BIPOLE III TRANSMISSION PROJECT

CONSTRUCTION ENVIRONMENTAL PROTECTION PLAN

KEEWATINOOW CONVERTER STATION FACILITIES AND INFRASTRUCTURE AND GROUND ELECTRODE

Manitoba Hydro

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Document Owner
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List of Revisions

Number	Nature of Revision	Section(s)	Revised By	Date

PREFACE

MANITOBA HYDRO'S ENVIRONMENTAL COMMITMENT

Manitoba Hydro is committed to protect and preserve natural environments and heritage resources affected by its projects and facilities. This commitment and a commitment to continually improve environmental performance is demonstrated through the company's Environmental Management System, which is ISO 14001 certified.

Environmental protection can only be achieved with the full engagement of Manitoba Hydro employees, consultants, local communities and contractors at all stages of projects from planning and design through construction and operational phases.

As stated in the Corporate Environmental Management Policy:

"Manitoba Hydro is committed to protecting the environment by:

- *preventing or minimizing any adverse impacts, on the environment, and enhancing positive impacts;*
- *continually improving our Environmental Management System;*
- *meeting or surpassing regulatory, contractual and voluntary requirements;*
- *considering the interests and utilizing the knowledge of our customers, employees, communities, and stakeholders who may be affected by our actions;*
- *reviewing our environmental objectives and targets annually to ensure improvement in our environmental performance; and*
- *documenting and reporting our activities and environmental performance."*

Manitoba Hydro's environmental management policy has been used to guide the development of the environmental protection program for the proposed Project. Implementation of the program is practical application of the policy and will demonstrate Manitoba Hydro's dedication to environmental stewardship.

Manitoba Hydro recognizes the unique relationship Aboriginal communities have with their areas of use and is appreciative to all the communities who took time to share information about their history and culture as well as their valued knowledge and perspectives with regards to the Bipole III Transmission Project. Aboriginal Traditional Knowledge that has been shared assisted Manitoba Hydro in: developing a greater understanding of the study area; identifying potential Project effects; planning and designing the Project; and developing mitigation measures, which can be found throughout this document and other project environmental plans. Manitoba Hydro understands the importance of continuing to engage with Aboriginal communities and to work to address outstanding concerns.

Adaptive management is being implemented within the Environmental Protection Program to be responsive and adaptive to changes to the project and on the landscape, stakeholder and aboriginal concerns, as well as inputs from our inspection and monitoring programs.

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF MAPS

1.0 INTRODUCTION

The Construction Environmental Protection Plan (CEnvPP) outlines the commitments and efforts that will be undertaken by Manitoba Hydro and contractors to protect the environment and mitigate potential environmental effects that may occur during construction of the Keewatinoow Converter Station Facilities and Infrastructure and associated Ground Electrode components of the Bipole III Transmission Project (the Project). The use of environmental protection plans is a practical and direct implementation of Manitoba Hydro's commitment to responsible environmental stewardship.

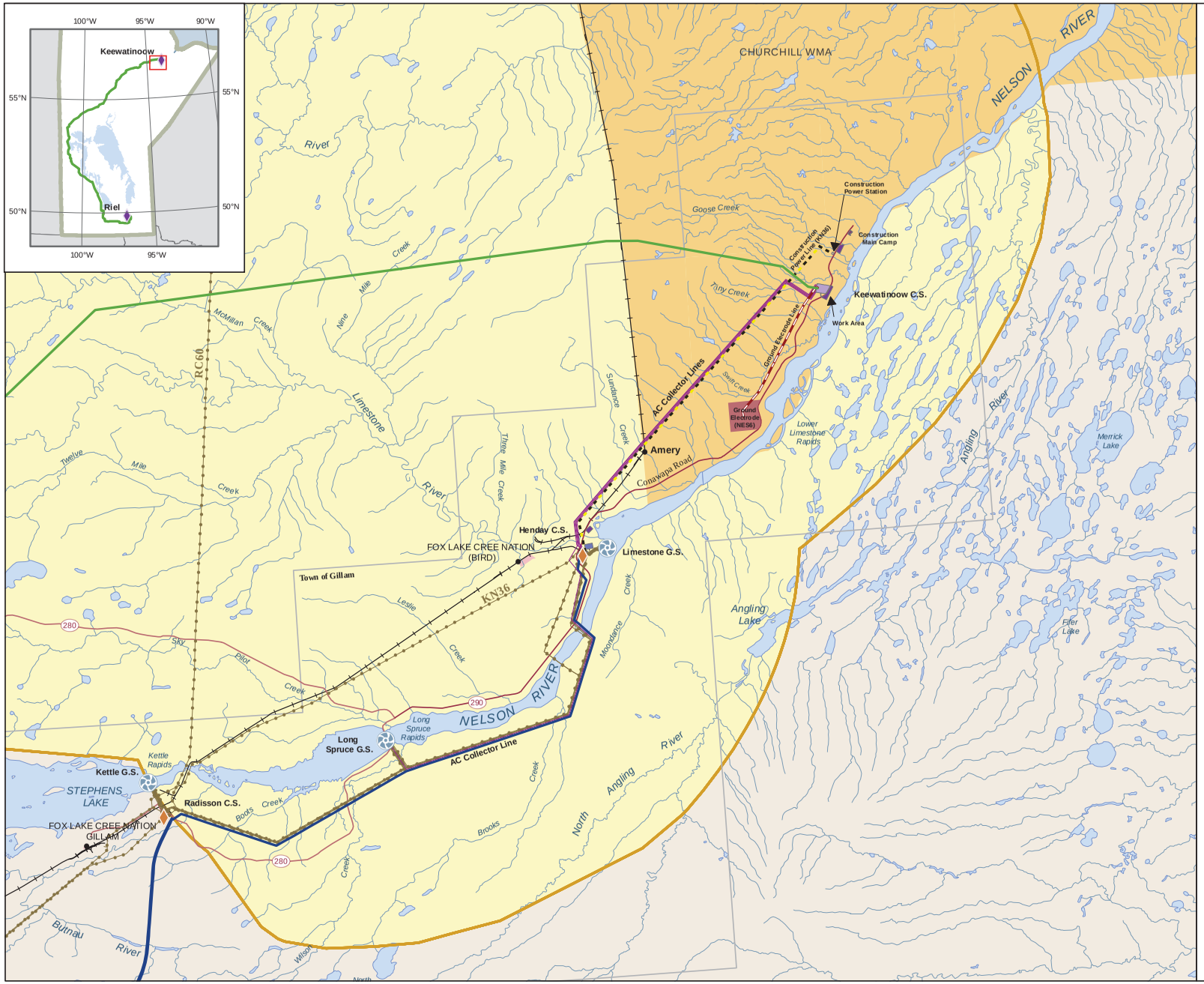
This CEnvPP provides guidance for the implementation of environmental protection measures for the Keewatinoow Converter Station facilities and infrastructure, herein referred to as the "Converter Station", and the Ground Electrode Site, herein referred to as the "Electrode Site" (Map 1). These components will be collectively referred to as the "Project".

1.1 OVERVIEW OF ENVIRONMENTAL PROTECTION PLAN

Part of Manitoba Hydro's commitment to environmental protection includes the development of a comprehensive Environmental Protection Program (EPP) for the Project. This program includes the development of a Project-Level Environmental Protection Plan (EnvPP) and Construction EnvPPs (CEnvPPs) specific to each major Project component (Figure 1-1). The Project-Level EnvPP contains general environmental protection information applicable to all project components, provides a foundation for developing component-specific CEnvPPs, and is intended for project managers and regulators. The CEnvPPs provide general and specific environmental protection information for each project component and are intended for use by construction contractors and environmental staff.

A number **of Environmentally Sensitive Sites** (ESS) have been identified for converter station and the electrode site. ESS are locations, features, areas, activities or facilities that were identified in the Bipole III Transmission Project EIS to be ecologically, socially, economically or culturally important or sensitive to disturbance and require protection during construction of the project. The determination of ESS has included the consideration of Aboriginal Traditional Knowledge (ATK). Manitoba Hydro will continue to engage with stakeholders and aboriginal communities in efforts to continually update this plan with sensitive sites and current knowledge as it is shared.

Map sheets have been developed at a scale of 1:10,000 for the Project to present the location and spatial extent of ESS. Each map has corresponding tabular summary information including ESS feature information and relevant mitigation measures to address the potential environmental effects at each ESS site.



Manitoba Hydro

Bipole III Transmission Project

Infrastructure

- Final Preferred Route
- AC Collector Lines
- Ground Electrode Line
- Ground Electrode Site
- Construction Power Line (KN36)
- Keewatinoow Converter Station
- Construction Power Site
- Construction Camp Site
- Limestone Construction Power Station Site
- Manitoba Hydro and Contractor Work Area Site
- Limestone Stores Area
- Henday Storage
- Project Study Area

Infrastructure

- Converter Station
- Generating Station
- Bipole I and II
- Transmission Line

Landbase

- Community
- City / Town
- First Nation
- Wildlife Management Area

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, MMM, Stantec, ProvMB, NRCAN
Date Created: September 09, 2013

N

0 5 10 Kilometres
0 3 6 Miles

1:250,000

Northern Project Components

Map 1

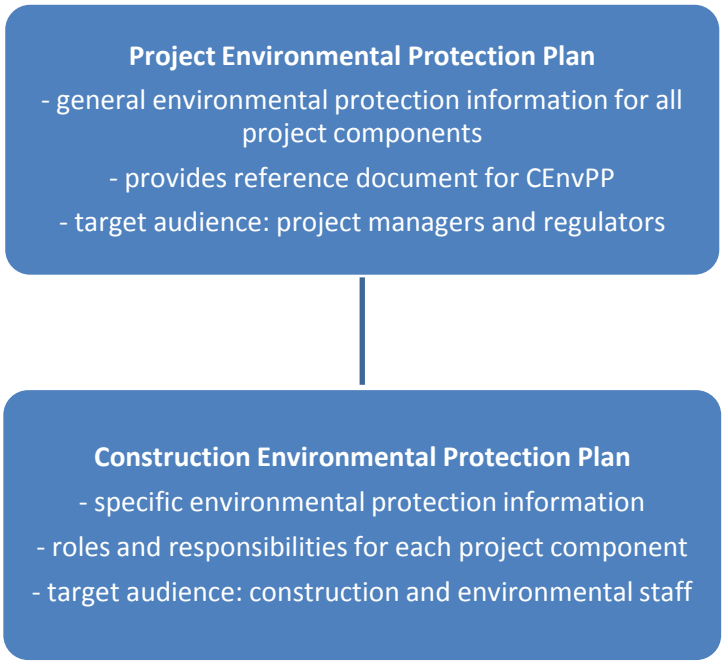


Figure 1-1: Relationship between Environmental Protection Documents

1.2 ROLES, RESPONSIBILITIES AND REPORTING

This section outlines the major roles and responsibilities of those involved in the implementation of the CEnvPP for the Project. A summary of roles and key responsibilities is found in Table 1-1. Communication and reporting on environmental issues, monitoring and compliance will be as outlined in Figure 1-2. A contact list for key staff involved in supporting this CEnvPP is found in Appendix A.

1.2.1 Environmental Protection

Manitoba Hydro will provide copies of all available permits, licences, approvals and authorizations obtained for the Project to the Contractor. Electronic copies of all permits are available for download from the Environmental Protection Information Management System.

The Contractor will comply with the Environmental Protection Plans prepared for the Project, including mitigation measures identified during the environmental assessment phase and contained herein. Environmental aspects of the work will be discussed during the Post-Contract Award Meeting, Pre-Construction Meeting, Progress Meetings, and Daily Job Planning Meetings.

Without limiting or otherwise affecting the generality or application of any other term or condition of the Contract, the Contractor shall:

- strictly comply with all Environmental Legislation and have suitable corrective and/or preventive measures in place to address any previous environmental warnings, fines or convictions; and

- do or cause to be done all things required or ordered, to mitigate environmental damage caused, directly or indirectly, by itself or by its servants, agents, employees or Subcontractors, accidentally or as a result of practices that are in contravention of the Contract or any Environmental Legislation.

1.2.2 Contractor's On-Site Environmental Representative(s)

Before commencing the on-site work, the Contractor shall identify its dedicated on-site Environmental Officer(s)/Supervisor(s), who shall attend the Pre-Construction Meeting to review environmental matters for the work. The dedicated On-Site Environmental Representative shall be fully conversant with:

- Contractor's Environmental Practices and Policies;
- All applicable Environmental Legislation; and
- The conditions of Project and Construction Environmental Protection Plans.

1.2.3 Environmental Improvement Orders

Failure to comply with the Environmental Protection section above or unsatisfactory performance in regards to any other environmental-related matter may result in Manitoba Hydro issuing Environmental Improvement Orders to the Contractor.

The Environmental Improvement Order, once communicated verbally or in writing are considered "effective immediately". A compliance date will be established by Manitoba Hydro for each Environmental Improvement Order issued. The Contractor must provide written documentation of the actions taken regarding the environmental improvement order as follows:

The Contractor shall:

- within the expiry date of the period specified in the order or any extension thereof , prepare a written report on the measures taken to remedy the contravention and on any measures yet to be taken;
- send a copy of the report to the Manitoba Hydro Representative who made the order;
- if applicable, provide a copy of the report to the employee(s) involved; and
- if applicable, review the contravention with all employees at regular weekly meeting and post in a prominent place at or near the workplace.

1.2.4 Manitoba Hydro Environmental Stop Work Order

Manitoba Hydro may issue an Environmental Stop Work Order where any activities which are being, or are about to be, carried on in a workplace, involve or are likely to involve an imminent risk of serious impact to the environment, or where a contravention specified in an Environmental Improvement Order was not remedied and warning was given. The Environmental Stop Work Order, once communicated verbally or in writing is considered "effective immediately", for any one or more of the following matters:

- the cessation of those activities;
- that all or part of the workplace be vacated;
- that no resumption of those activities be permitted by the Contractor;
- that a Manitoba Hydro issued stop work order remains in effect until it is withdrawn in writing by Manitoba Hydro; and
- that Manitoba Hydro will not be held responsible for delays to the work or be required to compensate the contractor for any matters arising as a result of the Manitoba Hydro issued Environmental Stop Work Order.

Note: A Manitoba Hydro-issued Environmental Stop Work Order does not prevent the Contractor from completing any work or activity that may be necessary in order to remove the risk of injury referred to above.

Table 1-1: Environmental Roles and Responsibilities of Personnel During the Construction Phase

Role	Key Responsibilities
Project Manager (off-site)	• Ensures all environmental plans, permits, authorizations, licences and approvals are in place for the project. • Oversees Resident Engineer / Manager or delegate. • Makes decisions at the corporate level. • Review and sign off on spill response plan. • Applies for the Project work permit with support from the Licensing and Environmental Assessment Department and consults with Licensing and Environmental Assessment Department if changes are required. • Obtains any other required permits or approvals from Manitoba Conservation and Water Stewardship.
Resident Engineer / Manager (on-site)	• Ensures that all project activities are conducted in accordance with the EnvPP and other Project related permits, authorizations, licences, approvals, regulations and guidelines. • Oversees Site Environmental Officer and those named as Contract "Engineer" or representative and. • Ensures that both Manitoba Hydro personnel and all contractors are aware of the contents of the EnvPP, and other environmental approvals and related legislation. • Solicits feedback and supports the Site Environmental Officer or delegate. • Monitors reports prepared by the Site Environmental Officer or delegate and assists with corrective measures if required. • Supervises the Site Environmental Officer or delegate in environmental compliance monitoring to ensure that the terms of all regulatory approvals and the EnvPP are followed. • Has the authority to issue stop work orders, change orders, etc. with contractor. • Determines action or response to incidents or non-compliance situations. • Confirms that erosion control measures are implemented as outlined in the erosion and sediment control section of the contract technical specifications and/or erosion and sediment control plan. • Executes the Project work permit. • Ensures that construction activities cease at a particular location if heritage resources (or human remains) are discovered and contacts the Project Archaeologist. • Participates in a post-construction inspection of the Project area with the regional Natural Resources Officer (Manitoba Conservation and Water Stewardship) to confirm compliance with the Environment Act Licence and identifies any deficiencies to be addressed.
Contract "Engineer"	• Administers the construction contracts. • Executes the Resident Engineer / Manager's environmental responsibilities on their behalf. • Has the authority to issue stop work orders, change orders, etc. with contractor. • Determines action or response to incidents or non-compliance situations. • Confirms that erosion control measures are implemented as outlined in the erosion and sediment control section of the contract technical specifications and/or erosion and sediment control plan.

Table 1-1: Environmental Roles and Responsibilities of Personnel During the Construction Phase

Role	Key Responsibilities
Site Environmental Officer(s)	• Conducts environmental compliance monitoring to ensure that the terms of the EnvPP and other project environmental approvals are followed. • Participates in orientation of environmental requirements to the contractor(s), their staff and Manitoba Hydro personnel. • Works with the contractor to ensure regulatory compliance and implementation of the EnvPP. • Conducts construction site inspections maintaining a record of all activities. • Documents any construction site issues or mitigation measures required to address unanticipated effects. • Has the authority to issue stop work orders with contractor. • Reports environmental incidents immediately to the Resident Engineer / Manager or delegate. • Liaises with local Manitoba Conservation and Water Stewardship personnel. • Ensures that construction activities cease at a particular location if heritage resources (or human remains) are discovered and contacts the Resident Engineer / Manager or delegate. • Facilitates post-construction inspection of the Project area with the regional Natural Resources Officer (Manitoba Conservation and Water Stewardship) to confirm compliance with the Environment Act Licence and identifies any deficiencies to be addressed.
Licensing and Environmental Assessment Department	• Provides advice and guidance on environmental protection matters. • Monitors inspection reports and monitoring information, and prepares annual report as per regulatory requirements. • Liaises with Manitoba Conservation and Water Stewardship, Environmental Approvals Branch.
New Generation Construction (NGC) Environmental Specialist	• Off-site support for all aspects of the EnvPP and environmental approvals. • Provides advice and guidance on environmental protection matters. • Liaises with Licensing and Environmental Assessment Department. • Liaises with Regional regulatory authorities. • Provides advice and guidance to Manitoba Hydro site staff for non-compliance situations, environmental incidents and emergencies. • Ensures all reporting into Environmental Protection Information Management System.
Manitoba Hydro Personnel	• Reports any heritage resources (or human remains) discoveries to their line management. • Follows all regulations and guidelines set out in the EnvPP and environmental approvals. • Reports any violations of regulations to their line management. • Exercises due diligence in carrying out project activities.

Table 1-1: Environmental Roles and Responsibilities of Personnel During the Construction Phase

Role	Key Responsibilities
Contractor(s)	• Accountable for all regulatory and environmental approvals (i.e., follow CEnvPP and mitigation measures prescribed) • Ensure all contractor project staff and agents are adequately trained/informed of pertinent environmental requirements of the Project related to their position • Report any discoveries of non-compliance, accidents or incidents to the Contract "Engineer" and Site Environmental Officer. • 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 Contract "Engineer" and Site Environmental Officer. • Maintains detailed records of inventories, wastes, incidents, alterations, accidents, equipment maintenance and any public complaints. • Responsible for providing an emergency response plan for their work areas. • Responsible for reporting all spills as outlined in the spill response plan. • Responsible for cleaning up spills and collection of soil samples while being monitored by Manitoba Hydro. • Responsible for storage and collection of hazardous wastes. • Responsible for following the spill response plan. • Responsible for other permits as outlined in Appendix B
Contractor's Personnel	• Accountable for all regulatory and environmental prescriptions (i.e., follow CEnvPP and mitigation measures prescribed) • Ensure adequately trained with respect to, and informed of pertinent, environmental requirements of the Project related to their position • Report any discoveries of non-compliance, accidents or incidents to the Contractor. • Ensures that all remedial actions are carried out as per Manitoba Hydro instruction. • Ensures all discoveries of heritage resources, human remains, paleontological finds, environmentally sensitive sites, etc. are reported to the Contractor.
Contractor's On-Site Environmental Representative	• Ensures that the contractor's personnel adhere to all aspects of the Construction Environmental Protection Plan. • Provides information and advice to the Contractor's personnel on environmental protection and safety matters. • Responsible for implementation of the contractor environmental plans (Appendix D), Project and Construction EnvPPs, and contractors' environmental practices and policies. • Liaise with Manitoba Hydro Site Environmental Officer on environmental issues.

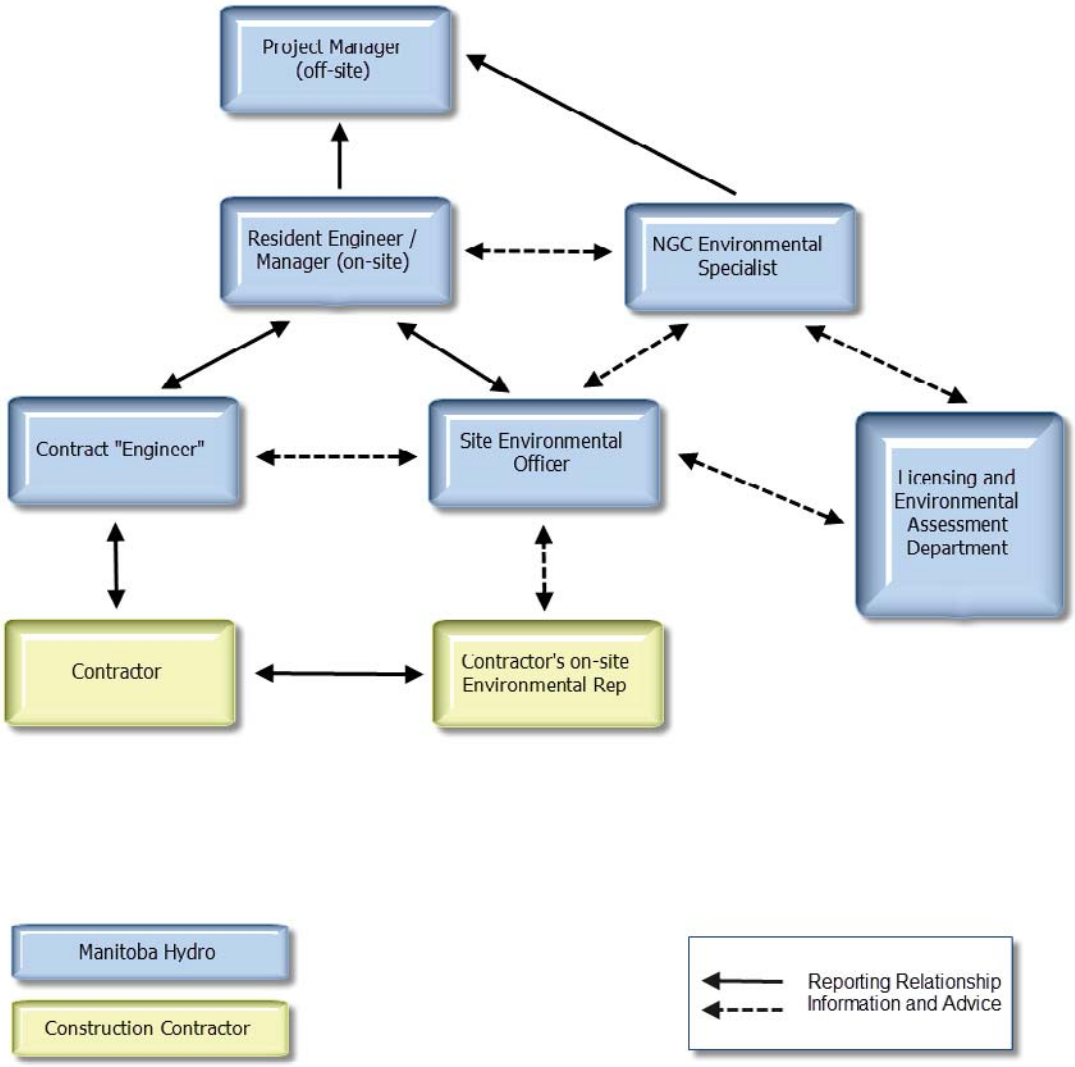


Figure 1-2: Environmental Communication Reporting Structure

1.3 ENVIRONMENTAL PROTECTION INFORMATION MANAGEMENT SYSTEM

An Environmental Protection Information Management System (EPIMS) will provide a single interface to store all environmental documentation. It will be utilized by project staff to submit permits, inspection reports, plans, logs, checklists, etc. for the management of all environmental protection implementation, regulatory compliance and incident reporting. The EPIMS will be fully integrated with project communications, inspection, biophysical, socio-economic, and heritage monitoring.

1.4 REGULATORY REQUIREMENTS

All relevant regulatory approvals for the Project will be obtained by Manitoba Hydro prior to construction. All documentation will be kept on-site by both the contractor and Manitoba Hydro personnel. Manitoba Hydro requires that its employees and contractors comply with all Federal and Provincial Regulatory requirements relating to the construction, operations and decommissioning of its projects and facilities. All Project licences, approvals and permits obtained can be found in Appendix B: Project Licences, Approvals and Permits and in EPIMS.

2.0 PROJECT DESCRIPTION

This Construction Environmental Protection Plan (CEnvPP) includes the following general components:

- Keewatinoow Converter Station Facilities and Infrastructure; and
- Keewatinoow Ground Electrode.

A detailed project description is available in the Bipole III Transmission Project Environmental Impact Statement.

The Keewatinoow Converter Station will be sited at the northern terminus of the Bipole III transmission line, approximately 80 km northeast of the Town of Gillam. The development will consist of infrastructure and buildings to support its operation: a 230 kV ac switchyard, converter transformers, a converter building and conversion equipment, and a dc switchyard. The Converter Station site is estimated to require a footprint of approximately 640 m x 640 m in dimension for a total area of approximately 410,000 m^2 (41 ha), including allowances for items such as road and transmission line approaches. The fenced area at the station is estimated to require a footprint of approximately 310,000 m^2 (31 ha). The Keewatinoow Construction Camp is located approximately 4 km northeast of the Converter Station. The Keewatinoow Ground Electrode is located within the Fox Lake Resource Management Area, approximately 50 km south-west from the Converter Station. The Electrode Site area requirement is estimated to be approximately 2,000 m x 2,000 m or 4,000,000 m^2 (400 ha), only a portion of which will be cleared and affected by the electrode installation. This includes allowances for items such as access road and electrode line approaches. The Keewatinoow ground electrode is proposed to be a shallow ring electrode, estimated to be approximately 800 m in diameter, and situated within the specified site area identified (Map 1).

3.0 ENVIRONMENTAL CONSIDERATIONS

Important environmental considerations for pre-construction planning and construction activities are required at environmental sensitive sites (ESS), which include locations, features, areas, activities or facilities that were identified in the Bipole III Transmission Project EIS to be ecologically, socially, economically or culturally important or sensitive to disturbance. This ESS requires protection and mitigation during construction of the Project. 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, permafrost, and other important locations requiring specific protection (e.g., resource use, access).

A summary of environmentally sensitive sites for the Project are identified in Table 3-1 and described in further detail below.

Table 3-1: Summary of ESS at the Keewatinoow Converter Station Facilities and Infrastructure and Ground Electrode

ESS Categories	Groups	Sensitivity Type	No. Sites
Riparian Features	Water Crossings	Fish habitat quality	30
	Vegetation	Species of Concern and Habitat	35
Heritage	Historic/ archaeological	Plaques/ Centennial Farms/ Other Historic Sites; Archaeological Sites	2

4.0 ENVIRONMENTAL PROTECTION PLAN ORIENTATION AND AWARENESS

4.1 POST-CONTRACT AWARD MEETING

A post-contract award meeting will be held between the Contractor and Manitoba Hydro (senior staff including Contract "Engineer" and Manitoba Hydro Environmental Representative (NGC Environmental Specialist or Site Environmental Officer)).

The environmental portion of this meeting will include the following:

- A review of Manitoba Hydro's Environmental Principles and all environmental specifications of the Contract;
- Transfer of relevant information or precautions that Manitoba Hydro is aware of and which pertain to the job; and
- A review of required Contractor developed environmental plans.

The Contractor shall communicate to all Contractor's Personnel the work specifications, environmental requirements and information provided during the post-contract award meeting and notify the Contract "Engineer" in writing when it has been completed.

Manitoba Hydro will be responsible for the maintenance of minutes/documents related to this meeting.

4.2 PRE-CONSTRUCTION MEETING

A pre-construction meeting will be held between the Contractor (Contractor, On-Site Environmental Representative) and Manitoba Hydro (Resident Engineer / Manager, Contract "Engineer" and Site Environmental Officer).

The environmental portion of this meeting will include the following:

- A review of environmental protection plan;
- Transfer of further relevant information or precautions that Manitoba Hydro is aware of and which pertain to the job;
- Procedures/requirements for dealing with environmental stop work orders or improvement orders;
- Reporting procedures for environmental incidents and emergencies (includes spill response);
- Documentation needs including the review of all pertinent forms (i.e. job planning form; environmental checklist); and

- Requirement to educate/train all Project employees with respect to the requirements of this Construction EnvPP.

Manitoba Hydro will be responsible for the maintenance of minutes/documents related to these meetings. The Contractor is required to ensure all other pertinent information is distributed to their personnel.

4.3 PROGRESS MEETINGS

Senior field staff will meet on a regularly scheduled basis to review and discuss progress to date and planned upcoming work. This meeting 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.

4.4 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 environmental requirements of the job and environmental precautions necessary. All job planning meetings, including the environmental content, shall be documented by the Contractor.

5.0 CONTRACTOR DEVELOPED ENVIRONMENTAL PLANS

Construction contractors will be required to develop environmental plans as part of the environmental protection program for this project component. The following may be including:

1. Emergency Preparedness and Response Plan:
   - The contractor will prepare a Project specific Emergency Response Plan that is complimentary to the Manitoba Hydro Emergency Response Plan – Keewatinoow Converter Station and Construction Camp Lagoon (Appendix F), including prevention planning and response for both hazardous material spills and fires. The plan will be reviewed and accepted by the Resident Engineer / Manager or delegate.
   - The contractor is responsible for all spills in their work areas. All spills will be reported to the Contract Engineer and Site Environmental Officer and regulators as required. The contractor will appoint a Spill Response Coordinator for their work areas. Site clean-up and disposal of contaminated material will be managed by the contractor as stated in the Spill Response Plan in consultation with the Contract Engineer and Site Environmental Officer.
   - The contractor will ensure that proper fire fighting practices are established and that adequate firefighting equipment is installed and maintained in all buildings, vehicles and work areas under their ownership. Emergency response/evacuation procedures will be adhered to in case of forest fires.
2. Waste and Recycling Management Plan:
   - The Contractor shall be responsible to develop and implement a Waste and Recycling Management Plan that follows the Waste and Recycling Management Framework for its work.
3. Erosion and Sediment Control Plan:
   - The Contractor shall be responsible to develop and implement site-specific Erosion and Sediment Control Plans for its work.
4. Concrete Washout Management Plan:
   - Contractors utilizing batching, placement machinery or concrete delivery equipment shall be responsible to develop and implement site-specific Concrete Washout Management Plan for its work.

6.0 ENVIRONMENTAL MITIGATION REQUIREMENTS

Contractors must follow all mitigation measures identified to protect the environment, including Environmental Sensitive Sites (ESS). Two types of mitigation measures must be followed:

- General Mitigation Measures apply to all Project areas.
- Specific Mitigation Measures apply to individual ESS.

Contractors will need to modify construction activities in accordance with **general mitigation measures (Section 6.6)** and **specific mitigation measures (see detailed maps and specific mitigation in Section 7).**

6.1 BUFFERS AND SETBACKS

Buffers are work areas where restricted activities such as low disturbance clearing are permitted. **Setbacks** are areas to be maintained from a given environmental feature where *no work* shall occur.

In some instances, ESS will have detailed mitigation measures including site-specific setbacks and buffers (see Section 7). Prescribed setbacks and buffer distances from sensitive environmental features will be based upon sensitivity of the ESS.

These setbacks and buffers are preliminary and may be expanded or refined based on further data collection, regulatory license and work permits to be issued for the project.

Example of a Buffer:

A stream will have a riparian buffer based upon the quality of fish habitat. This buffer may limit the type of construction activity.

Example of a Setback:

Breeding areas or nests of select wildlife species will have setback distances that exclude construction activity for a specific time period.

6.2 TIMING WINDOWS

Table 6-1 outlines federally and provincially regulated timing windows when construction activity is likely to negatively impact wildlife (fish, birds, mammals). Timing windows may be expanded or refined based on further data collection, regulatory licences and work permits to be issued for the project.

The recommended windows are considerate of periods of the year when wildlife species are sensitive to disruptive operations because of a sensitive lifecycle activity such as spawning, calving, nesting, and hibernation, etc. Table 6-2 is intended to assist in scheduling certain construction activities outside of these sensitive periods when risks of adverse construction impacts are negligible. Where conflicting timing restraints with construction activities exist in a particular area, additional mitigation, determined in conjunction with regulators, will have to be considered and implemented to reduce effects.

Table 6-1: Timing Windows

Restriction	Timing Window	Details
In-water Work	September 1 – July 15 following year	To protect spawning fish and developing eggs and fry, in-water work should be avoided.
Clearing	April 1-July 31	Clearing will avoid the sensitive breeding period for birds.
Burning	April 1 – November 15	Burning is not permitted unless a burning permit is obtained from Manitoba Conservation and Water Stewardship.

Table 6-2: Burning Permit Requirements

Timeline	Permit Required	Other Required Action
April 1 – November 15	Yes	• Acquire burn permit from Manitoba Conservation and Water Stewardship. • A copy of the permit must be provided to the Site Environmental Officer or delegate. • Written notification must be provided to the Site Environmental Officer or delegate regarding intent to burn and when burn is extinguished.
November 16 – March 31*	No	• Written notification must be provided to the Site Environmental Officer or delegate regarding intent to burn and when burn is extinguished.
March 1 – March 31	No	• Written notification to Manitoba Conservation and Water Stewardship district office.

*Note: Extinguish all fires by March 31; immediately inform Manitoba Conservation and Water Stewardship if not extinguished before March 31.

6.3 RIPARIAN MANAGEMENT

Based on characteristics and qualities of waterbodies in, or near the project footprint, Contractors will need to modify land clearing, machinery passage and other construction activity, these sites will be identified on the Map Sheets in Section 7.0.

Riparian Buffers (as shown in Table 6-3) are applied to riparian habitats within the Project Footprint in which all shrub and herbaceous vegetation will be retained and all trees that do not violate Manitoba Hydro vegetation clearance requirements will be retained. For slopes greater that 50% site investigation and prescription by MH Senior Environmental Assessment Officer is required. **Seven meter Machine free zones** are work areas where restricted activities such as low disturbance clearing are permitted by reaching into zone with equipment but not entering the zone except at trail crossing.

Table 6-3: Riparian Buffer Distances Based on Slope

Slope of Land Entering Waterway (%)	Width of Riparian Buffer (m)
10	30
20	40
30	55
40	70
50	85

Boundaries of **Riparian Buffers** and **Machine Free Zones** are measured from the **ordinary high water mark** (OHWM) (Figure 6-1). Setbacks are measured from the OHWM or from a defined riparian boundary as delineated by an Aquatics Specialist.

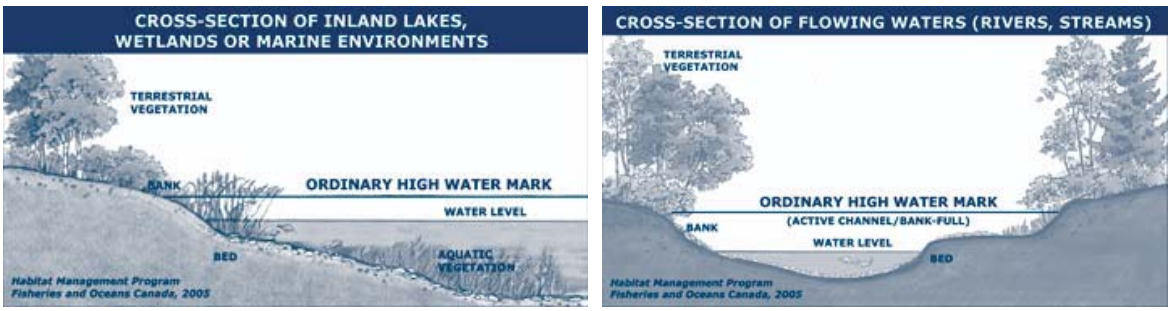


Figure 6-1: Ordinary High Water Mark (OHWM) Shown for an Inland Lake (left) and a Flowing Waterbody (right)

(Source: Department of Fisheries and Oceans, MB 2009)

6.4 ESS – RIPARIAN MITIGATION

Activities associated with project construction pose a low risk to fish habitat. Because of this low level of risk, Operational Statements (OS) developed by the Fisheries and Oceans Canada will be applied to modify construction of overhead lines, temporary stream crossings, ice bridges and snow fills, and dry open cut stream crossings (Appendix E). In addition to Fisheries and Oceans Canada OS requirements, Contractors will implement setbacks and buffers as indicated on Site-specific information the Map Sheets Section 7.0.

6.5 GENERAL MITIGATION REQUIREMENTS

Construction considerations required for all Project areas are considered general mitigation and are applicable to all construction areas.

The environmental protection measures are provided under the following five categories: 1) Management (MM); 2) Project Activity (PA); 3) Project Component (PC); 4) Environment Component (EC); and 5) Environmental Issue (EI), as follows:

(MM) Management environmental protection measures include management, contractual, administrative and other measures that are common to all environmental protection categories and topics.

(PA) Project Activity environmental protection measures include construction activities that are likely to cause direct environmental effects. Project activities are action words or phrases, that that are carried out during construction of the Bipole III Transmission Project such as drilling, clearing, etc..

(PC) Project Component environmental protection measures relate to major components of the Project. The Project is very large and complex consisting of several major components including transmission lines, converter stations and ground electrode facilities, and involves access trails, stream crossings, construction camps, marshalling yards, etc.

(EC) Environmental Component protection measures include important or vulnerable components of the environment that are subject to environmental effects of the Project. Some environmental components are particularly vulnerable to construction of transmission lines, converter stations, ground electrode facilities and other project components and activities, and warrant separate consideration. Example environmental components include agricultural areas, fish habitat, heritage sites and wetlands.

(EI) Environmental Issue and Topic protection measures include important issues and topics identified for the Project. Environmental issues and topics include emergency response, erosion protection/sediment control, hazardous substances, petroleum products and soil contamination.

There is overlap and duplication of mitigation measures amongst the above categories, this allows the user to look up the actions they must perform by different categories.

6.6 GENERAL MITIGATION TABLES

Access Roads and Trails (PC-1)

ID	Mitigation
PC-1.01	Access roads and trails no longer required will be decommissioned and rehabilitated in accordance with the Rehabilitation and Vegetation Management Plan.
PC-1.03	Access roads and trails will be constructed to a minimum length and width to accommodate the safe movement of construction equipment
PC-1.05	Access roads and trails will be provided with erosion protection and sediment control measures in accordance with the Erosion Protection and Sediment Control Plan.
PC-1.06	Vehicle, machinery and pedestrian traffic will be restricted to established access roads and trails, and cleared construction areas in accordance with the Access Management Plan.
PC-1.07	Approach grades to waterbodies will be minimized to limit disturbance to riparian areas.
PC-1.08	Bypass trails, sensitive sites and buffer areas will be clearly marked prior to clearing, to identify that prescribed selective clearing is to occur as per Map Sheets.
PC-1.09	Contractor will be restricted to established roads and trails, and cleared construction areas in accordance with the Access Management Plan.
PC-1.11	Equipment, machinery and vehicles will only travel on cleared access roads and trails, and will cross waterways at established temporary and permanent crossings.
PC-1.12	Existing access roads, trails or cut lines will be used to the extent possible.
PC-1.13	MCWS Work Permits will be obtained prior to the commencement of the project.
PC-1.14	Clean abrasives may be used as alternatives to chemical melting agents.
PC-1.15	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-1.16	Public use of decommissioned access routes will be controlled through the Access Management Plan .
PC-1.17	Public use of project controlled access roads and trails during construction will be controlled through the Access Management Plans.
PC-1.18	Grades for access roads and trails should follow natural terrain contours to the extent possible and should be minimized adjacent to and approaching waterbodies.
PC-1.19	Surface water runoff will be directed away from disturbed and erosion prone areas but not directly into waterbodies.
PC-1.20	Vegetation control along access roads and trails will be in accordance with Rehabilitation and Vegetation Management Plan.
PC-1.21	The Site Environmental Officer will inspect access roads and trails prior to decommissioning to evaluate adherence to environmental protection measures and to document areas of potential contamination.
PC-1.22	The Site Environmental Officer will inspect decommissioned and rehabilitated access roads and trails in accordance with the site Rehabilitation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.

Aircraft Use (EI-1)

ID	Mitigation
EI-1.01	Contractors using aircraft will submit flight plans in advance of flying to the Resident Engineer / Manager during active construction periods.
EI-1.02	Fuel storage, handling and dispensing at aircraft landing areas will conform to provincial legislation and guidelines.
EI-1.03	Pre-defined aircraft landing locations will include construction camps, marshalling yards, borrow pits, right-of-way corridor and designated landing sites.
EI-1.04	Temporary aircraft landing sites will be approved by the Resident Engineer / Manager prior to use.

Blasting (PA-1)

ID	Mitigation
PA-1.01	A communication protocol will be developed to notify affected parties of blasting operations and conductor splicing. Affected parties may include Manitoba Conservation and Water Stewardship, RCMP, municipalities, landowners, and resource users.
PA-1.02	Blasting will be conducted and monitored in accordance with Fisheries and Oceans Canada Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters
PA-1.03	Blasting will not be permitted around idenitified caribou calving habitats during calving season. (May 1 to June 30)
PA-1.04	Where practical, blasting will be scheduled outside the period from April 30 to Aug 1, to avoid the critical nesting periods. The practicality anf feasibility of the works will be at the determination of the Resident Engineer / Manager in consultation with the NGC Environmental Specialist
PA-1.05	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.
PA-1.07	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	The Blasting Contractor will be in possession of valid licenses, permits and certificates required for blasting in Manitoba.
PA-1.09	The Blasting Contractor will submit a Blasting Plan to the Contract "Engineer" for review and approval prior to commencement of blasting operations.
PA-1.10	Use of ammonium nitrate and fuel oil will not be permitted in or near waterways.
PA-1.13	Drillhole sites will be clearly marked with flagging tape and signs.
PA-1.14	Large explosive charges will be divided into smaller multiple time-delay charges, where practical. The practicality and feasibility of the works will be at the determination of the Resident Engineer / Manager.

Borrow Pits and Quarries (PC-2)

ID	Mitigation
PC-2.01	Access to abandoned borrow pits and quarries will be managed in accordance with the Access Management Plan.
PC-2.02	All equipment and structures will be removed from borrow pits prior to abandonment.
PC-2.03	Borrow pits and quarries will be designed, constructed and operated in compliance with Mines and Minerals Act.
PC-2.05	Borrow pits and quarries will not be located within established buffer zones and setback distances from identified Environmentally Sensitive Sites.
PC-2.06	Drainage water from borrow pits and quarries will be diverted through vegetated areas, existing drainage ditch(s) or employ a means of sediment control prior to entering a waterbody.
PC-2.07	Erosion protection and sediment controls will be put in place before borrow pit excavation commences, when required as determined by the resident Engineer/Manager in consultation NGC Environmental Specialist.
PC-2.08	Fuel storage will not be permitted near stockpiles outlined in PC 2.21.
PC-2.09	Garbage, debris or refuse will not be discarded into borrow pits and quarries.
PC-2.10	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.
PC-2.11	Organic material, topsoil and subsoil with-in borrow pits and quarries will be stripped and stockpiled for use in future site rehabilitation.
PC-2.13	Signs will be posted at borrow pits and quarries to warn all persons of safety hazards.
PC-2.14	Surface drainage will be redirected away from the borrow pits and quarries before excavation commences where possible.
PC-2.17	Vegetation in active Manitoba Hydro permitted borrow pits and quarries will be maintained as per the Rehabilitation/ and Vegetation Management Plan
PC-2.18	Worked out borrow pits and granular quarries will be left with maximum 4:1 (horizontal to vertical) side slopes.
PC-2.19	Borrow pits and quarries will not be permitted within established buffer zones and setback distances from waterbodies, wetlands, and riparian areas.
PC-2.20	Discharges from dewatering operations will be carried out so that it avoids entering natural water systems, unless sediment is controlled.
PC-2.21	Will inspect borrow pits and quarries prior to decommissioning to evaluate adherence to environmental protection measures and to document areas of potential contamination.
PC-2.22	The Site Environmental Officer will inspect rehabilitated borrow pits and quarries in accordance with the site Reclamation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.
PC-2.23	Borrow pits will be accessed using existing access routes and rights-of-way where possible. Acceptance of the access location by the Resident Engineer / Manager will be required.

Burning (PA-2)

ID	Mitigation
PA-2.01	All occurrences of fire spreading beyond the debris pile will be reported immediately in accordance with work permit conditions
PA-2.02	Any residue or unburned materials remaining post-burn is not to encumber operations or re-vegetating activities.
PA-2.03	Burning of slash on permafrost soils should be avoided. If it is unavoidable, approval from the Resident Engineer/Manager in consultation with NGC Environmental Specialist must be obtained.
PA-2.04	Burning of solid wastes including kitchen wastes and treated wood will not be permitted.
PA-2.05	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
PA-2.06	Burning will not be carried out within riparian buffer zones or setbacks for stream crossings or waterbodies.
PA-2.07	Burning will only be carried out in accordance with provinical work permits. A Burning Permit is required between April 1st and November 15.
PA-2.08	Debris and wood chip piles located near habitation or highways will only be burned when weather conditions are favourable to ensure the safe dispersal of smoke and in acordance with burning permits where applicable.
PA-2.09	Debris piles scheduled for burning will be piled on mineral soils where possible.
PA-2.10	Firefighting equipment required by legislation, guidelines and contract specifications will be kept on site and maintained in serviceable condition during burning.
PA-2.11	Slash will be piled in a manner that allows for clean, efficient burning of all material. Mixing soil into the slash is to be avoided.

Clearing (PA-3)

ID	Mitigation
PA-3.01	Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. (See Riparian Bufffer Table in CEnvPP) Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
PA-3.02	Access to clearing areas will utilize existing roads and trails to the extent possible. Acceptance of the access location by the Resident Engineer / Manager will be required.
PA-3.03	All clearing and construction equipment is to remain within the bounds of access routes and the Project footprint identified.
PA-3.07	Cleared trees and woody debris will not be pushed into or adjacent to standing timber, wetlands or waterbodies.
PA-3.08	Clearing activities will be carried out in accordance with contract specifications and Annual Harvest Plan
PA-3.09	Clearing and disturbance and equipment use will be limited to the project footprint and associated access routes.
PA-3.10	Clearing will not be permitted within established setbacks for bird nesting and rearing during established timing windows.
PA-3.11	Clearing within environmentally sensitive areas, not designated for organic removal will be carried out in a manner that minimizes disturbance to existing organic soil layer.
PA-3.13	Construction vehicles, machinery and heavy equipment will not be permitted in designated machine-free zones except at designated crossings.
PA-3.14	Danger trees will be flagged/marked for removal using methods that do not damage soils and adjacent vegetation.
PA-3.16	In locations where grubbing and vegetation stripping is not required, existing low growth vegetation such as grasses, forbs and shrubs will be maintained to the extent possible; disturbance to roots and adjacent soils will be minimized.
PA-3.17	Machine clearing will remove trees and brush with minimal disturbance to existing organic soil layer using only "V" or "K-G" type blades, feller-bunchers and other means approved by the Resident Engineer / Manager.
PA-3.18	Property limits, right-of-way boundaries, buffers and sensitive areas (where applicable) will be clearly marked with stakes and/or flagging tape prior to clearing.
PA-3.20	Slash piles will be placed at least 15 m from forest stands.
PA-3.21	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-3.22	The Contract "Engineer" or Resident Engineer / Manager will issue a stop work order if extreme wet weather or insufficient frost conditions results in soil damage from rutting, and soil erosion is resulting in sedimentation of adjacent waterbodies.
PA-3.23	Trees containing active nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied.
PA-3.24	Trees will be felled toward the middle of rights-of-way or cleared area to avoid damage to standing trees. Trees will not be felled into waterbodies.
PA-3.25	Vegetation will be removed by mechanical means except where other selective clearing methods are stipulated at identified Environmentally Sensitive Sites.
PA-3.26	Where practical, merchantable timber will be salvaged and brought to market. As per Annual Harvest Plan, timber that is not salvaged will be piled and burned during frozen conditions in accordance with timing windows
PA-3.27	Chemical control of vegetation is not permitted during clearing.

Construction Camps (PC-3)

ID	Mitigation
PC-3.01	A food handling permit will be obtained from the local Public Health Inspector prior to the operation of kitchens.
PC-3.02	Bear-proof garbage containers and/or electric fencing will be used to store food waste in northern and rural areas.
PC-3.03	Construction camp sites will be kept tidy at all times. Waste materials including litter will be collected for disposal.
PC-3.05	Crown land permits will be obtained for construction camps as required.
PC-3.06	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-3.07	Feeding or harassment of any wildlife will be prohibited.
PC-3.08	Firebreaks will be constructed around camp locations where there is a risk of fire.
PC-3.09	Hunting and Fishing will not be permitted within the Project Footprint, unless approved by Resident Engineer/Manager.
PC-3.11	Problem wildlife will be reported immediately to Manitoba Conservation and Water Stewardship.
PC-3.12	Propane tanks for camp use will be stored in dedicated, secure areas at a safe distance from kitchen and sleeping quarters in accordance with provincial legislation and national codes.
PC-3.15	Spill control and clean-up equipment and materials will be provided for construction camps in accordance with the Keewatinoow Converter Station Spill Response Plan
PC-3.18	Waste and recyclables will be removed in accordance with the Waste and Recycling Management Plan to a licensed or approved waste disposal site and/or recycling facility.
PC-3.19	Food, greases and wastes will be stored in sealed, air-tight containers and managed as per PA-3.2
PC-3.20	All outdoor food storage lockers, containers and freezers will be locked.

Demobilizing and Cleaning Up (PA-4)

ID	Mitigation
PA-4.01	Buildings, structures, trailers, equipment, utilities, waste materials, etc., will be removed from construction areas and sites when work is completed. Foundations that are determined to be "clean fill" may be covered and abandoned.
PA-4.02	Construction access roads/trails that are no longer required will be decommissioned and rehabilitated to prevent access.
PA-4.04	Construction areas no longer required will be demobilized and rehabilitated in accordance with Rehabilitation and Vegetation Management Plan and/or provincial regulations (ie quarries and borrow sites)
PA-4.05	Petroleum product and other hazardous substances storage areas will be cleaned up, assessed and, if necessary, remediated in accordance with provincial guidelines and Manitoba Hydro guidelines.
PA-4.06	Stream crossings and drainages will be left free of obstructions so as not to impede natural runoff.
PA-4.07	Manitoba Hydro will inspect decommissioned construction areas and sites after demobilization and clean-up for adherence to environmental protection measures and effectiveness.
PA-4.01	Buildings, structures, trailers, equipment, utilities, waste materials, etc., will be removed from construction areas and sites when work is completed. Foundations that are determined to be "clean fill" may be covered and abandoned.

Draining (PA-5)

ID	Mitigation
PA-5.01	Where practical blockage of natural drainage patterns by construction activities will be avoided. The practicality and feasibility of the works will be at the determination of the Resident Engineer / Manager in consultation with the Site Environmental Of
PA-5.02	Culverts will be installed and maintained in accordance with Manitoba Stream Crossing Guidelines and Fisheries and Oceans Canada Operation Statement on Culvert Maintenance.
PA-5.03	Dewatering discharges will be directed into vegetated areas, existing drainage ditch(s) or a means of sediment control at such a rate and 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	Drainage water from construction areas will be diverted through vegetated areas, existing drainage ditch(s) or a means of sediment control prior to entering a waterbody.
PA-5.05	Erosion protection and sediment control will be provided in accordance with the Erosion Protection and Sediment Control Plan.
PA-5.06	Existing, natural drainage patterns and flows will be maintained to the extent possible.
PA-5.07	No debris or slash is allowed to be placed in drainage channels/ditches
PA-5.08	Drainage ditches will be provided with elevation controls to prevent water ponding.
PA-5.09	Drainage ditches and culverts will be installed during periods with minimal or no stream flows.
PA-5.10	Drainage channels and ditches will be identified and flagged prior to construction.
PA-5.11	Disturbance of natural drainages including seepage areas, discharge and recharge areas, wetlands, and ephemeral and permanent watercourses will be avoided.
PA-5.12	Where construction must be carried out within a drainage channel, water will be diverted around the work until completed in accordance with the contract specifications.
PA-5.13	Dewatering of excavations or alterations to existing drainage patterns will be done so that it avoids entering natural water systems unless sediment is controlled.

Drilling (PA-6)

ID	Mitigation
PA-6.01	Abandoned drill holes will be sealed with bentonite or other effective sealers to prevent interconnection and cross-contamination of ground and surface waters.
PA-6.03	Drilling equipment and machinery will not be serviced within 100 m of waterbodies or riparian areas.
PA-6.04	Drilling fluids and waste materials will not be allowed to drain into waterbodies, riparian areas or wetlands.
PA-6.05	Drilling in Environmentally Sensitive Sites and associated buffers and setbacks will not be permitted unless approved by Resident Engineer/Manager in consultation with NGC Environmental Specialist.
PA-6.08	Spill control and clean-up equipment will be provided at all drilling locations.
PA-6.09	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PA-6.10	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	Where there is potential for mixing of surface and ground water, precautions will be taken to prevent the interconnection of these waters.

Emergency Response (EI-2)

ID	Mitigation
EI-2.01	All fires will be reported in accordance with fire reporting procedures in the Emergency Preparedness and Response Plan.
EI-2.02	All spills at construction sites will be reported in accordance with provincial legislation and guidelines , and Manitoba Hydro Guidelines.
EI-2.03	All vehicles hauling petroleum products will carry spill containment and clean-up equipment.
EI-2.04	Clean-up and the disposal of contaminated materials will be managed in accordance with provincial guidelines and Manitoba Hydro guidelines.
EI-2.06	Emergency spill response and clean-up materials and equipment will be available at construction sites, marshalling yards, fuel storage facilities and standby locations.
EI-2.07	Fire extinguishers will be mounted on buildings at locations where they will be most readily accessible. Safety Officers will conduct annual inspections of fire extinguishers.
EI-2.09	Post audit assessments will be carried out for all reported major spills and fires to ensure that procedures are followed and plans remain effective.
EI-2.10	Project emergency response and evacuation procedures in the Emergency Preparedness and Response Plan will be adhered to in the event of forest fires.
EI-2.11	Reasonable precautions will be taken to prevent fuel, lubricant, fluids or other products from being spilled during equipment operation, fuelling and servicing.
EI-2.12	Spill response and clean-up equipment will be capable of containing and recovering the largest release possible and be suitable for the site location.
EI-2.13	Start-up and main construction camps will have a fire brigade designated in accordance with the Emergency Preparedness and Response Plan.
EI-2.14	The Emergency Preparedness and Response Plan will be prepared by the Contractor, approved by the Resident Engineer / Manager prior to construction.
EI-2.15	The Manitoba Hydro hazardous materials incident report form will be completed when reporting a spill.
EI-2.16	The Area Spill Response Coordinator will be notified of hazardous substance releases immediately in accordance with the Emergency Preparedness and Response Plan.

Erosion Protection and Sediment Control (EI-3)

ID	Mitigation
EI-3.01	Accumulated sediment will be removed from silt fences and other barriers in accordance with the Erosion Protection and Sediment Control Plan to ensure proper functioning.
EI-3.02	Construction activities will be suspended during extreme wet weather events where erosion protection and sediment control measures are compromised.
EI-3.03	Contractor specific Erosion Protection and Sediment Control Plans will be prepared by the Contractor, approved by the Contract "Engineer" or Resident Engineer / Manager prior to construction and updated annually.
EI-3.04	Erosion protection and sediment control installations will only be removed after disturbed areas are protected and sediments are disposed of in accordance with Erosion Protection and Sediment Control Plan.
EI-3.07	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include erosion protection and sediment control techniques and procedures.
EI-3.09	The Contractor will be responsible for modifying erosion protection and sediment control installations to ensure continued effectiveness.
EI-3.10	The Contractor will communicate erosion protection and sediment control information to all project staff and a copy will be made available at the project site.
EI-3.12	The Site Environmental Officer will make inspections of decommissioned project areas and sites in accordance with the Site Rehabilitation Prescription to ensure that environmental protection measures are effective and that any deficiencies are addressed.

Fish Protection (EC-3)

ID	Mitigation
EC-3.01	Construction activities will not be carried out within established buffer zones and setback distances from waterbodies, wetlands and riparian areas without prior written notification of Fisheries and Oceans Canada.
EC-3.02	Disturbances to waterbodies, shorelines, riparian areas, etc. will be rehabilitated immediately upon completion of construction activities.
EC-3.03	Erosion protection and sediment control measures will be put in place at all project locations where surface drainage is likely to flow into fish bearing waters.
EC-3.04	Fish and fish habitat will be protected in accordance with federal legislation and federal and provincial guidelines.
EC-3.05	MCWS and Fisheries and Oceans Canada (DFO) will be notified if beaver dams must be cleared along rights-of-ways and along access roads and trails. Clearing of dams will be carried out in accordance of the Fisheries and Oceans Canada Operational Statement
EC-3.06	Project personnel will be prohibited from fishing at project locations or along rights-of-way.
EC-3.07	The Site Environmental Officer will inspect rehabilitated riparian areas to assess the success of re-vegetation and to determine if additional rehabilitation is required.

Grading (PA-7)

ID	Mitigation
PA-7.01	A thick gravel layer (1.2 m) or compacted snow layer (0.6 m) will be used in temporary workspaces or marshalling yards located in permafrost areas where required to prevent damage to surface materials.
PA-7.02	Grading for gravel pads for construction areas and access roads will be limited to areas where it is needed for the safe and efficient operation of vehicles, machinery and construction equipment.
PA-7.03	Grading for site rehabilitation and restoration will be in accordance with Rehabilitation and Vegetation Management Plan.
PA-7.04	Grading will not be permitted within established buffer zones and setback distances from waterbodies.
PA-7.05	Grading will only be permitted within rights-of-ways and construction areas.
PA-7.06	Where practical, gravel pads will be graded so the surface runoff is directed away from waterbodies, riparian areas and wetlands. The practicality and feasibility are determine by Resident Engineer/Manager in consultation with NGC Environmental Specialist
PA-7.07	Required erosion protection and sediment control measures will be put in place prior to grading in accordance with the Erosion Protection and Sediment Control Plan.

Groundwater (EC-4)

ID	Mitigation
EC-4.01	Potable water samples will be collected every two weeks and submitted for analysis according to provincial sampling and analysis protocol.
EC-4.04	Where groundwater is used for project purposes groundwater usage will be monitored.

Grubbing (PA-8)

ID	Mitigation
PA-8.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques.
PA-8.02	Construction areas requiring extensive grubbing will be stabilized as soon as possible to minimize erosion.
PA-8.03	Grubbing will be halted during heavy precipitation events when working in areas of finely textured soils.
PA-8.04	Grubbing will not be permitted within 2 m of standing timber to prevent damage to root systems and to limit the occurrence of blow down.
PA-8.06	Stockpiled materials from grubbing will not block natural drainage patterns.
PA-8.07	Unless required for the work, the extent of grubbing will be minimized to the extent possible.
PA-8.08	When not under frozen conditions, erosion protection and sediment control measures will be put in place prior to grubbing in accordance with the Erosion Protection and Sediment Control Plan.
PA-8.09	Windrows of grubbed materials will be piled at least 15 m from standing timber.

Hazardous Materials (EI-4)

ID	Mitigation
EI-4.02	Access to hazardous materials storage areas will be restricted to authorized and trained Contractor and Manitoba Hydro personnel.
EI-4.03	An inventory of WHMIS controlled substances will be prepared by the Contractor and maintained at each project site and updated as required by provincial legislation.
EI-4.04	Bulk waste oil will be stored in approved aboveground tanks provided with secondary containment in accordance with provincial legislation.
EI-4.05	Containers of hazardous substances stored outside will be labelled, weatherproof, placed on spill containment pallets and covered by a weatherproof tarp.
EI-4.06	Contractor personnel will be trained and certified in the handling of hazardous materials including emergency response procedures in accordance with provincial legislation.
EI-4.07	Contractor personnel will receive WHMIS training in accordance with provincial legislation.
EI-4.08	Controlled substances will be labelled in accordance with WHMIS requirements, required documentation will be displayed and current Materials Safety Data Sheets will be available at each project site.
EI-4.09	Empty hazardous waste containers will be removed to a licensed or approved disposal site.
EI-4.10	Hazardous materials storage sites will be secured, and signs will be posted that include hazard warnings, contacts in case of a release, access restrictions and under whose authority the access is restricted.
EI-4.11	Hazardous materials will be adequately contained and will be protected from wind and rain to prevent entry of fine particles into streams through runoff of dust deposition.
EI-4.12	Hazardous substance and WHMIS inventories will be completed prior to construction. Inventories will be updated in accordance with regulatory requirements.
EI-4.14	Hazardous material and petroleum product storage areas (including coke materials for ground electrode facilities) will have the following features: maximum separation distance from sensitive features (watercourses/bodies); clear identification of the mate
EI-4.15	All hazardous materials including petroleum products will be transported according to the procedures prescribed by provincial legislation.
EI-4.16	Hazardous waste substances will be segregated and stored by type.
EI-4.17	Indoor storage of flammable and combustible substances will be in fire resistant and vented enclosed storage area or building in accordance with national codes and standards.
EI-4.18	Manitoba Hydro will approve all hazardous materials that are used on the project prior to their arrival on-site.
EI-4.19	Non-hazardous products will be used in place of hazardous substances to the extent possible.
EI-4.20	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include hazardous materials awareness.
EI-4.21	Pesticide storage will be in accordance with provincial legislation and Manitoba Hydro guidelines.
EI-4.22	The Contractor will be responsible for the safe use, handling, storage and disposal of hazardous substances including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-4.23	The Contractor will monitor hazardous substance containers regularly for leaks and to ensure that labels are displayed.
EI-4.24	The Site Environmental Officer will make routine inspections of hazardous substance storage sites to ensure that environmental protection measures are implemented and effective.
EI-4.25	Waste oil will be transported by licensed carriers to licensed or approved waste oil recycling facilities.
EI-4.26	Wet batteries will be stored and transported to licensed or approved waste recycling facilities.

Heritage Resources (EC-5)

ID	Mitigation
EC-5.01	All archaeological finds discovered during site preparation and construction will be left in their original position until the Project Archaeologist is contacted and provides instruction.
EC-5.02	Construction activities will not be carried out within established buffer zones for heritage resources except as approved by Project Archaeologist.
EC-5.03	Environmental protection measures for heritage resources will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-5.04	Orientation for project staff working in construction areas will include heritage resource awareness and training including the nature of heritage resources and the management of any resources encountered.
EC-5.05	Orientation information will include typical heritage resource materials and reporting procedures.
EC-5.06	The Contractor will report heritage resource materials immediately to the Resident Engineer / Manager and will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes instruction.
EC-5.07	The Culture and Heritage Resource Protection Plan will be adhered to during Preconstruction and construction activities.
EC-5.08	The Site Environmental Officer will inspect borrow pits and other excavations for the presence of heritage resource materials.

Management Measures (MM)

ID	Mitigation
MM-01	All licenses, permits, contracts, project specifications, guidelines and other applicable documents will be in the possession of both the Contractor and Manitoba Hydro prior to commencement of work.
MM-02	All project participants will ensure that project activities are carried out in compliance with applicable legislation, guidelines and contractual obligations and environmental protection plan provisions.
MM-03	Environmental concerns will be identified and discussed at planning meetings on an as required basis.
MM-04	Manitoba Hydro will contact First Nation and Aboriginal community representatives prior to project start-up.
MM-05	Manitoba Hydro will contact local municipal authorities prior to project start-up to ensure that all environmental concerns are identified and addressed by the Contractor.
MM-06	Manitoba Hydro will contact local resource users, lodge operators, outfitters and recreational resource users and associations prior to project start-up.
MM-07	Manitoba Hydro will contact Manitoba Conservation and Water Stewardship and Forest Management Licence Holders prior to clearing regarding timber use opportunities.
MM-08	Manitoba Hydro will meet the Contractor at the beginning of each new contract to review environmental protection requirements including mitigation measures, inspections and reporting.
MM-09	Manitoba Hydro will notify trappers in advance of clearing and construction schedules in their trapline areas.
MM-10	Manitoba Hydro will provide the contractor with a stakeholders list with names, organizations and contact information for the purpose of contacting stakeholders as necessary.
MM-11	Project construction update meetings will be held regularly for the ongoing review of environmental and safety issues.
MM-12	Relevant documents including licenses, permits, approvals, legislation, guidelines, environmental protection plans, orthophotos maps, etc., will be made available to all project participants.
MM-13	Response to enforcement actions by regulatory authorities will be in accordance with Manitoba Hydro policy P602.
MM-14	The Contractor will obtain all licenses, permits, contracts and approvals other than those that are Manitoba Hydro's responsibility prior to project start-up.
MM-15	The Contractor will review terms and conditions of all authorizations, contract specifications, agreements, etc., prior to project start-up and will discuss any questions or concerns with Manitoba Hydro.

Staging Areas (PC-5)

ID	Mitigation
PC-5.01	Contractor employees responsible for receipt and distribution of hazardous substances will be trained in handling and transportation of dangerous goods, and WHMIS.
PC-5.03	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-5.04	Fire breaks will be established around staging and work storage areas in areas where there is a risk of fire.
PC-5.05	Garbage and debris will be stored in approved containers, sorted for recycling and disposed of at a licensed or approved waste disposal site.
PC-5.06	Hazardous substances entering and leaving the staging and work storage areas will be inventoried and accounted for.
PC-5.07	Hazardous substances will be stored in accordance with provincial legislation, and provincial and national codes and standards.
PC-5.08	Staging and work storage areas will be located based on criteria that consider soils, topography, land form type, permafrost, wildlife habitat and other environmental factors.
PC-5.10	Staging and work storage areas will be located, constructed, operated and decommissioned in accordance with contact specifications.
PC-5.11	Once staging and work storage areas are no longer required, structures, equipment, materials, fences, etc. will be dismantled and moved to storage or a new location.
PC-5.12	Organic material, topsoil and sub-soil stripped during site preparation will be stockpiled separately for later use in site rehabilitation.
PC-5.13	Petroleum products will only be stored, handled and dispensed in designated areas within staging and work storage areas in accordance with provincial legislation and guidelines.
PC-5.14	Spill control and clean-up equipment to be located at designated areas within staging and work storage areas.
PC-5.15	Staging and work storage areas no longer required will be decommissioned and rehabilitated in accordance with the Rehabilitation and Vegetation Management Plan.
PC-5.16	Vegetation control at marshalling yards will be in accordance with Rehabilitation and Vegetation Management Plan.
PC-5.17	Vehicle, machinery and equipment maintenance and repairs will be carried out in designated areas within staging and work storage areas.
PC-5.18	Waste hazardous substances, fuel containers and other materials will be stored in approved containers and transported to licensed or approved waste disposal facilities by a licensed carrier.
PC-5.19	Welding mats will be used to minimize the risk of fire.
PC-5.20	The Site Environmental Officer will inspect rehabilitated staging and work storage areas in accordance with the site Rehabilitation and Vegetation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.

Permafrost (EC-6)

ID	Mitigation
EC-6.01	Alterations to natural drainage patterns by rutting and scouring of surface materials in permafrost areas will be avoided to the extent possible.
EC-6.03	Construction projects in permafrost areas of northern Manitoba will employ insulation techniques to protect frozen ground from melting, where possible. The practicality and feasibility of the works will be at the determination of the Resident Engineer / Manager
EC-6.04	Damage to permafrost areas at watercourse crossings will be minimized by conducting work under frozen conditions.
EC-6.05	Unless otherwise identified in the contract specifications, disturbance to ground cover vegetation and organic soils in permafrost areas will be minimized.
EC-6.06	Environmental protection measures for permafrost areas in northern Manitoba will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-6.07	Unless otherwise identified in the contract specifications, excavations of permafrost areas in northern Manitoba will be minimized to the extent possible.
EC-6.08	Permafrost areas in northern Manitoba will be identified and mapped in advance of project construction activities.
EC-6.09	The top layer of vegetation and organic materials will be retained as an insulating layer in permafrost areas.
EC-6.10	Following construction, the Site Environmental Officer will inspect permafrost areas to assess effectiveness of environmental protection measures and to determine if additional measures are required.

Petroleum Products (EI-5)

ID	Mitigation
EI-5.01	Aboveground tanks will be equipped with overfill protection and spill containment consisting of perimeter dykes or secondary containment in the tank design.
EI-5.02	All aboveground petroleum product tanks with a capacity greater than 5,000 L will be registered with Manitoba Conservation and Water Stewardship and have a valid operating permit.
EI-5.03	Construction, installation or removal of petroleum product storage tank systems will only occur under the supervision of a registered licensed petroleum technician.
EI-5.04	Containment measures, such as secondary containment (i.e., berms) will be used at all locations where stationary oil-filled equipment is used.
EI-5.05	Contractors will inspect all mobile and stationary equipment using petroleum products on a regular basis to ensure that measures are taken immediately to stop any leakage discovered.
EI-5.06	Fuelling of equipment or portable storage tanks will be done in designated areas.
EI-5.07	Fuelling operations require the operator to be visually observing the process 100% of the time.
EI-5.08	If dykes are used, the containment areas will be dewatered after rainfall events and the containment water disposed of as specified in contract specifications.
EI-5.09	Once petroleum product storage areas are no longer required, a Phase I and II Environmental Site Assessment will be carried out to determine if remediation is required in accordance with national standards.
EI-5.10	Only approved aboveground petroleum storage tanks will be used during the construction phase of the project. No underground tanks will be permitted.
EI-5.11	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include petroleum product storage and handling awareness.
EI-5.12	Petroleum product dispensing systems will be secured and locked when not in use by authorized personnel.
EI-5.13	Petroleum product inventories will be taken weekly by the owner/operator on all aboveground tanks greater than 5,000 L and retained for inspection by Manitoba Hydro or Manitoba Conservation and Water Stewardship upon request.
EI-5.14	Petroleum product storage containers in excess of 230 L will be located on level ground and will incorporate secondary containment with a capacity of 110% of the largest container volume.
EI-5.15	Petroleum product storage sites and mobile transportation units will be equipped with fire suppressant equipment and products.
EI-5.16	Petroleum product storage tanks will be protected from vehicle collisions by concrete filled bollards.
EI-5.17	Petroleum product storage will be located a minimum of 100 m from the ordinary high water mark of waterbodies, riparian areas or wetlands.
EI-5.18	Petroleum products stored outside will be in waterproof and labelled containers, placed on spill containment pallets.
EI-5.19	Petroleum products will be transported and handled according to the procedures prescribed by provincial legislation.
EI-5.20	Petroleum products will display required signage, placards and labelling, and will be stored and handled in accordance with provincial legislation.
EI-5.21	Petroleum products will only be stored and handled within designated areas at construction camps and marshalling yards.
EI-5.22	Portable petroleum product storage containers will be placed on spill trays with a capacity of 110% of the largest container when not in use.
EI-5.23	Slip tanks and barrels will be securely fastened to the vehicle during transport and fuelling operations.
EI-5.25	Spill trays will remain impervious at very low temperatures (-45 C) and have accumulated precipitation removed regularly.
EI-5.26	The Contractor will be responsible for the safe use, handling, storage and disposal of petroleum products including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-5.27	The Contractor will inspect all petroleum product storage tanks and containers regularly for leaks, and product inventories will be recorded and retained for inspection by Manitoba Hydro and Manitoba Conservation and Water Stewardship.
EI-5.28	There will be no ignition sources in and adjacent to petroleum product storage areas.

Petroleum Products (EI-5)

EI-5.29	Transfer of petroleum products between storage areas and work sites not exceed daily requirements and will be in accordance with provincial legislation and guidelines.
EI-5.30	Used petroleum products (including empty containers) will be collected and transported to a licensed oil recycling facility in approved storage containers.
EI-5.31	Vehicles hauling petroleum products will carry equipment and materials for emergency spill containment and clean-up.
EI-5.32	Warning signs will be posted in visible locations around petroleum product storage areas. Signs will indicate hazard warning, contact in case of a spill, access restrictions and authority.

Rehabilitating and Re-vegetation (PA-9)

ID	Mitigation
PA-9.01	Construction areas no longer required will be re-contoured, stabilized, re-vegetated and restored to near natural conditions in accordance with Rehabilitation and Vegetation Management Plan
PA-9.02	Natural re-vegetation will be allowed to occur although active rehabilitation programs may be required at specific sites where erosion warrants seeding or planting
PA-9.03	Organic material, topsoil and subsoil stripped from construction areas will be stockpiled separately for future site rehabilitation.
PA-9.04	Rehabilitation of construction areas will incorporate erosion protection and sediment control measures in accordance with the Erosion and Sediment Control Plan as required.
PA-9.05	Rehabilitation Plans will include objectives for restoration of natural conditions, erosion protection, sediment control, non-native and invasive plant species management, wildlife habitat restoration and restoration of aesthetic values as required.
PA-9.06	Where appropriate, regional native grass mixtures will be used to assist re-vegetation of disturbed areas to control erosion or prevent invasion of non-native species. The mixtures will not contain non-native or invasive species.
PA-9.07	Stockpiled organic materials, topsoil and subsoil will be spread over restored construction areas to encourage re-vegetation.
PA-9.08	Stockpiled soils will be protected from wind erosion by location, wetting and, if necessary, by covering.
PA-9.09	Soil/site preparation consisting of scarification, grading and fertilizing will be conducted if necessary to re-establish vegetation.
PA-9.10	Highly erodible eolian (wind-blown) deposits will be stabilized immediately after disturbance by the addition of surface cover.
PA-9.11	Rehabilitation measures for temporary stream crossings will be implemented as soon as possible after crossings are removed.
PA-9.12	Excavations will be left at a maximum slope of 4:1 (horizontal: vertical) for erosion and sediment control purposes.
PA-9.13	Compensatory measures such as tree planting and habitat enhancement will be considered for construction areas and sites where important habitat is removed.
PA-9.14	The Site Environmental Officer will inspect rehabilitated construction areas in accordance with the site Reclamation Plan to assess effectiveness and determine if additional restoration activities are required.
PA-9.15	Rehabilitation Plans for borrow pits and quarries will also be provided to Manitoba Industry, Economic Development and Mines.

Stream Crossings (PC-9)

ID	Mitigation
PC-9.02	Construction of temporary crossings will follow the Fisheries and Oceans Canada Manitoba Operational Statement for Temporary Stream Crossings.
PC-9.03	Construction of transmission line stream crossings will follow the Fisheries and Oceans Canada Manitoba Operational Statement for Overhead Line Construction.
PC-9.04	Where applicable, the Fisheries and Oceans Canada Manitoba Operational Statement for Isolated or Dry Open Cut Stream Crossings and/or High-pressure Directional Drilling will be adhered to.
PC-9.05	Approach gradients to waterbodies will not exceed 5% to control erosion and minimize sedimentation. This gradient may be achieved using log ramps or other methods, but will not include grading.
PC-9.06	Vehicles, machinery and equipment working on watercourse crossings will be kept in good working condition and free of fluid leaks.
PC-9.07	Existing woody debris will not be removed from stream beds unless required for the stream crossing and approved by the Site Environmental Officer.
PC-9.08	Aggregate materials will not be removed from the bed or bank of any stream or waterway.
PC-9.09	Branches, sawdust, soil or organic materials will not to be used as bank or bridge fill. Only approved materials including bundled logs will be used at stream crossings.
PC-9.10	Right-of-way and access road planning will minimize the number of watercourse crossings.
PC-9.11	Only clean, well-graded aggregate fill will be used to backfill excavations adjacent to watercourse crossings.
PC-9.12	Erosion protection and sediment control measures will be put in place prior to the commencement of construction activities.
PC-9.13	The bed or banks of watercourses will not be disturbed during removal of snow fills.
PC-9.14	Riparian vegetation along rights-of-way will be maintained in accordance with the Fisheries and Oceans Canada Manitoba Operational Statement for Maintenance of Riparian Vegetation in Existing Rights-of-Way.
PC-9.15	Disturbed stream banks will be stabilized and re-vegetated with low growth vegetation as soon as practical.
PC-9.16	The Site Environmental Officer will be present when winter stream crossings are being pulled out prior to breakup.
PC-9.17	The Site Environmental Officer will inspect rehabilitated watercourse crossings in accordance with the site Rehabilitation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.
PC-9.18	Saturated marshy floodplains of streams will be avoided as watercourse crossings to the extent possible. Where marshy floodplain areas must be crossed, the work will be carried out under frozen conditions.

Stripping (PA-10)

ID	Mitigation
PA-10.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques.
PA-10.02	Erosion protection and sediment control measures will put be in place prior to stripping in accordance with the Erosion and Sediment Control Plan as required.
PA-10.03	In areas of known salinity, excavated or stripped soil will be stored on liners or in designated areas were possible.
PA-10.04	Mineral topsoils and surficial organic materials should be stripped separately from subsoils, segregated, and stockpiled for later use in backfilling, contouring and rehabilitation. Soils should be replaced in the reverse order to which they were removed.
PA-10.05	Stockpiled materials from stripping will not block natural drainage patterns.
PA-10.06	Stripping in northern Manitoba will normally be carried out under frozen ground conditions during established timing windows to minimize rutting and erosion.
PA-10.07	Stripping will not be permitted within established buffer zones and setback distances from waterbodies except where approved in work permits, authorizations or contract specifications.
PA-10.09	The extent of stripping will be minimized to the extent possible.

Transmission Towers and Conductors (PC-10)

ID	Mitigation
PC-10.05	Transmission towers will not be located within established buffer zones and setback distances from waterbodies, wetlands and riparian areas, where possible. The practicality and feasibility of the works will be at the determination of the Resident Engineer/Manager.
PC-10.06	Transmission tower construction will not be permitted within established buffer zones for bird nesting and rearing during established timing windows.
PC-10.07	Transport of equipment and materials for tower construction will be along pre-defined access corridors
PC-10.08	Transmission towers will not be located within established buffer zones and setback distances from sensitive sites including, protected areas and heritage resources whenever feasible.

Treated Wood (EI-8)

ID	Mitigation
EI-8.01	Salvage and disposal of treated wood products will be in accordance with Manitoba Hydro guidelines.
EI-8.02	Small quantities of surplus or unwanted treated wood products may be disposed of as domestic waste products at licensed or approved waste disposal sites.
EI-8.03	Treated wood products will not be used indoors and will not be burned.
EI-8.04	Treated wood will be delivered to project locations or construction sites on an as required basis to reduce storage time in the field.
EI-8.05	Use of treated wood will be in accordance with provincial legislation and guidelines, and Manitoba Hydro guidelines.
EI-8.06	If treated wood products are sold the purchaser will be advised about potential adverse effects and will sign a release.
EI-8.07	The Site Environmental Officer will inspect the use of treated wood to ensure that environmental protection measures are implemented and effective.
EI-8.08	Creosote-treated wood will not be used. If existing creosote-treated wood is encountered it will be disposed of as hazardous waste by a licensed contractor at an approved waste disposal site.
EI-8.09	CCA or other approved treated wood products will be used if avoidance of construction in aquatic environments is not possible.
EI-8.10	Treated wood will be kept in use for as long as possible or reused for other projects.

Vehicle and Equipment Maintenance (EI-9)

ID	Mitigation
EI-9.01	An Emergency Preparedness and Response Plan and spill control and clean-up equipment will be provided at all designated vehicle, equipment and machinery maintenance areas.
EI-9.02	Emergency vehicle, equipment and machinery maintenance repairs will contain waste fluids and will use drip trays and tarps
EI-9.04	Vehicle, equipment and machinery maintenance and repairs will be carried out in designated areas located at least 100 m from the ordinary high water mark of a waterbody, riparian area or wetland.
EI-9.05	Vehicle, equipment and machinery operators will perform a daily inspection for fuel, oil and fluid leaks and will immediately shutdown and repair any leaks found. All machinery working near watercourses will be kept clean and free of leaks.
EI-9.06	Vehicles transporting dangerous goods or hazardous products will display required placards and labelling in accordance with provincial legislation and Manitoba Hydro guidelines.
EI-9.07	Vehicles, equipment and machinery must arrive on site in clean condition free of fluid leaks and weed seeds.
EI-9.08	Vehicles, equipment and machinery that carry fuel, hydraulic oil and other petroleum products will also carry spill control and clean-up equipment and materials.
EI-9.01	An Emergency Preparedness and Response Plan and spill control and clean-up equipment will be provided at all designated vehicle, equipment and machinery maintenance areas.

Waste Management (EI-10)

ID	Mitigation
EI-10.01	A Contract specific Waste and Recycling Management Plan will be prepared by the Contractor, approved by the Resident Engineer / Manager prior to construction and updated annually.
EI-10.02	Bear-proof waste containers and/or electric fencing will be used in northern, remote and rural project locations.
EI-10.03	Construction sites will be kept tidy at all times and bins will be provided wherever solid wastes are generated.
EI-10.04	Indiscriminate burning, dumping, littering or abandonment will not be permitted.
EI-10.05	Kitchen wastes will be stored in closed containers to minimize wildlife interactions.
EI-10.06	Solid waste materials will be collected and transported to a licensed or approved waste disposal facility in accordance with the Solid Waste/Recycling Management Plan.
EI-10.07	Waste materials remaining at snow disposal sites after melting will be disposed of at a licensed or approved landfill.
EI-10.08	The Site Environmental Officer will make regular inspections of waste collection, storage and handling at construction sites to ensure that environmental protection measures are implemented and effective.
EI-10.09	The Contractor must demonstrate that sufficient capacity exists at waste disposal grounds by obtaining approval from the operator prior to use of that facility.

Wetlands (EC-8)

ID	Mitigation
EC-8.01	Clearing wastes and other construction debris or waste will not be placed in wetland areas. Existing logs, snags and wood debris will be left in place.
EC-8.02	Environmental protection measures for working in and around wetlands will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-8.03	Natural vegetated buffer areas around wetlands and riparian zones will be maintained to the extent possible.
EC-8.04	Project activities will avoid wetland areas to the extent possible. If avoidance is not practical, the extent of disturbance will be minimized. Disturbance of wetlands will only be carried out under frozen ground conditions.
EC-8.05	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for working around wetlands.
EC-8.06	Construction of buildings, facilities and other structures in wetland areas will be avoided. If avoidance of wetlands is not practical, steel or concrete structures or CCA treated poles/timbers will be used.

Wildlife Protection (EC-9)

ID	Mitigation
EC-9.01	Any wildlife killed or injured by vehicles will be reported to Manitoba Conservation.
EC-9.03	Boundaries of important wildlife habitats will be flagged by prior to commencement of construction.
EC-9.04	Clearing will occur during late fall and winter to the extent possible to avoid the spring/summer nesting season for birds and parturition times for mammal species and breeding windows for frog species.
EC-9.06	Construction camps will be kept clean, food will be kept in sealed storage areas, and kitchen wastes will be stored in bear-proof containers and/or electric fencing in northern and rural areas.
EC-9.07	Hunting and harvesting of wildlife by project staff will not be permitted while working on the project sites.
EC-9.09	Manitoba Conservation will be notified if animal traps are encountered and must be removed for project activities.
EC-9.11	No firearms will be permitted at construction sites.
EC-9.12	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for wildlife and wildlife habitat.
EC-9.13	Problem wildlife will be reported immediately to Manitoba Conservation and Water Stewardship.
EC-9.14	Trails through or near important habitat types will be managed in accordance with the Access Management Plan.
EC-9.15	Trees containing large nests of sticks and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied. Artificial structures for nesting may be provided if unoccupied nests must be removed.
EC-9.16	Vehicles will not exceed posted speed limits and wildlife warning signs may be installed in high density areas and at known crossings locations.
EC-9.18	Wildlife and wildlife habitat will be protected in accordance with provincial and federal legislation and provincial and federal guidelines.
EC-9.19	Wildlife will not be fed, befriended or harassed at construction areas.
EC-9.20	Construction activities will not be carried out within established buffer zones and setback distances for wildlife species.
EC-9.21	Understory vegetation will be managed at access routes to limit line of sight.
EC-9.22	New by-pass trails and access routes will be sited where possible to utilize existing natural terrain features and existing vegetation to minimize line of site.

7.0 MAP SHEETS AND MITIGATION TABLES

The map sheets and specific mitigation tables are presented in the following pages in a "map book" format. The map sheets provide an overview of Environmentally Sensitive Sites (ESS), while the associated mitigation tables provide specific mitigation requirements related to this ESS.

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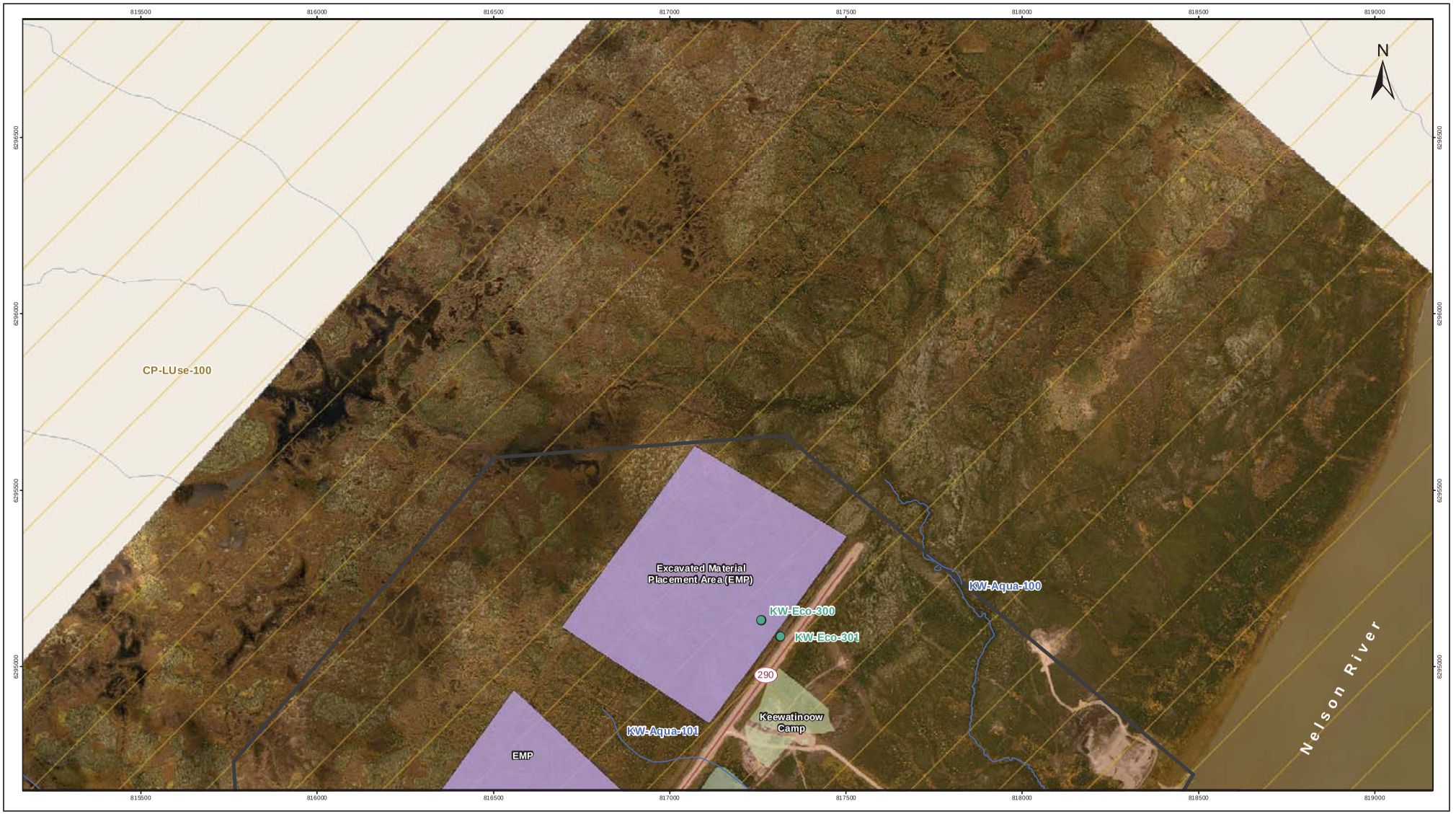

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: October 24, 2013

0 125 250 500
Metres

1:10,000

Land Base
- Provincial Highways
- Provincial Roads
- Watercourse
- Waterbodies

Project Infrastructure
- BPIII Final Preferred Route
- Keewatinoow Converter Station
- Ground Elecrode Line
- Construction Power Line
- Ground Electrode
- Work Area Zone
- Manitoba Hydro & Contractor Work Area
- Borrow Deposits
- Excavated Material Placement Area
- Access Road Security Gatehouse

ESS Legend

Ecosystem
- Species of Concern

Water
- Water Crossing

Land Use
- Churchill WMA

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 1

MAP NUMBER : 1

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 1	-	-	14N

Potential Effects:

Within the Churchill Wildlife Management Area

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-300	Species of Concern (plant)	817260	6295132	14N
KW	KW-Eco-301	Species of Concern (plant)	817314	6295085	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

- Non-mitigable due to complete removal of all vegetation cover for site.

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-100	Unnamed Tributary of Nelson River	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-101	Unnamed Tributary of Nelson River	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: October 24, 2013

0 125 250 500
Metres

1:10,000

Land Base
- Provincial Highways
- Provincial Roads
- Watercourse
- Waterbodies

Project Infrastructure
- BPIII Final Preferred Route
- Keewatinoow Converter Station
- Ground Elecrode Line
- Construction Power Line
- Ground Electrode
- Work Area Zone
- Manitoba Hydro & Contractor Work Area
- Borrow Deposits
- Excavated Material Placement Area
- Access Road Security Gatehouse

ESS Legend

Ecosystem
- Species of Concern

Water
- Water Crossing

Water
- Water Crossing

Water
- Water Crossing

Land Use
- Churchill WMA

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 2

MAP NUMBER : 2

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 2	-	-	14N

Potential Effects:

CP-LUse-100: *Within the Churchill Wildlife Management Area*

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-302	Species of Concern (plant)	816418	6293878	14N
KW	KW-Eco-303	Species of Concern (plant)	816418	6293878	14N
KW	KW-Eco-304	Species of Concern (plant)	816575	6293727	14N
KW	KW-Eco-305	Species of Concern (plant)	816146	6293427	14N
KW	KW-Eco-306	Species of Concern (plant)	816139	6293400	14N
KW	KW-Eco-307	Species of Concern (plant)	816153	6293382	14N
KW	KW-Eco-308	Species of Concern (plant)	816437	6293267	14N
KW	KW-Eco-309	Species of Concern (plant)	816411	6293207	14N
KW	KW-Eco-310	Species of Concern (plant)	816455	6293258	14N
KW	KW-Eco-311	Species of Concern (plant)	816073	6292988	14N
KW	KW-Eco-312	Species of Concern (plant)	816120	6292933	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

- Non-mitigable due to complete removal of all vegetation cover for site.

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-101	Unnamed Tributary of Nelson River	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-102	Unnamed Tributary of Nelson River	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-103	Unnamed Tributary of Nelson River	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing

ESS Group : Wetland

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-300	Unnamed wetland	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-301	Unnamed wetland	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Loss of riparian vegetation, rutting, altered surface water flows.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Provide 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low-disturbance methods within buffer
- The application of herbicides is prohibited within buffer

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-104	Fifteen Creek	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-105	Fourteen Creek	-	-	N/A	N/A	Marginal	Low

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction
- No instream works or fording from April 15 - July 15

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-106	Unnamed Tributary of Nelson River	-	-	N/A	N/A	Marginal	Low

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; rutting of floodplain

Specific Mitigation:

- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing

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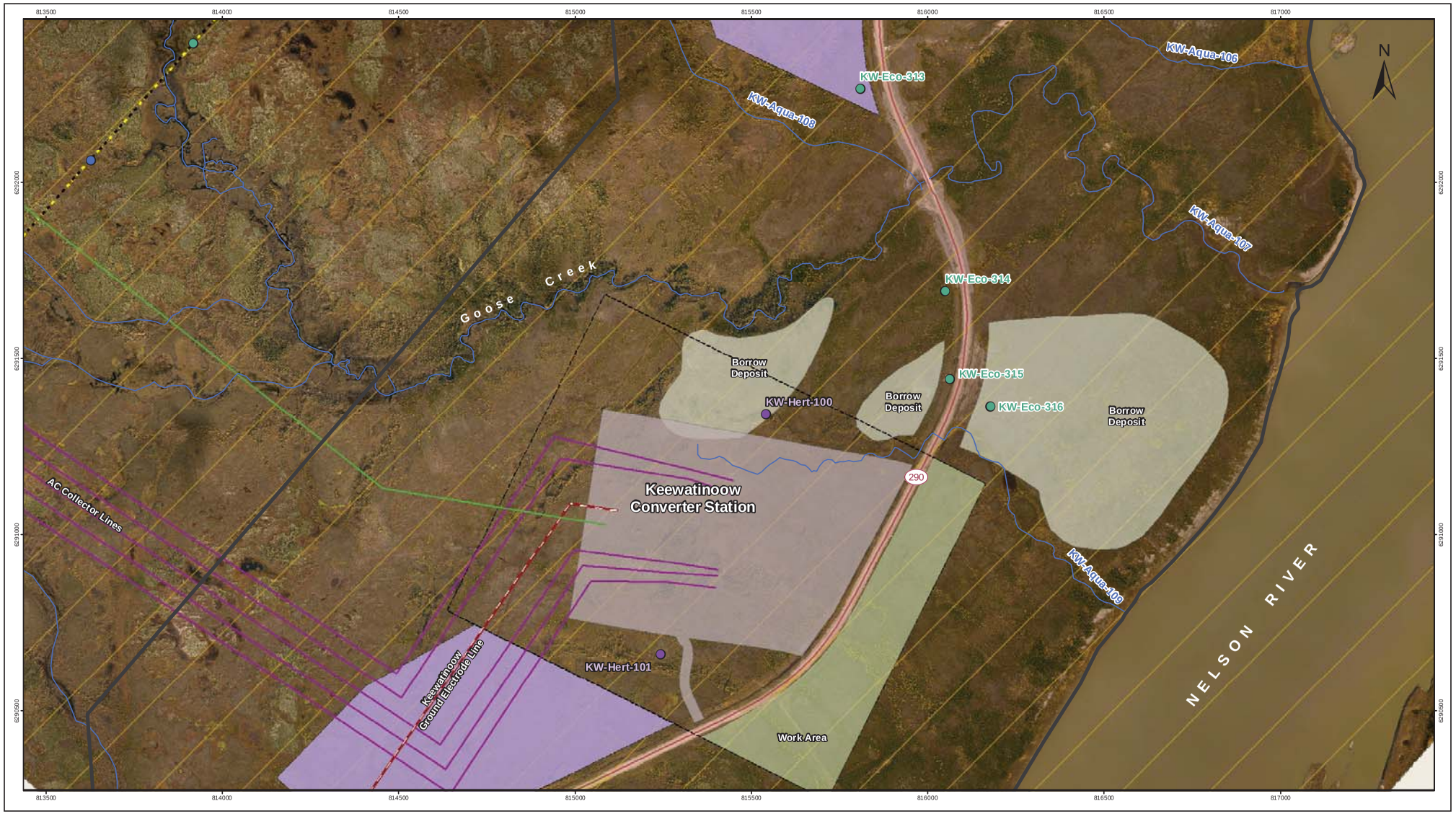

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: October 24, 2013

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Land Base
- Provincial Highways
- Provincial Roads
- Watercourse
- Waterbodies

Project Infrastructure
- BPIII Final Preferred Route
- Keewatinoow Converter Station
- Ground Elecrode Line
- Construction Power Line
- Ground Electrode
- Work Area Zone
- Manitoba Hydro & Contractor Work Area
- Borrow Deposits
- Excavated Material Placement Area
- Access Road Security Gatehouse

ESS Legend

Ecosystem
- Species of Concern

Heritage
- Archaeological

Water
- Water Crossing

Water
- Water Crossing

Land Use
- Churchill WMA

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 3

MAP NUMBER : 3

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 3	-	-	14N

Potential Effects:

Within the Churchill Wildlife Management Area

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Archaeological

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Hert-100	Registered Archaeological Site	815541	6291342	14N
KW	KW-Hert-101	Registered Archaeological Site	815242	6290660	14N

Potential Effects:

Potential disturbance to Heritage Resource

Specific Mitigation:

- Permanent fences will be established to protect the site
- Conduct site investigation with Archaeologist post clearing and prior to construction
- Minimize surface disturbance around the site to the extent possible
- Inspect excavated materials or surface disturbance for heritage resources and report any finds to Environmental Inspector

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-313	Species of Concern (plant)	815808	6292265	14N
KW	KW-Eco-314	Species of Concern (plant)	816050	6291691	14N
KW	KW-Eco-315	Species of Concern (plant)	816062	6291441	14N
KW	KW-Eco-316	Species of Concern (plant)	816178	6291364	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

- Identify and flag prior to start of work
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Provide 5m vegetated (shrub and herbaceous) buffer around site
- Remove trees by hand or other low-disturbance methods
- Confine vehicle traffic to established trails to the extent possible

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-106	Unnamed Tributary of Nelson River	-	-	N/A	N/A	Marginal	Low

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; rutting of floodplain

Specific Mitigation:

- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-107	Goose Creek	-	-	N/A	N/A	Important	Moderate

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction
- No instream works or fording from April 15 - July 15

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-108	Unnamed Tributary of Goose Creek	-	-	N/A	N/A	Important	Moderate

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction
- No instream works or fording from April 15 - July 15

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-109	Unnamed Tributary of Nelson River	-	-	N/A	N/A	Marginal	Low

Potential Effects:

Infilling of fish habitat; Increased erosion and sedimentation of streams from construction of station

Specific Mitigation:

- Instream work will be conducted during favourable weather conditions
- All instream construction activities will be conducted in isolation from flowing water using a temporary diversion if necessary
- Exitsing local drainage will be maintained subsequent to in-filling
- Flow to downstream areas will be maintained at all times while diversions are in place

- Turbid water generated from the isolated work will be pumped away from the watercourse to a vegetated area, filter fabric or other acceptable area that will provide filtration and/or settling time prior to entering watercourses

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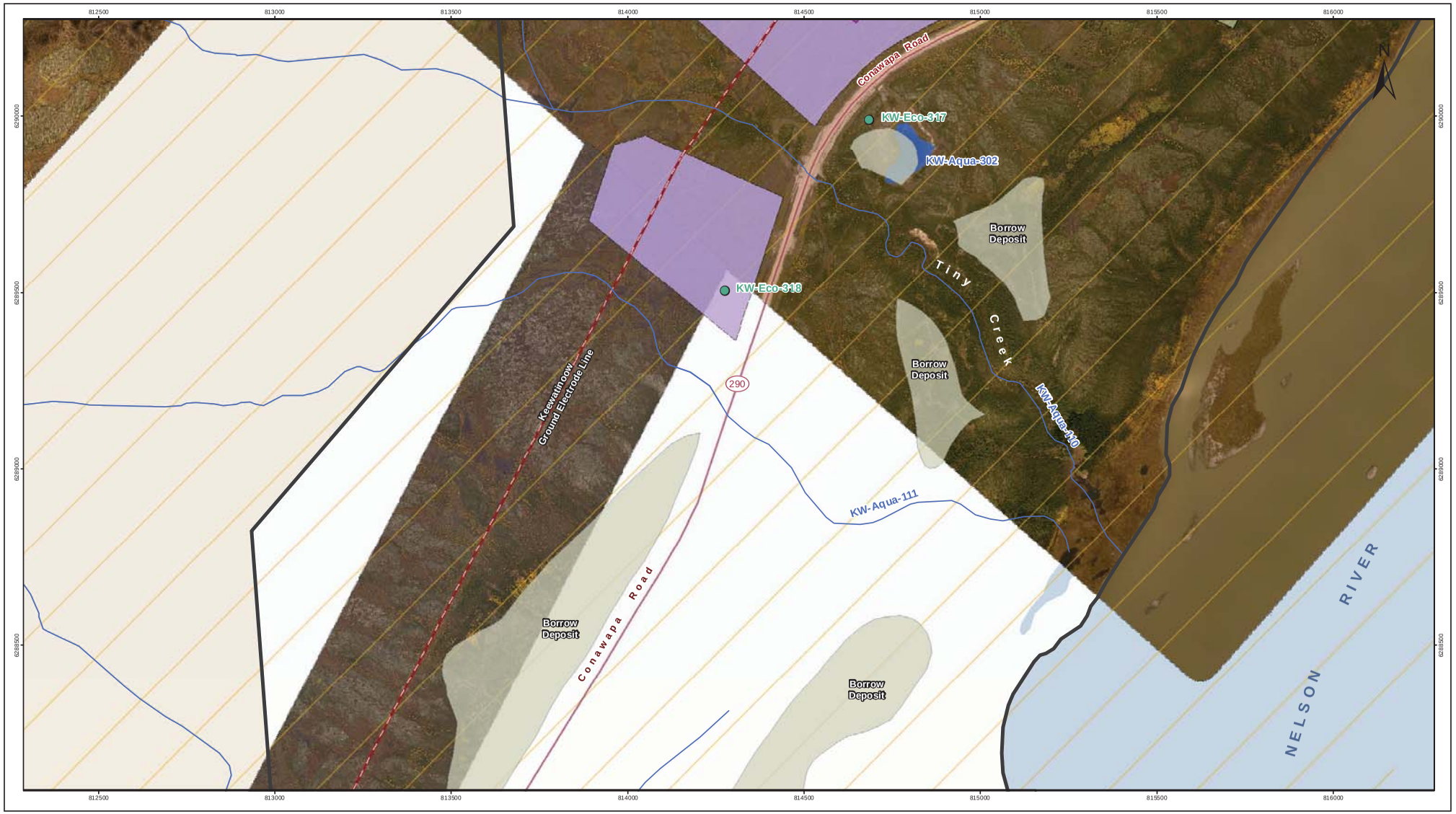

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: October 24, 2013

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Metres

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Land Base
- Provincial Highways
- Provincial Roads
- Watercourse
- Waterbodies

Project Infrastructure
- BPIII Final Preferred Route
- Keewatinoow Converter Station
- Ground Elecrode Line
- Construction Power Line
- Ground Electrode
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- Manitoba Hydro & Contractor Work Area
- Borrow Deposits
- Excavated Material Placement Area
- Access Road Security Gatehouse

ESS Legend

Ecosystem
- Species of Concern

Land Use
- Churchill WMA

Water
- Water Crossing

Water
- Water Crossing

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 4

MAP NUMBER : 4

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 4	-	-	14N

Potential Effects:

CP-LUse-100: *Within the Churchill Wildlife Management Area*

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-317	Species of Concern (plant)	814684	6289990	14N
KW	KW-Eco-318	Species of Concern (plant)	814276	6289506	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

- Identify and flag prior to start of work
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Provide 5m vegetated (shrub and herbaceous) buffer around site
- Remove trees by hand or other low-disturbance methods
- Confine vehicle traffic to established trails to the extent possible

ESS Group : Wetland

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-302	Unnamed wetland	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Loss of riparian vegetation, rutting, altered surface water flows, contamination.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Provide 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low-disturbance methods within buffer
- The application of herbicides is prohibited within buffer

ESS Group : Water Crossing

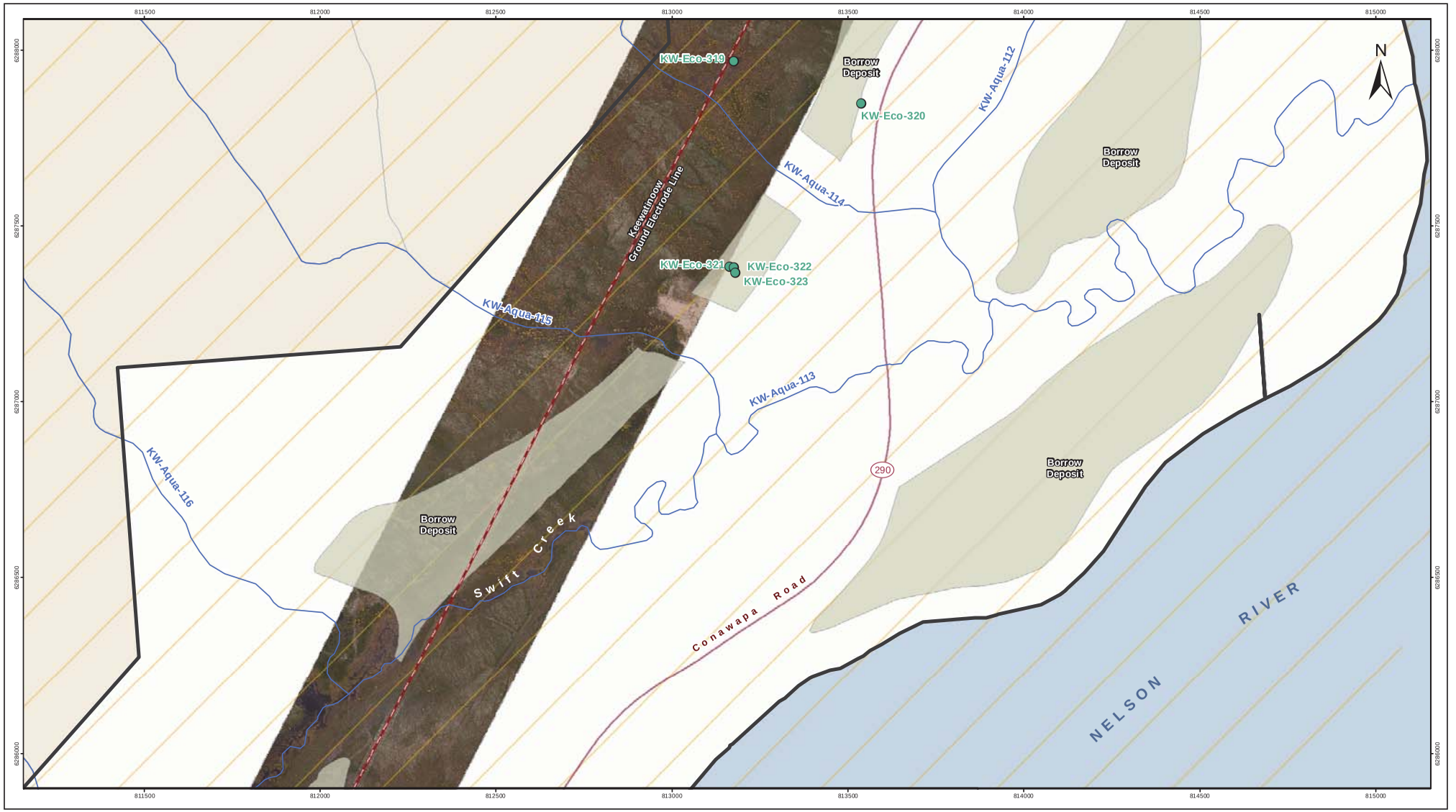
Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-110	Tiny Creek	-	-	N/A	N/A	Important	Moderate
KW	KW-Aqua-111	Unnamed Tributary of Nelson River	-	-	N/A	N/A	Marginal	Moderate

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbances and impeded fish movement; Rutting of floodplain

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction
- No instream works or fording from April 15 - July 15



Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
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Date Created: October 24, 2013

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Land Base
- Provincial Highways
- Provincial Roads
- Watercourse
- Waterbodies

Project Infrastructure
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- Borrow Deposits
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- Access Road Security Gatehouse

ESS Legend

Ecosystem
- Species of Concern

Water
- Water Crossing

Land Use
- Churchill WMA

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 5

MAP NUMBER : 5

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 5	-	-	14N

Potential Effects:

CP-LUse-100: *Within the Churchill Wildlife Management Area*

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-112	Unnamed Tributary of Swift Creek	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; rutting of floodplain

Specific Mitigation:

- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-113	Swift Creek	-	-	N/A	N/A	Important	Moderate
KW	KW-Aqua-114	Unnamed Tributary of Swift Creek	-	-	N/A	N/A	Marginal	Moderate
KW	KW-Aqua-115	Unnamed Swift Creek Tributary	-	-	N/A	N/A	Marginal	Moderate

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction
- No instream works or fording from April 15 - July 15

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-319	Species of Concern (plant)	813174	6287968	14N
KW	KW-Eco-320	Species of Concern (plant)	813538	6287848	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

- Identify and flag prior to start of work
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Provide 5m vegetated (shrub and herbaceous) buffer around site
- Remove trees by hand or other low-disturbance methods
- Confine vehicle traffic to established trails to the extent possible

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-321	Species of Concern (plant)	813163	6287384	14N
KW	KW-Eco-322	Species of Concern (plant)	813174	6287382	14N
KW	KW-Eco-323	Species of Concern (plant)	813181	6287367	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

• Non-mitigable due to complete removal of all vegetation cover for site.

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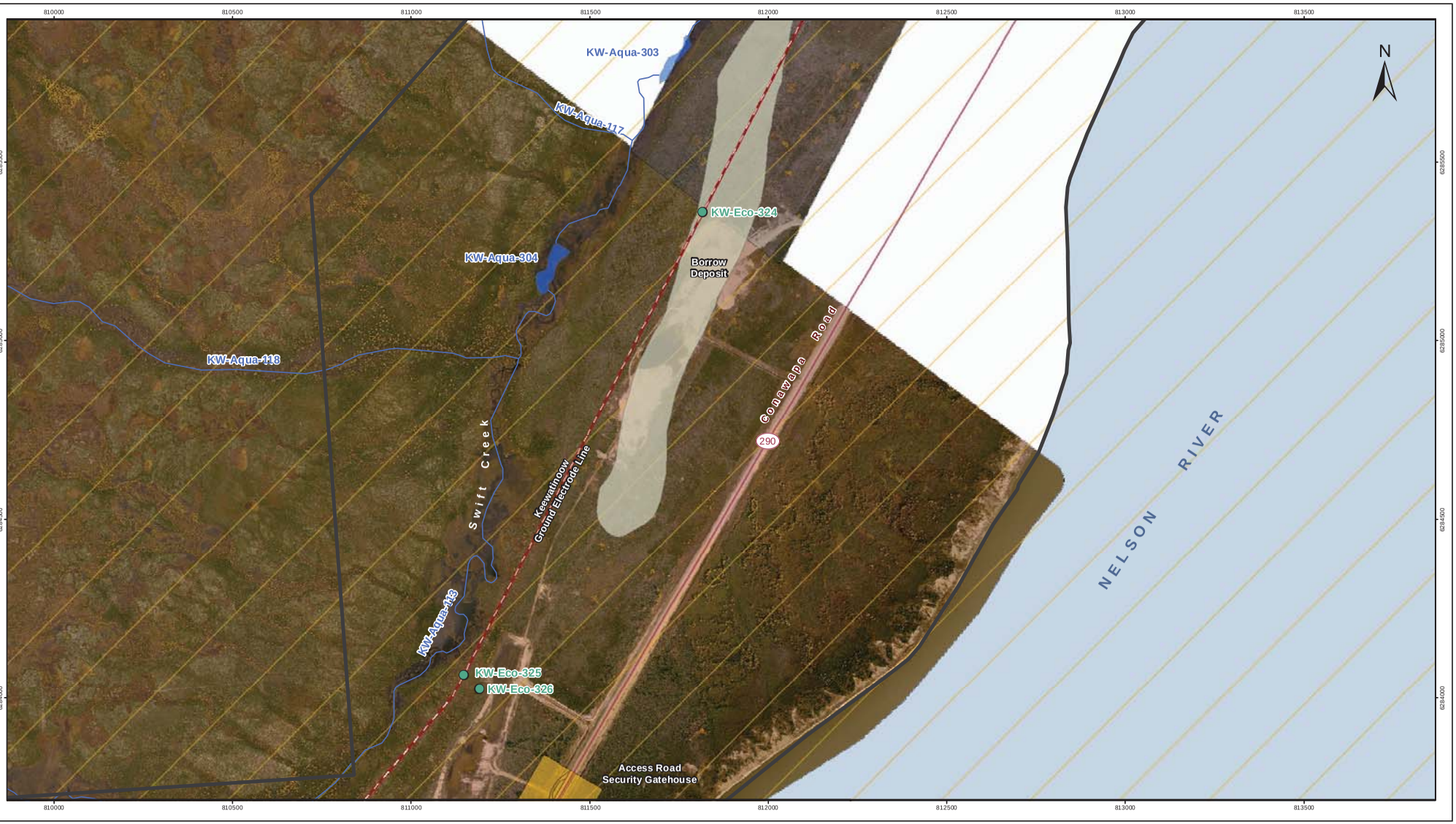

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
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Land Base
- Provincial Highways
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- Watercourse
- Waterbodies

Project Infrastructure
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ESS Legend

Ecosystem
- Species of Concern

Land Use
- Churchill WMA

Water
- Water Crossing

Water
- Water Crossing

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 6

MAP NUMBER : 6

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 6	-	-	14N

Potential Effects:

Within the Churchill Wildlife Management Area

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-324	Species of Concern (plant)	811816	6285361	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

- Non-mitigable due to complete removal of all vegetation cover for site.

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KW	KW-Eco-325	Species of Concern (plant)	811147	6284064	14N
KW	KW-Eco-326	Species of Concern (plant)	811191	6284025	14N

Potential Effects:

Potential loss of plants of conservation concern from clearing, construction, maintenance and decommissioning activities.

Specific Mitigation:

- Identify and flag prior to start of work
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Provide 5m vegetated (shrub and herbaceous) buffer around site
- Remove trees by hand or other low-disturbance methods
- Confine vehicle traffic to established trails to the extent possible

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-113	Swift Creek	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-117	Unnamed Tributary of Swift Creek	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-118	Unnamed Tributary of Swift Creek	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of floodplain.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- Adhere to Department of Fisheries and Oceans (DFO) Operational Statements for Temporary Stream Crossings, Ice Bridges and Snow Fills, and Overhead Line Construction
- No instream works or fording from April 15 - July 15

ESS Group : Wetland

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-303	Unnamed wetland	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-304	Unnamed wetland	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Loss of riparian vegetation, rutting, altered surface water flows, contamination.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Provide 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low-disturbance methods within buffer
- The application of herbicides is prohibited within buffer

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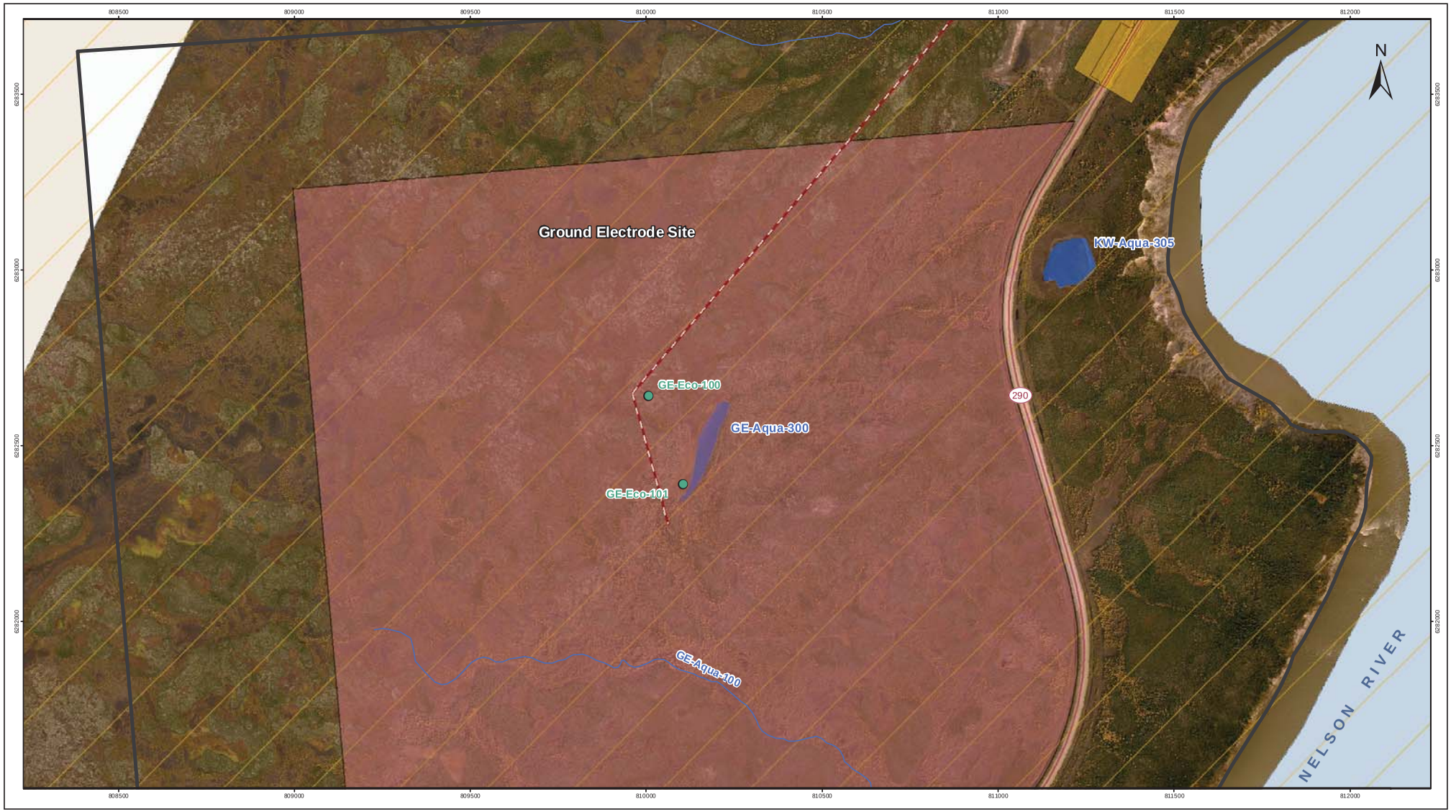

Manitoba Hydro

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Land Base
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- Access Road Security Gatehouse

ESS Legend

Ecosystem
- Species of Concern

Land Use
- Churchill WMA

Water
- Water Crossing

Water
- Water Crossing

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 7

MAP NUMBER : 7

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 7	-	-	14N

Potential Effects:

Within the Churchill Wildlife Management Area

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Species of Concern

Sec ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
GE	GE-Eco-100	Species of Concern (plant)	810005	6282643	14N
GE	GE-Eco-101	Species of Concern (plant)	810104	6282391	14N

Potential Effects:

Loss of plants of conservation concern from clearing and construction activities.

Specific Mitigation:

- Identify and flag prior to start of work
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Provide 5m vegetated (shrub and herbaceous) buffer around site
- Remove trees by hand or other low-disturbance methods
- Confine vehicle traffic to established trails to the extent possible

ESS Group : Wetland

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
GE	GE-Aqua-300	Unnamed wetland	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-305	Unnamed wetland	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Loss of riparian vegetation, rutting, altered surface water flows, contamination.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Provide 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low-disturbance methods within buffer
- The application of herbicides is prohibited within buffer

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
GE	GE-Aqua-100	Unnamed Tributary of Nelson River	-	-	N/A	N/A	Marginal	Low

Potential Effects:

Instream works & diversion effects; increased erosion and sedimentation of stream; contamination of a watercourse from leaching of embedded coke; stream crossing effects.

Specific Mitigation:

- No instream work or fording between April 15 and July 15
- Construction will be postponed under adverse weather (i.e., storm events), to minimize potential sediment introduction into the aquatic environment
- All instream construction activities will be conducted in isolation of flowing water using a temporary diversion
- Temporary diversions will be constructed and operated using the best management practices outlined in Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (DFO and MNR 1996) and DFO Operational Statement for Isolated or Dry Open Cut Stream Crossings
- During pump around diversions, pump intakes will be screened according to DFO guidelines (DFO 1991). Water will be discharged downstream from the worksite, onto a splash pad to prevent channel and bank erosion
- Any diversions channels will be designed to accommodate high flows due to storm events, be lined with erosion-resistant lining, be passable by fish under all flow conditions, & will be backfilled & stabilized upon completion of construction
- Flow to downstream areas will be maintained at all times while diversions are in place
- Turbid water generated from the isolated work site will be pumped away from the watercourse to a vegetated area, filter fabric dam or other acceptable area that will provide filtration and/or settling time prior to entering watercourses
- A fish salvage will be conducted following isolation of the worksite. Fish will be relocated to an area downstream from the site
- Turbidity monitoring will be conducted during instream construction activities. Turbidity measurements will detect changes in turbidity resulting from construction activities and monitor effectiveness of mitigation measures.
- Diversions will be removed following completion of works. The site will be restored and all disturbed surfaces stabilized (i.e. re-vegetated)
- Disturbed areas will be re-vegetated following completion of works

Specific Mitigation cont'd

- Coke may be rinsed or leached (aged), will be stored >100 m from the ordinary high water mark, & will be adequately contained & protected from wind & rain to prevent entry of fine particulates into streams through runoff or dust deposition
- Appropriate erosion and sediment control measures will be implemented to mitigate sediment introduction into watercourses
- Where crossing a stream is necessary, fording or construction of temporary stream crossings will follow DFO's operational statements for Temporary Stream Crossings &, if appropriate conditions exist, Ice Bridges and Snow Fills

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Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: October 24, 2013

0 125 250 500
Metres

1:10,000

Land Base
- Provincial Highways
- Provincial Roads
- Watercourse
- Waterbodies

Project Infrastructure
- BPIII Final Preferred Route
- Keewatinoow Converter Station
- Ground Elecrode Line
- Construction Power Line
- Ground Electrode
- Work Area Zone
- Manitoba Hydro & Contractor Work Area
- Borrow Deposits
- Excavated Material Placement Area
- Access Road Security Gatehouse

ESS Legend

Water
- Water Crossing

Water
- Water Crossing

Land Use
- Churchill WMA

Bipole III Transmission Project
Construction Environmental Protection Plan
Keewatinoow C.S. and Infrastructure and Ground Electrode Site Environmentally Sensitive Site Locations

Map 8

MAP NUMBER : 8

ESS Group : Conservation

Sec ID	ESS ID	ESS Name	Location	Easting	Northing	UTM Zone
CP	CP-LUse-100	Churchill Wildlife Management Area	Entire Extent of Map 1	-	-	14N

Potential Effects:

Within the Churchill Wildlife Management Area

Specific Mitigation:

- Must not place food for the purpose of attracting, feeding or holding polar bears
- All project staff must record all polar bears encountered/observed on a daily basis, any observations of polar bears or polar bear tracks must be reported to the MH Site Environmental Officer or MH Environmental Inspector
- All garbage must be stored in bear proof containers or within electric fencing and removed from Wildlife Management Area
- Clearing within the ROW will be kept to a minimum and with non -non-hazard trees removed. Any trees that are cleared must be cut, piled and burned under safe conditions
- Carry out construction activities on well frozen ground in wetlands

ESS Group : Water Crossing

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
GE	GE-Aqua-100	Unnamed Tributary of Nelson River	-	-	N/A	N/A	Marginal	Low

Potential Effects:

Instream works & diversion effects; increased erosion and sedimentation of stream; contamination of a watercourse from leaching of embedded coke; stream crossing effects.

Specific Mitigation:

- No instream work or fording between April 15 and July 15
- Construction will be postponed under adverse weather (i.e., storm events), to minimize potential sediment introduction into the aquatic environment
- All instream construction activities will be conducted in isolation of flowing water using a temporary diversion
- Temporary diversions will be constructed and operated using the best management practices outlined in Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (DFO and MNR 1996) and DFO Operational Statement for Isolated or Dry Open Cut Stream Crossings
- During pump around diversions, pump intakes will be screened according to DFO guidelines (DFO 1991). Water will be discharged downstream from the worksite, onto a splash pad to prevent channel and bank erosion
- Any diversions channels will be designed to accommodate high flows due to storm events, be lined with erosion-resistant lining, be passable by fish under all flow conditions, & will be backfilled & stabilized upon completion of construction
- Flow to downstream areas will be maintained at all times while diversions are in place
- Turbid water generated from the isolated work site will be pumped away from the watercourse to a vegetated area, filter fabric dam or other acceptable area that will provide filtration and/or settling time prior to entering watercourses
- A fish salvage will be conducted following isolation of the worksite. Fish will be relocated to an area downstream from the site
- Turbidity monitoring will be conducted during instream construction activities. Turbidity measurements will detect changes in turbidity resulting from construction activities and monitor effectiveness of mitigation measures.
- Diversions will be removed following completion of works. The site will be restored and all disturbed surfaces stabilized (i.e. re-vegetated)
- Disturbed areas will be re-vegetated following completion of works
- Coke may be rinsed or leached (aged), will be stored >100 m from the ordinary high water mark, & will be adequately contained & protected from wind & rain to prevent entry of fine particulates into streams through runoff or dust deposition
- Appropriate erosion and sediment control measures will be implemented to mitigate sediment introduction into watercourses
- Where crossing a stream is necessary, fording or construction of temporary stream crossings will follow DFO's operational statements for Temporary Stream Crossings &, if appropriate conditions exist, Ice Bridges and Snow Fills

ESS Group : Wetland

Sec ID	ESS ID	ESS Name	Easting	Northing	Channel Width (m)	Wet Width (m)	Fish Habitat Class	Habitat Sensitivity
KW	KW-Aqua-306	Unnamed wetland	-	-	N/A	N/A	N/A	N/A
KW	KW-Aqua-307	Unnamed wetland	-	-	N/A	N/A	N/A	N/A

Potential Effects:

Loss of riparian vegetation, rutting, altered surface water flows, contamination.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Provide 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low-disturbance methods within buffer
- The application of herbicides is prohibited within buffer

APPENDICES

APPENDIX A – CONTACT LIST

Contact	Name	Phone Number(s)
Construction Contractor		
Contractor Project Manager		
Contractor Field Lead		
Contractor Safety and Environmental Officer		
Manitoba Hydro		
Project Manager		
Resident Engineer/Manager		
Contract Engineer		
Site Environmental Officer		
Environmental Specialist		
Field Safety, Health and Emergency Response Officer		
Hazardous Materials Officer		
Area Spill Response Coordinator		
Emergency Response Services		
Project Archaeologist		
Manitoba Conservation Contacts		
District Office (Gillam)		
Regional Fisheries Manager		
First Nations Contacts		

APPENDIX B – ENVIRONMENTAL LICENCES, APPROVALS AND PERMITS

Approval Required, Applicable Legislation / Regulation	Type of Approval needed	Responsibility
Crown Lands Act (General Permit)	Permit	LEA
Crown Lands Act (work permit)	Permit	NGC
Dangerous Goods Handling and Transportation Act – Storage and Handling of Gasoline and Associated Products Regulation (registration of petroleum tanks)	Permit	NGC / Contractor
Environment Act Licence (Class 3)	Licence	LEA
Explosives Act (permit required for storage of explosives on site)	Permit	Contractor
Forest Act (permit to cut timber on Crown Lands)	Permit	LEA
Heritage Resources Act (application to conduct work if artifact is found)	Permit	LEA
Highways Protection Act (transportation of large loads)	Permit	NGC
Mines and Minerals Act (quarry lease or permit)	Lease or Permit	NGC
Water Rights Act	Licence	NGC
Wildfires Act (work permit)	Permit	NGC
Wildfires Act (permit to burn wood – outside of timing windows only)	Permit	NGC
Wildlife Act (WMA Use permit)	Permit	LEA

NGC- Manit0ba Hydro New Generation Construction Division

LEA- Manitoba Hydro Licensing And Environmental Assessment Department

APPENDIX C – FRAMEWORKS FOR CONTRACTOR-DEVELOPED ENVIRONMENTAL PLANS

C.1 Waste and Recycling Management Planning Framework

Introduction

The Bipole III Transmission Project (the Project) is a large scale development that has potential to generate a significant waste stream. To manage and reduce the amount of materials flowing from the construction of the Project, Manitoba Hydro will require Waste and Recycling Management Plans (W&R) plans from construction contractors in an effort to reduce the volume of materials going to landfill and facilitate reuse and recycling. Where applicable, the W&R Plan will also address wastes developed in the operation of work camps. This framework outlines the objectives, scope and materials to be covered in the W&R Plan required by each applicable contractor for the construction of the Bipole III Transmission Project.

Purpose of Framework

Manitoba Hydro recognizes the need to proactively address the issue of waste management. This document provides a framework to guide contractors in the preparation and implementation of a Waste and Recycling Management Plan, which is a crucial step in managing waste generation and disposal.

Objectives

Manitoba Hydro's objective for developing this Waste and Recycling Management Plan framework is to provide guidance to contractors in the development of a W&R Plan. The W&R Plan must contain the necessary components to meet regulatory requirements, applicable Acts and regulations, industry standards, and best practices in waste reduction, re-use and recycling for the Bipole III Transmission Project.

The goal of the W&R Plan is to reduce the amount of waste disposed at landfills while optimizing waste reduction, reuse and recycling activities. To obtain this goal, W&R Plans will include strategies related to waste minimization and avoidance, appropriate waste treatment and the applicable handling, storage, collection, recycling and disposal of waste. This framework will outline and define Manitoba Hydro's expectations for a W&R Plan to the contractor. Establishing these expectations and minimum requirements in a framework provides the contractor with the opportunity to develop more efficient processes which will meet or exceed Manitoba Hydro's goals of waste reduction and prevention.

Definitions

For the purposes of developing a Waste and Recycling Management Plan, below are the definitions of waste and hazardous waste.

The Environment Act definition of waste is:

"waste" includes rubbish, litter, junk, or junked obsolete or derelict motor vehicles, or obsolete or derelict equipment, appliances or machinery; slimes, tailings, fumes, waste of domestic, municipal, mining, factory or industrial origin; effluent or sewage; human or animal wastes; solid or liquid manure; or waste products of any kind whatsoever or the run-off from such wastes.

The Dangerous Goods Handling and Transportation Act definition of hazardous waste is:

“hazardous waste" means a product, substance or organism that

a) is prescribed, designated or classified as hazardous waste in the regulations, or

b) by its nature conforms to the classification criteria for one or more classes of hazardous wastes set out in the regulations.

Plan Scope

Each W&R Plan must identify the nature of the waste generated by the contractor. Examples of waste that are expected to be produced by the Project and be covered by the W&R Plan are found in the following table. (Note: this is not an exhaustive list.)

Table C-1: Materials to be Covered by the W&R Plan

Category	Items
Hazardous waste	Motor oils, fuels, solvents, coolants, pesticides, other chemicals
Construction materials	Wood, aluminum, copper, steel, cardboard, plastic
Food services	Beverage containers (aluminum and glass), cardboard, boxboard, plastics, newsprint, office paper
Domestic solid waste	Organic material, non-recyclable waste
E-waste	Computers, circuitry, batteries
Construction equipment	Rubber tires, lead-acid batteries, hydraulic fluid, oil filters

For each waste item identified in Table C-1, the following is required:

- the waste management method to be employed (reuse, recycle, landfill);
- collection, handling, storage, treatment and transportation requirements;
- final destination (landfill, recycle depot, etc.); and
- Municipal approvals for waste destined to a licensed waste disposal ground or landfill.

Related Environmental Protection Program Documents

When contactors develop a Waste and Recycling Management Plan, the Construction Environmental Protection Plan and the Project Environmental Plan should be referenced as these plans include waste mitigation measures.

Waste Management

The Waste and Recycling Management Plan must provide a process to which a hierarchical approach is taken to waste management. The purpose of the hierarchy is to assess each waste item for opportunities to avoid waste, then opportunities to reuse, followed by opportunities to recycle prior to disposal. This hierarchy will be as follows:

- compliance with federal and provincial waste management legislation (i.e., Acts and Regulations);
- waste avoidance;
- waste re-use;
- waste recycling; and
- waste disposal (as a final option).

Prior to the start of construction, the contractor must ensure that the waste disposal grounds are willing and have the capacity to accommodate the projected waste volume. Waste disposal grounds must be registered with Manitoba Conservation and Water Stewardship and be in accordance with the Waste Disposal Grounds Regulation (150/91, July 9 1991).

Waste Management Activities

The Waste and Recycling Management Plan must also include waste management activities to address the following:

- waste avoidance, reuse and recycling;
- waste segregation, storage and handling;
- waste transport and disposal;
- tracking of waste volumes produced;
- waste monitoring and reporting; and
- spill response and reporting as per Manitoba Hydro's Spill Response and Reporting Plan.

Due to the remoteness of some of the Project worksites there will be differing levels of waste segregation due to the logistical challenges of waste management during the construction of the Project. Table C-2 reflects the expected waste stream handling capabilities for typical project worksites.

Other Plan Considerations

- Waste kept on-site must be stored in such a way as to not pose health and safety risks.
- Recyclables destined for depots in major centers in Winnipeg or Thompson) should be back-hauled to reduce transportation costs.
- Methods for disposal of cleared vegetation, including trees, shrubs and undergrowth resulting from clearing will be covered by the Project's Construction Environmental Protection Plans and through consultation with the Regional Forrester as per the licence document.
- Waste excavated material will be reused wherever possible and waste material is to be disposed of by a licensed waste contractor. Stockpiles and waste that must be stored temporarily on site will be stored on existing cleared areas away from drainage channels and slopes.

Waste and Recycling Management Plan Approval

A detailed Waste and Recycling Management Plan must be developed by the contractor and submitted for approval by the Senior Environmental Assessment Officer in the Transmission Line Construction Department or the Senior Environmental Specialist for New Generation Construction. The W&R plan must address all applicable issues and concerns identified in this Waste and Recycling Management Plan framework. The detailed W&R plan submitted by the contractor must include all actions needed to effectively implement the Waste and Recycling Management Plan and its waste management hierarchy.

Table C-2: Preferred Waste Management Methods

Category	Items	Preferred Waste Management Methods
Hazardous Waste	Motor oils, oil filters, lead-acid batteries, hydraulic fluid, fuels, solvents, coolants, pesticides, other chemicals and their containers	Separate hazardous waste materials by type and store them segregated from the waste stream in approved containers and containment areas.
		Ensure that staff handling wastes is trained in the handling and transportation of hazardous waste.
		Inventory and account for hazardous waste leaving collection areas.
		Transportation off-site by licensed regulated waste transporter and disposal off-site by a regulated waste receiver, for recycling or proper disposal.
Construction Materials	Aluminum, copper, steel, scrap conductors	Collected and segregated on-site, transported for off-site recycling.
	Wood - timber off cuts, pallets, wooden boxes	Minimize waste by producing or using only the amount necessary. Off cuts and pallets to be burnt on-site or disposed of in landfills licensed by MCWS with capacity to accept and separate construction wastes.
	Cardboard packing and boxes	Collected and recycled at landfill
	Plastic bags and plastic packaging	Collected and disposed of at landfill
Food Services (Non-Hazardous Waste)	Beverage containers (aluminum, glass,), cardboard, boxboard, plastics, newsprint, office paper	Collected and recycled
Non-Hazardous Solid Waste	Grease Trap wastes and organic food waste	Store materials in wildlife-proof waste containers or in secure location. Waste will be taken off-site for disposal.
Electronic Wastes	Computers, circuitry, etc.	Electronic waste will be stored and transported off-site to a licensed e-waste receiver for recycling or disposal.
Construction Equipment	Rubber tires	Tires will be stored and transported off-site to a licensed regulated waste receiver for recycling or disposal.

Table C-2: Preferred Waste Management Methods

Category	Items	Preferred Waste Management Methods
Excavated Material	Excess material removed during construction	Refill any excavations and spread any excess over the nearby area and allow to re-vegetate. Waste materials will be reused as much as practicable to construct, haul roads, pads, etc.
Waste Concrete	Footing pours	Minimize waste by producing only the amount necessary. Disposal in designated area(s) for concrete washout. Regularly break-up and remove hardened concrete for proper disposal in landfill or used as fill on site.
Cleared Vegetation	Vegetation cleared during construction of yard sites, Access Roads and the ROW	Felling, chipping, mulching or burning. Salvage timber on Crown Land where practical and feasible. Follow burning procedures for non-salvaged timber. Vegetation mulch/chips may be retained on site for use in mitigation and site management works (e.g., erosion control). Mulch/chips may be utilized by local landowners where practical and feasible.

C.2 Erosion and Sediment Control Planning Framework

Introduction

Part of Manitoba Hydro's commitment to environmental protection includes the development of an Environmental Protection Program (EPP) for the Bipole III Transmission Project (the 'Project'). Aspects of this program include planning, monitoring and follow up for erosion and sediment control. This document provides the Framework for the development of Erosion and Sediment Control Plans (ESCP) by construction contractors for the project.

This Framework is intended to provide assurance to regulatory reviewers, environmental organizations, Aboriginal communities and the general public that commitments made in the Project Environmental Impact Statement (EIS) and Construction Environmental Protection Plans (CEnvPPs) will be implemented and monitored in a responsible and accountable manner.

Background

Land disturbing activities associated with the proposed construction of the Project may involve soil, rock, and vegetation removal. This surficial disturbance may result in soil erosion and/or sedimentation in the construction areas and beyond.

Erosion and sedimentation are naturally occurring processes involving the loosening, transport and deposition of soils. Erosion involves the wearing away of soil materials, caused by the action of wind or water, through detachment and transport of materials while sedimentation is the deposition of soil particles previously held in suspension by flowing water.

Water runoff is also part of the natural hydrological cycle, however, clearing, grading, and other construction activities that remove vegetation and compact the soil may result in increased runoff. Excessive runoff may cause erosion, sedimentation, or flooding.

Construction activities can result in a rapid increase in erosion and sedimentation rates that, if left uncontrolled, can reparably or irreparably harm the environment.

Purpose

It is important that land and water resources are protected from soil erosion. Manitoba Hydro recognizes the need to proactively address the issues of erosion and sedimentation. This document provides a framework to guide contractors in the preparation and implementation of an ESCP, which is a crucial step in managing and mitigating erosion and sedimentation.

Objectives

The objectives of the erosion and sediment control Framework are as follows:

- To provide a framework for erosion, sediment control and planning.
- To identify a process to develop an ESCP that meets regulatory requirements, industry standards and best practices.
- To provide guidance on the development of an ESCP that contains the necessary components to meet regulatory requirements, industry standards and best practices.

Roles and Responsibilities

The following table summarizes the roles and responsibilities of the main participants in the ESCP:

Manitoba Hydro	Ultimate responsibility for ESC planning, design, implementation, inspection, monitoring, maintenance, operation, and decommissioning. May delegate responsibilities to numerous design and construction professionals to construct/implement, maintain and inspect /monitor for the duration of the undertaking. Signs agreements, approvals permits and Authorizations to which compliance is legally binding. Ensure Contractors are aware of their responsibilities and are back charged for

	construction of ESC measures installed, maintained and specific restorations requirements. Appoint a Site Environmental Officer to confirm implementation and effectiveness of the ESCP.
Contractor	Erosion and Sediment Control Plans will be prepared by the Contractor, approved by the Construction Supervisor, Site Manager and/or the NGC Environmental Specialist prior to construction and updated annually. The Contractor will communicate erosion protection and sediment control information to all project staff and will ensure a copy of the Erosion and Sediment Control Plan will be made available at the project site. The Contractor will be responsible for implementing and maintaining Erosion Protection and Sediment Control Plans and procedures. The Contractor will be responsible for modifying erosion protection and sediment control installations to ensure continued effectiveness. The Contractor will be responsible for installation and maintenance of erosion and sediment control measures Appoint a Environmental Representative to confirm that regulatory criteria are being met by the ESCP.
Site Environmental Officer	Conduct regular monitoring of ESC measures to confirm proper implementation and effectiveness of controls. Provide feedback to the Construction Contractor and the Licensing and Environmental Assessment Officer. Document site inspections and corrective actions. Maintain log books/ records. Conduct inspections of ESC measures to confirm that regulatory criteria are being met. Issue Environmental Improvement Orders, as required, if measures are not meeting regulatory criteria.

Responsibilities for the development and implementation of an ESCP should be carried out in the order below:

- A contractor-specific Erosion Protection and Sediment Control Plan will be prepared prior to starting construction.
- Erosion Protection and Sediment Control Plans will be prepared by the Contractor, approved by the Resident Engineer/ Manager and the NGC Environmental Specialist prior to construction and updated annually.
- The Contractor will communicate erosion protection and sediment control information to all project staff and a copy of the Erosion and Sediment Control Plan will be made available at the project site.

- The Contractor will be responsible for implementing and maintaining Erosion Protection and Sediment Control Plans and procedures.
- The Contractor will be responsible for modifying erosion protection and sediment control installations to ensure continued effectiveness.
- The Site Environmental Officer will conduct regular monitoring of erosion and sediment control measures to confirm implementation and continued effectiveness.
- The Site Environmental Officer will make regular inspections of erosion protection and sediment control measures to confirm regulatory criteria are being met.
- The Site Environmental Officer will make inspections of decommissioned project areas and sites in accordance with the project Rehabilitation and Vegetation Management Plan to ensure that rehabilitation measures are effective and that any deficiencies are addressed.

Erosion and Sediment Control Plan Components

The plan should include both temporary and permanent ESC's. Temporary ESC's are those that are in place during the construction phase, or a portion thereof, when exposed soils are vulnerable to increased erosion rates and streams are at risk of sedimentation. Permanent ESC's are those that are to be maintained throughout the operational phase of the Project.

General environmental protection components pertaining to erosion protection and sediment control are listed below.

1. Phase construction to limit soil exposure.
2. Minimize needless stripping and grading.
3. Stabilize exposed soils immediately.
4. Protect waterways and stabilize drainage ways.
5. Protect steep slopes and cuts.
6. Install perimeter controls.
7. Employ advanced sediment settling controls.
8. Ensure contractors are trained in ESC plan, implementation, inspections, maintenance and repairs.
9. Adjust ESC plan at construction site, as required.
10. Assess effectiveness of ESC control measures regularly and after storms, and repair, replace or upgrade, as required.
11. Respond to Environmental Improvement Orders related to erosion and sediment control, as required, if issued by Manitoba Hydro.

Monitoring and Inspection

Monitoring and Inspection is necessary to ensure the effectiveness of the plan. It provides confirmation of proper implementation and effectiveness of environmental protection measures, therefore contributing to the overall success of a project. Manitoba Hydro will provide Site Environmental Officers prior to the start of an undertaking to document the pre-disturbance conditions, and to ensure that the erosion and sediment control plan is initiated at the start of the project. Additionally, post-construction monitoring is often required to ensure the restoration, stabilization, and required monitoring of constructed features/habitats is established. Manitoba Hydro will provide Site Environmental Officers to conduct inspections of environmental components (soil and water) targeted for protection by erosion and sediment control measures in order to confirm that regulatory requirements are being achieved.

It is the duty of the contractor to ensure that the erosion and sediment control measures are properly installed, well maintained and functioning as intended on a daily basis. The ESCP should provide the framework for the inspection, maintenance including the need for repair, and record-keeping procedures during all stage of construction. The effectiveness of the ESCP depends directly on the frequency of monitoring and what actions are taken to address any failures that may occur. An effective construction monitoring program should include the following:

1. Construction drawings detailing the erosion and sediment controls installed which is updated through the construction period.
2. High risk areas should be identified on these drawings and routinely evaluated.
3. During inactive construction periods, where the site is left alone for 30 days or longer, a monthly monitoring should be conducted.
4. All damaged ESC measures should be repaired and/or replaced.
5. A monitoring schedule should be drawn up to include times, areas and person(s) responsible.

APPENDIX D – CONTRACTOR-DEVELOPED ENVIRONMENTAL PLANS

D.1 Emergency Preparedness and Response Plan

Attach Contractor developed Emergency Preparedness and Response Plan

D.2 Waste and Recycling Management Plan

Attach Contractor developed Waste and Recycling Management Plan

D.3 Erosion and Sediment Control Plan

Attach Contractor developed Erosion and Sediment Control Plan

D.4 Concrete Washout Management Plan

Attach Contractor developed Concrete Washout Management Plan

APPENDIX E – FISHERIES AND OCEANS CANADA OPERATIONAL STATEMENTS

ICE BRIDGES AND SNOW FILLS

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 3.0

Ice bridges and snow fills are two methods used for temporary winter access in remote areas. Ice bridges are constructed on larger watercourses that have sufficient stream flow and water depth to prevent the ice bridge from coming into contact with the stream bed or restricting water movement beneath the ice. Snow fills, however, are temporary stream crossings constructed by filling a stream channel with clean compacted snow.

Ice bridge and snow fill crossings provide cost-effective access to remote areas when lakes, rivers and streams are frozen. Since the ground is frozen, ice bridges and snow fills can be built with minimal disturbance to the bed and banks of the watercourse. However, these crossings can still have negative effects on fish and fish habitat. Clearing shoreline and bank vegetation increases the potential for erosion and instability of the banks and can lead to deposition of sediments into fish habitat. There is also potential for blockage of fish passage during spring break-up.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your ice bridge or snow fill project without a DFO review when you meet the following conditions:

- ice bridges are constructed of clean (ambient) water, ice and snow,
- snow fills are constructed of clean snow, which will not restrict water flow at any time,
- the work does not include realigning the watercourse, dredging, placing fill, or grading or excavating the bed or bank of the watercourse,
- materials such as gravel, rock and loose woody material are NOT used,
- where logs are required for use in stabilizing shoreline approaches, they are clean and securely bound together, and they are removed either before or immediately following the spring freshet,
- the withdrawal of any water will not exceed 10% of the instantaneous flow, in order to maintain existing fish habitat,
- water flow is maintained under the ice, where this naturally occurs, and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Constructing an Ice Bridge or Snow Fill* listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in the violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (**www.sararegistry.gc.ca**). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Manitoba Operational Statement notification form (**www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Constructing an Ice Bridge or Snow Fill

1. Use existing trails, winter roads or cut lines wherever possible as access routes to limit unnecessary clearing of additional vegetation and prevent soil compaction.

2. Construct approaches and crossings perpendicular to the watercourse wherever possible.

3. Construct ice bridge and snow fill approaches using clean, compacted snow and ice to a sufficient depth to protect the banks of the lake, river or stream. Clean logs may be used where necessary to stabilize approaches.

4. Where logs are used to stabilize the approaches of an ice bridge or snow fill:

   4.1. The logs are clean and securely bound together so they can be easily removed.
   4.2. No logs or woody debris are to be left within the water body or on the banks or shoreline where they can wash back into the water body.

5. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to accommodate the road. This removal should be kept to a minimum and within the road right-of-way.

6. Install sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and decommissioning activities and make all necessary repairs if any damage occurs.

7. Operate machinery on land or on ice and in a manner that minimizes disturbance to the banks of the lake, river or stream.

   7.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
   7.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water or spreading onto the ice surface.
   7.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
   7.4. Restore banks to original condition if any disturbance occurs.

8. If water is being pumped from a lake or river to build up the bridge, the intakes are sized and adequately screened to prevent debris blockage and fish mortality (refer to DFO's *Freshwater Intake End-of-Pipe Fish Screen Guideline* (1995) available at **www.dfo-mpo.gc.ca/Library/223669.pdf**).

9. Crossings do not impede water flow at any time of the year.

10. When the crossing season is over and where it is safe to do so, create a v-notch in the centre of the ice bridge to allow it to melt from the centre and also to prevent blocking fish passage, channel erosion and flooding. Compacted snow should be removed from snow fills prior to the spring freshet.

11. Stabilize any waste materials removed from the work site to prevent them from entering the lake, river, or stream. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

12. Vegetate and stabilize (e.g., cover exposed areas with erosion control blankets or tarps to keep the soil in place and prevent erosion) any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses. Cover such areas with mulch to prevent erosion and to help seeds germinate.

    12.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

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DFO/2007-1329

ISOLATED OR DRY OPEN-CUT STREAM CROSSINGS

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 1.0

For the purpose of this Operational Statement, the term "Isolated Crossing" means a temporary stream crossing technique that allows work (e.g., trenched pipeline or cable installation) to be carried out "in-the-dry" while diverting the natural flow around the site during construction. These types of open trenched crossings are isolated using flume or dam and pump techniques (see *Pipeline Associated Watercrossings*, 2005 at **http://www.capp.ca/default.asp?V_DOC_ID=763&PubID=96717**). The term "Dry Open-cut Stream Crossing" means a temporary stream crossing work (e.g., trenched pipeline or cable installation) that is carried out during a period when the entire stream width is seasonally dry or is frozen to the bottom.

The risks to fish and fish habitat associated with isolated open cut stream crossings include the potential for direct damage to substrates, release of excessive sediments, loss of riparian habitat, stranding of fish in dewatered areas, impingement/ entrainment of fish at pump intakes, and disruption of essential fish movement patterns. Similarly, dry open-cut stream crossings pose a risk to fish and fish habitat due to potential harmful alteration of substrates, loss of riparian habitat, and release of excessive sediment once stream flows resume.

The order of preference for carrying out a cable or pipeline stream crossing, in order to protect fish and fish habitat, is: a) punch or bore crossing (see *Punch & Bore Crossings* Operational Statement); b) high-pressure directional drill crossing (see *High-Pressure Directional Drilling* Operational Statement); c) dry open-cut crossing; and d) isolated open-cut crossing. This order must be balanced with practical considerations at the site.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your isolated or dry open-cut stream crossing project without a DFO review when you meet the following conditions:

- for dry, open-cut crossings the watercourse is dry or frozen completely to the bottom at the site,
- for isolated crossings, the channel width of the watercourse at the crossing site is less than 5 meters from ordinary high water mark to ordinary high water mark (HWM) (see definition below),
- the isolated crossing does not involve the construction or use of an off-stream diversion channel, or the use of earthen dams,
- the isolated crossing ensures that all natural upstream flows are conveyed downstream during construction, with no change in quality or quantity,
- the site does not occur at a stream location involving known fish spawning habitat, particularly if it is dependent on groundwater upwelling,
- the use of explosives is not required to complete the crossing, and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-cut Stream Crossing* listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial and federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (SARA) (**www.sararegistry.gc.ca**). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending the Manitoba Operational Statement notification form (**www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-Cut Stream Crossing

1. Use existing trails, roads or cut lines wherever possible as access routes to avoid disturbance to the riparian vegetation.

2. Locate crossings at straight sections of the stream, perpendicular to the banks, whenever possible. Avoid crossing on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in the erosion and scouring of the stream bed.

3. Complete the crossing in a manner that minimizes the duration of instream work.

4. Construction should be avoided during unusually wet, rainy or winter thaw conditions.

5. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the utility right-of-way.

6. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use. Operational Statements are also available for *Ice Bridges and Snow Fills*, *Clear-Span Bridges*, and *Temporary Stream Crossing*.

    6.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
    6.2. Grading of the stream banks for the approaches should not occur.
    6.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
    6.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Manitoba In-Water Construction Timing Windows*).
    6.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

7. Operate machinery in a manner that minimizes disturbance to the watercourse bed and banks.

    7.1. Protect entrances at machinery access points (e.g., using swamp mats) and establish single site entry and exit.
    7.2. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
    7.3. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.
    7.4. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

8. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

9. Stabilize any waste materials removed from the work site, above the HWM, to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

10. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. 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.

    10.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated Crossing

Temporary isolation is used to allow work "in-the-dry" while maintaining the natural downstream flow by installing dams up and downstream of the site and conveying all of the natural upstream flow into a flume, or pumping it around the isolated area. In addition to measures 1 to 10, the following measures should be carried out when conducting an isolated stream crossing:

11. Time isolated crossings to protect sensitive fish life stages by adhering to fisheries timing windows (see Measure 6.4).

12. Use dams made of non-earthen material, such as water-inflated portable dams, pea gravel bags, concrete blocks, steel or wood wall, clean rock, sheet pile or other appropriate designs, to separate the dewatered work site from flowing water.

    12.1. If granular material is used to build dams, use clean or washed material that is adequately sized (i.e., moderately sized rock and not sand or gravel) to withstand anticipated flows during the construction. If necessary, line the outside face of dams with heavy poly-plastic to make them impermeable to water. Material to build these dams should not be taken from below the HWM of any water body.
    12.2. Design dams to accommodate any expected high flows of the watercourse during the construction period.

13. Before dewatering, rescue any fish from within the isolated area and return them safely immediately downstream of the worksite.

    13.1. You will require a permit from DFO to relocate any aquatic species that are listed as either endangered or threatened under SARA. Please contact the DFO office in your area to determine if an aquatic species at risk is in the vicinity of your project and, if appropriate, use the DFO website at **www.dfo-mpo.gc.ca/species-especes/permits/sarapermits_e.asp** to apply for a permit.

OVERHEAD LINE CONSTRUCTION

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 3.0

Overhead lines are constructed for electrical or tele-communication transmission across many watercourses that range in size from small streams and ponds to large rivers, lakes and reservoirs. This Operational Statement applies to selective removal of vegetation along the right-of-way to provide for installation and safe operation of overhead lines, and passage of equipment and materials across the water body.

Although fish habitat occurs throughout a water system, it is the riparian habitat that is most sensitive to overhead line construction. Riparian vegetation occurs adjacent to the watercourse and directly contributes to fish habitat by providing shade, cover, and spawning and food production areas. It is important to design and build your overhead line project to meet your needs while also protecting riparian areas. Potential impacts to fish and fish habitat include excessive loss of riparian vegetation, erosion and sedimentation resulting from bank disturbance and loss of plant root systems, rutting and compaction of stream substrate at crossing sites, and disruption of sensitive fish life stages.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your overhead line project without a DFO review when you meet the following conditions:

- it does not require the construction or placement of any temporary or permanent structures (e.g. islands, poles, crib works, etc.) below the ordinary high water mark (HWM) (see definition below), and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines* listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (**www.sararegistry.gc.ca**). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Manitoba Operational Statement notification form (**www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines

1. Installing overhead lines under frozen conditions is preferable in all situations. On wet terrains (e.g., bogs), lines should be installed under frozen conditions, where possible, or using aerial methods (i.e., helicopter).

2. Design and construct approaches so that they are perpendicular to the watercourse wherever possible to minimize loss or disturbance to riparian vegetation.

3. Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or overhead line structures.

3.1. Wherever possible, locate all temporary or permanent structures, such as poles, sufficiently above the HWM to prevent erosion.

4. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to accommodate the overhead line. This removal should be kept to a minimum and within the road or utility right-of-way.

5. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing* Operational Statement is also available.

5.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads)

should be used provided they do not constrict flows or block fish passage.

5.2. Grading of the stream banks for the approaches should not occur.

5.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.

5.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Manitoba In-Water Construction Timing Windows*).

5.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

6. Operate machinery on land and in a manner that minimizes disturbance to the banks of the watercourse.

6.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

6.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.

6.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

6.4. Restore banks to original condition if any disturbance occurs.

7. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

7.1. Avoid work during wet, rainy conditions or use alternative techniques such as aerial methods (i.e., helicopter) to install overhead lines.

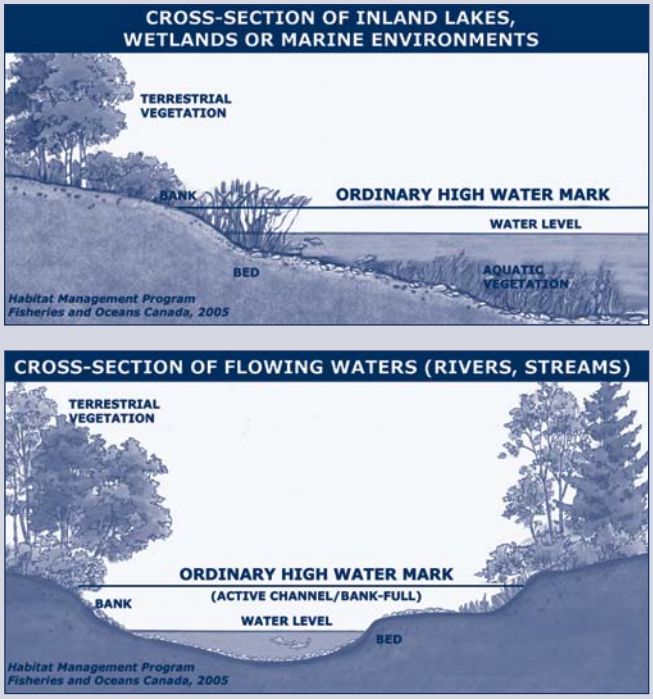
8. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

9. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. 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.

9.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).



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DFO/2007-1329

TEMPORARY STREAM CROSSING

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 1.0

A temporary stream crossing consists of i) a one-time ford in flowing waters, ii) a seasonally dry streambed ford, or iii) a temporary bridge (e.g., Bailey bridge or log stringer bridge). Temporary stream crossings are employed for short term access across a watercourse by construction vehicles when an existing crossing is not available or practical to use. They are not intended for prolonged use (e.g., forest or mining haul roads). The use of temporary bridges or dry fording is preferred over fording in flowing waters due to the reduced risk of damaging the bed and banks of the watercourse and downstream sedimentation caused by vehicles. Separate Operational Statements are available for *Ice Bridges and Snow Fills* used for temporary access during the winter and for non-temporary *Clear Span Bridges*.

The risks to fish and fish habitat associated with temporary stream crossings include the potential for direct harm to stream banks and beds, release of excessive sediments and other deleterious substances (e.g., fuel, oil leaks), loss of riparian habitat and disruption to sensitive fish life stages.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your temporary stream crossing project without a DFO review when you meet the following conditions:

- the bridge is no greater than one lane in width, and no part of its structure is placed within the wetted portion of the stream,
- the work does not include realigning the watercourse,
- for fording in flowing waters and temporary bridges, the channel width at the crossing site is no greater than 5 metres from ordinary high water mark to ordinary high water mark (HWM) (see definition below),
- disturbance to riparian vegetation is minimized,
- the work does not involve dredging, infilling, grading or excavating the bed or bank of the watercourse,
- all crossing materials will be removed prior to the spring freshet, or immediately following project completion if this occurs earlier,
- fording involves a one time event (over and back) and will not occur in areas that are known fish spawning sites,
- the crossing will not result in erosion and sedimentation of the stream, or alteration (e.g., compaction or rutting) of the bed and bank substrates,
- the crossing does not involve installation of a temporary culvert, and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Carrying Out a Temporary Stream Crossing* listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial and federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (SARA) (**www.sararegistry.gc.ca**). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending the Manitoba Operational Statement notification form (**www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Carrying Out a Temporary Stream Crossing

1. Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.

2. Locate crossings at straight sections of the stream, perpendicular to the bank, whenever possible. Avoid crossing on meander bends, braided streams, alluvial

fans, or any other area that is inherently unstable and may result in the erosion and scouring of the stream bed.

3. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the road or utility right-of-way. When practicable, prune or top the vegetation instead of uprooting.

4. Generally, there are no restrictions on timing for the construction of bridge structures or fording seasonally dry streambeds, as they do not involve in-water work. However, if there are any activities with the potential to disrupt sensitive fish life stages (e.g., fording of the watercourse by machinery) these should adhere to appropriate fisheries timing widows (see the *Manitoba In-Water Construction Timing Windows*).

5. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use.

- **5.1.** If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used, provided they do not constrict flows or block fish passage.
- **5.2.** Grading of the stream banks for the approaches should not occur.
- **5.3.** If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary bridge should be used in order to protect these areas.
- **5.4.** The one-time fording should adhere to fisheries timing windows (see Measure 4).
- **5.5.** Fording should occur under low flow conditions, and not when flows are elevated due to local rain events or seasonal flooding.

6. Install effective sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

7. For temporary bridges also employ the following measures:

- **7.1.** Use only clean materials (e.g., rock or coarse gravel fill, wood, or steel) for approaches to the bridge (i.e., not sand, clay or organic soil) and install in a manner that avoids erosion and sedimentation.
- **7.2.** Design temporary bridges to accommodate any expected high flows of the watercourse during the construction period.
- **7.3.** Restore the bank and substrate to pre-construction condition.
- **7.4.** Completely remove all materials used in the construction of the temporary bridge from the watercourse following the equipment crossing, and stabilize and re-vegetate the banks.

8. Operate machinery in a manner that minimizes disturbance to the watercourse bed and banks.

- **8.1.** Protect entrances at machinery access points (e.g., using swamp mats) and establish single site entry and exit.
- **8.2.** Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
- **8.3.** Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.
- **8.4.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

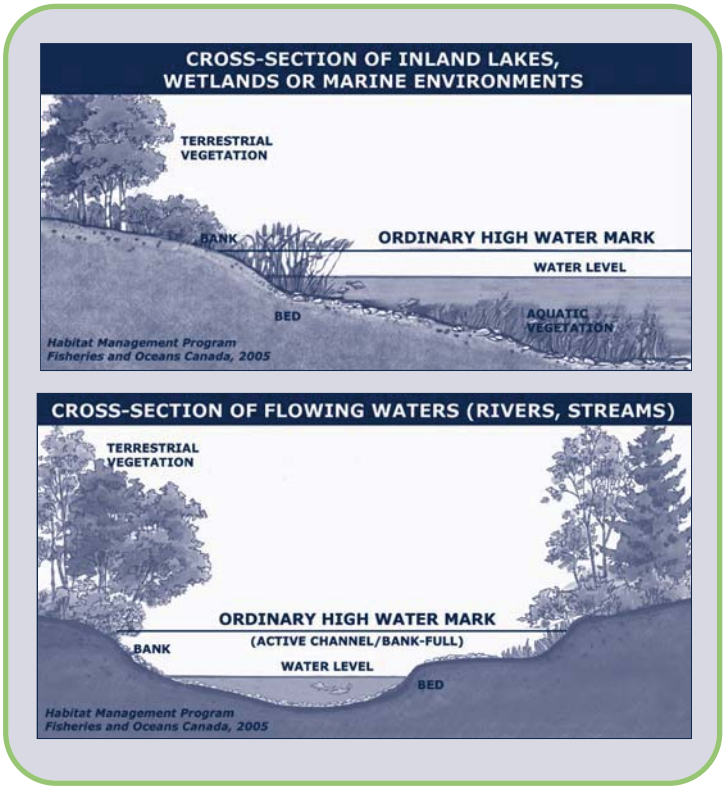
9. Stabilize any waste materials removed from the work site, above the HWM, to prevent them from entering any watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.

10. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. 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.

- **10.1.** Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) - The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).



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DFO/2007-1329

APPENDIX F – MANITOBA HYDRO EMERGENCY RESPONSE PLAN – KEEWATINOOW CONVERTER STATION AND CONSTRUCTION CAMP LAGOON

Manitoba Hydro

Emergency Response Plan

Keewatinoow Converter Station and Construction Camp Lagoon

PROJECT LOCATION: 80 KM NE of Gillam, MB

Date: October, 2013
Created by: Alex Harling
Reviewed by:
Approved by: P. Eng

PLEASE NOTE THAT THIS INFORMATION WILL BE UPDATED AS REQUIRED

Manitoba Hydro

1. Table of Contents:

Contents

Manitoba Hydro

2. EMERGENCY CONTACTS:

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Security		**204-652-3262**
EMS – Gillam		**204-652-2911**
THOMPSON FIRE AND AMBULANCE		**204-677-7911**
POLICE (RCMP)	**Emergency**	**204-652-2200**
	Non Emergency	**204-677-6911**
THOMPSON HOSPITAL	**Major injuries**	**204-677-2381**
GILLAM HOSPITAL	**Minor Injuries**	**204-652-2600**
CUSTOM HELICOPTERS – Gillam		**204-652-2212**
		204-338-7593

MANITOBA WORKPLACE SAFETY & HEALTH DIVISION	204-945-0581 (Wpg)
MANITOBA CONSERVATION AND WATER STEWARDSHIP	204-944-4888 (24 HR)
FOREST FIRE REPORTING	1-800-782-0076 (24 HR)
MANITOBA HYDRO (To report a utility strike)	1-888-624-9376 (24 HR)

NOTE: ALL MANITOBA HYDRO TRUCKS ARE EQUIPPED WITH LONG RANGE VHF RADIO OVER A REPEATER. MANY MANITOBA HYDRO EMPLOYEES ALSO CARRY VHF HANDHELD RADIOS.

Manitoba Hydro

3. DEFINITION OF A SERIOUS INCIDENT:

(Incidents that need to be reported to Manitoba Family Services and Labour Department)

The following few examples are injuries/incidents that will result in the government being notified.

3.1 Anytime a worker is killed

3.2 Any injury that results in fracture, laceration requiring stitches, unconsciousness of the worker, third degree burns, loss of sight etc…

3.3 Any explosions, fires, structural failure and Crane Failure

Please see the Workplace Safety and Health Regulation, Section 2.6 for the full definition of "serious incident"

4. Incident Reporting Procedure:

1. Secure the area to prevent further damage or injury if applicable

2. In the event any incident/accident occurs EMS needs to be contacted – via cell phone first 204-652-0401 for emergency medical response. If cell is out of range, EMS can be contacted through a Manitoba Hydro Radio Channel Direct "D"

    1. State the name of the injured, and state your name
    2. Nature of emergency (i.e. fire/accident, Injury, number of injured personnel)
    3. Severity of emergency
    4. Location of incident (EX: main camp, work area "A" "B" "C") – SEE SITE MAP
        A. EMS is contacted in the event there is an incident/accident
        B. Security contacts Limestone ERC at 204-486-1121 if there is a fire
        C. MH management needs to be contacted in the event of any incident and be involved in the investigation and be of assistance to security or EMS
        D. RCMP in the event of a death, or a civil disturbance
        E. Stabilize the injured person until EMS arrives and assist if required

3. Report incident to immediate supervisor, and supervisor will assist with communication and applying emergency response depending on the nature of emergency

4. The Field Safety Officer will be responsible to contact Corporate Safety & Health Division (CS&H), 204-360-4357 if the following occurs:
   A. Any SERIOUS INCIDENT/SERIOUS INJURY
   B. Any HIGH VOLTAGE ELECTRICAL ACCIDENT or NATURAL GAS ACCIDENT to an employee
   C. Any INJURIES TO THE PUBLIC OR CONTRACTORS EMPLOYEES
   D. Any FIRE or EXPLOSION

5. Whenever an on-the-job serious incident/serious injury occurs:

   A. The Workplace Safety and Health Division of Manitoba Family Services and Labour requires that injury to an employee classified as a Serious Incident be reported to them "by the fastest means of communication possible"

   B. This means that when a Serious Incident has occurred your supervisory staff needs to call the CS&H incident report line, 204-360-4357 to report the incident as soon as possible after dealing with the emergency. They must then fill out E-Form 1672 and send it to CS&H within 2 days

4.1 Minor Injury Procedure:

Minor injury occurs: (Cuts requiring a band-aid, scraps, bruises, or twisted ankles)

1. Employee notifies supervisor of injury
2. Injured worker get treatment from their own on Site first aiders
3. On-Site first aider treats worker for minor injury
4. If there is any uncertainty on the extent of the minor injury, the worker should be taken to EMS
5. Supervisor conducts incident investigation report
6. Supervisor ensure corrective action is met
7. Supervisor provides MH safety officer with completed report

Manitoba Hydro

ALL CONTRACTORS ARE TO PROVIDE THEIR OWN FIRST AID IN ACCORDANCE WITH THE WORKPLACE SAFETY AND HEALTH ACT AND UNDER THEIR CONTRACT.

4.2 Major Injury Procedure:

Employee notices the injured: (Laceration requiring stitches, broken bones, head injuries, amputations)

ENSURE Accident/incident scene is not disturbed for investigation purposes.

In the event an injured worker requires being medi-vaced out of Site to the nearest hospital, EMS will make the call. EMS is responsible for the contact and coordination of the custom helicopters to Site and landing of the helicopter. Once Custom helicopters have arrived, EMS will transfer the patient over in their care.

4.2.1 Injured is alive:

1. Contact EMS at 204-652-0401 if cell phone is out of range use a Manitoba Hydro radio on Channel Direct "D"
2. Stabilize patient until EMS arrives
3. EMS arrives
4. EMS assumes control and takes action

4.2.2 Potential Fatality:

1. Employee informs Security at 204-652-3262
2. Security contacts EMS at 204-652-0401
3. EMS contacts RCMP at 204-652-2436
4. EMS and RCMP verify cause of death
5. Do not attempt to move deceased until coroner arrives

5. Fire Response Plan:

1. Call Site security at 204-652-3262 if cell phone is out of range use a Manitoba Hydro radio on Channel Direct "D"
2. Give all pertinent information regarding the type, location and extent of the fire. See Site Map
3. Security will notify Limestone Emergency Response Crew (ERC) team at 204-486-1121 to the location and severity of the fire

4. If Site security cannot be reached call Site safety officer at 652-0114 or Civil field engineer at 204- 805-2918 and give all information regarding type, location and severity of fire
5. If no one can reached then start proceeding to contact Site management from the contact list provided on this document on page 4

5.1 Fire Procedure:

1. To report a fire contact security at 204-652-3262
2. Security contacts Limestone ERC team at 204-486-1121
3. Remove any injured workers from area and stabilize them until EMS arrives
4. Shutdown any equipment if any
5. Never fight a fire unless you have had proper training and the fire is small and contained
6. Travel to the safest muster point from your work area as shown on the Site map
7. Supervisors will take a roll call of all workers once at a safe muster point
8. Security will notify Manitoba Hydro and other contractors as required
9. Wait for Limestone ERC team to arrive on the scene and extinguish the fire

DO NOT re-enter the Site until the "ALL CLEAR" is given by Fire Fighting Officials.

Manitoba Hydro

6. Severe Weather Procedure:

Severe Weather includes: strong winds, blizzards, damaging hail, extreme thunderstorms, and tornadoes:

1. In the event of severe weather if you are located at camp, seek shelter at muster point "A" which is near the front entrance of the Site. It will then be decided by the Resident Manager what the next step will be

2. If you are located in the main camp, seek shelter at muster point "B" if muster point "B" is not accessible or unsafe to travel to proceed to muster point "C" It will then be decided by the Resident Manager what the next step will be

3. Offer assistance to individuals that need help

4. Direct all people to a safe area

5. Locate available supplies for first aid and emergency equipment

6. Keep phone lines available for emergency communications if available

7. Do not leave shelter until the storm has passed

8. Do not try to out-run the storm by vehicle

Manitoba Hydro

7. Camp Power Outage Procedure:

In the event that Power fails at Keewatinoow follow these steps:

1. Stay where you are and await further direction
2. Camp facility operator will check the breakers/power supply for an issue that can be easily resolved
3. If issue cannot be easily fixed proceed to these next steps. NOTE: The issues must be fixed or rectified by a qualified person
4. If no power can be supplied to the camp, the resident manager will determine if the Site needs to be evacuated
5. If evacuation is necessary ensure everyone follow the "Emergency Evacuation Plan"

****Please see emergency evacuation plan attached with this document on the MH safety boards. This will also be in the MH shared folder under Emergency Response Plan Appendices.**

Manitoba Hydro

8. Blockade or Civil Disturbance Procedure:

1. Report the location of the blockade or disturbance to your supervisor, if supervisor is not available then report the incident to security at 204-652-3262
2. Advise applicable party of the issue and if the situation becomes violent, or threatening let security know immediately
3. Security will contact RCMP to resolve the issue
4. Do not aggravate or get involved with upset or threatening individuals
5. Await direction from supervisor or security
6. Do not talk to reporter's with-out prior permission from the Resident Manager

Manitoba Hydro

9. Regulatory Requirements:

This Emergency Response Plan is intended to meet the requirements found in the of the Workplace Safety and Health Act W210 and Regulation MR 217/2006.

Plan Availability:	A copy of the basic plan will be made available in each trailer. Updated versions of the plan are available in the Manitoba Hydro Safety Office.
Review and Revisions:	*As a living document*, this Plan and its annexes should be expected to be under continual revision. It will be reviewed annually by the Workplace Safety and Health Committee in conjunction with the MH safety officer.
Emergency Planning:	In preparation for emergency incidents, the Resident Manager shall maintain a positive, safe working environment for staff and guests.

Manitoba Hydro

10. Resources:

Facilities in surrounding area:

1. R.C.M.P.....204-652-2200 or 204-677-6911
2. Gillam Hospital and Fire Service.....204-677-7911 or 204-652-2600
3. Thompson Hospital.....204-677-2381
4. Manitoba Conservation and Water Stewardship - Thompson.204-677-6622
5. Manitoba Infrastructure and Transportation Thompson.....204-677-6540
6. Fire Commissioners office Winnipeg.....204-945-3322

Key Building Locations:

1. Hydro Field Office (Main camp)
2. Emergency Medical Services (Paramedic)

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11. Review of Emergency Response Plan:

Name	Date	Signature

By Signing this document you are stating that you are aware of your responsibilities in an emergency. If you are unaware contact your supervisor.

Manitoba Hydro

Appendix "A "Site Contact list

Manitoba Hydro Site Staff			
Employee	**Position**	**Office**	**Cell**
TBD	Resident Manager	TBD	TBD
TBD	Resident Engineer	TBD	TBD
Mike Newton	Field Civil Engineer	204-652-3247	204-805-2918
Alex Harling	Safety Officer		204-652-0114
TBD	Enviromental Officer	TBD	TBD
Jacqi Hicks	Acting Camp Administrator	204-652-3248	204-679-0042
Suzanne Ducharme	HPMA/Labour Relations Advisor	204-360-3648	204-4700427
Andrew Kaus	Liaison Officer	204-360-4434	

Manitoba Hydro Off-Site Staff (Winnipeg)			
Employee	**Position**	**Office**	**Cell**
Rob Elder	Project Manager	204-360-7917	204-792-0591
Gregory Page	Lead Civil Engineer	204-360-3362	204-471-1980
Jason Peterson	HPMA/Labour Relations Advisor	204-360-7137	204-479-6636

Manitoba Hydro

Appendix "B "Emergency Procedure list

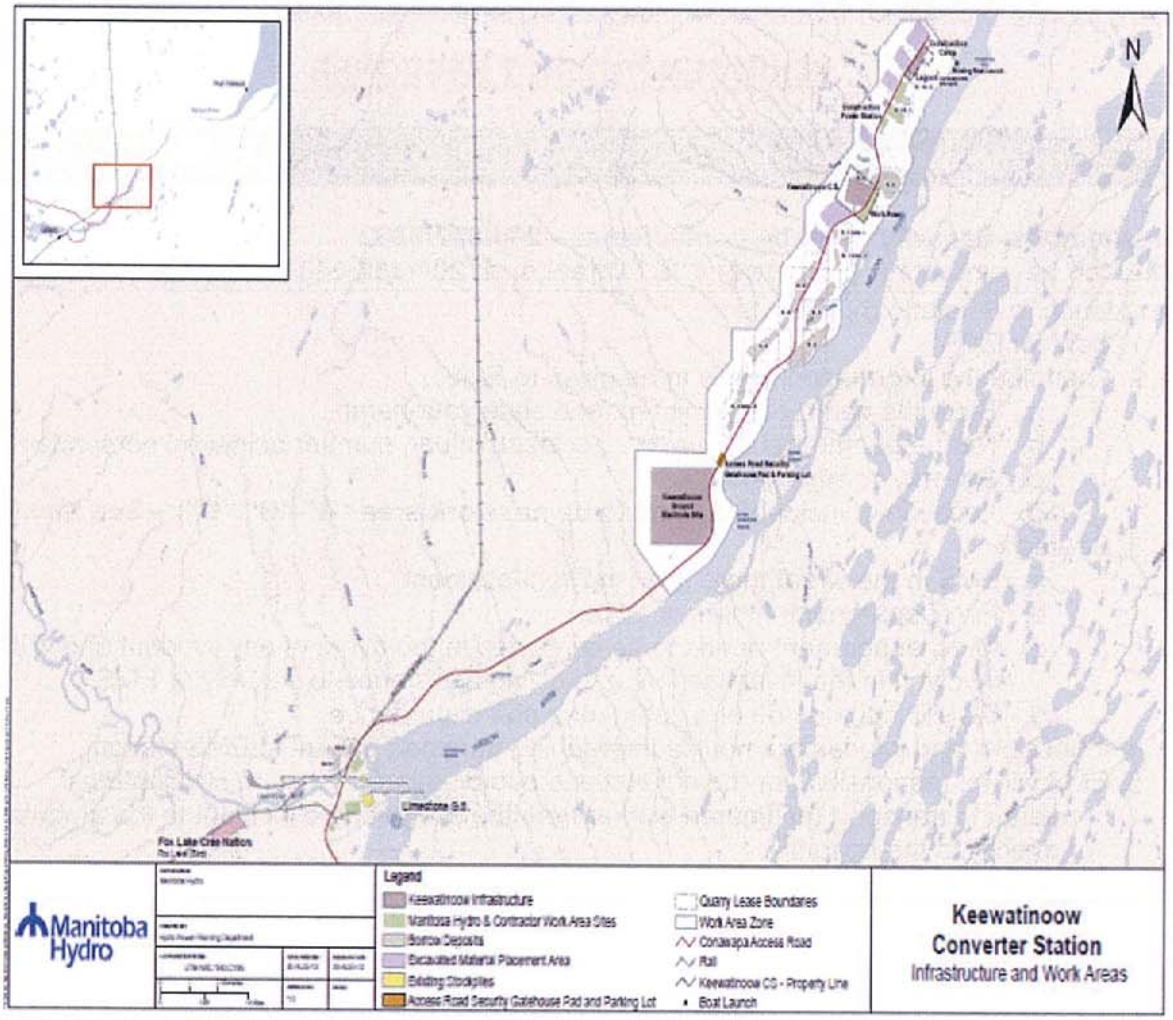
Keewatinoow Converter Station Construction Project

INJURY EMERGENCY RESPONSE

Emergency Call-In Procedure: Use a Project RADIO or PHONE
Keewatinoow Security cCan be contacted at – 204-652-3262 **EMS can be contacted - Channel # "D" Direct or at 204-652-0401**
Information to Sstate to Security: 1. Contact EMS 2. The following information needs to be given to EMS: a. State the name of the injured, and state your name. b. Nature of emergency (i.e. fire/accident, Injury, number of injured personnel) c. Severity of emergency **d.** Location of incident **(EX: main camp, work area "A" "B" "C")** – See Site Map 3. Contact: a. EMS in the event there is an incident/accident. b. Fire Department if there is a fire c. MH management needs to be contacted in the event of any incident and will be involved in the investigation, and giving assistance to security or EMS. d. RCMP in the event of a death, or a civil disturbance 4. If possible, and injuries are not life threatening transport patient to EMS station. 5. EMS will be responsible for the contact and coordination of Custom Helicopters if required to transport the injured worker from the scene of the incident to the ambulance or directly to the hospital.

Manitoba Hydro

Appendix "C "Keewatinoow Project Site Map"



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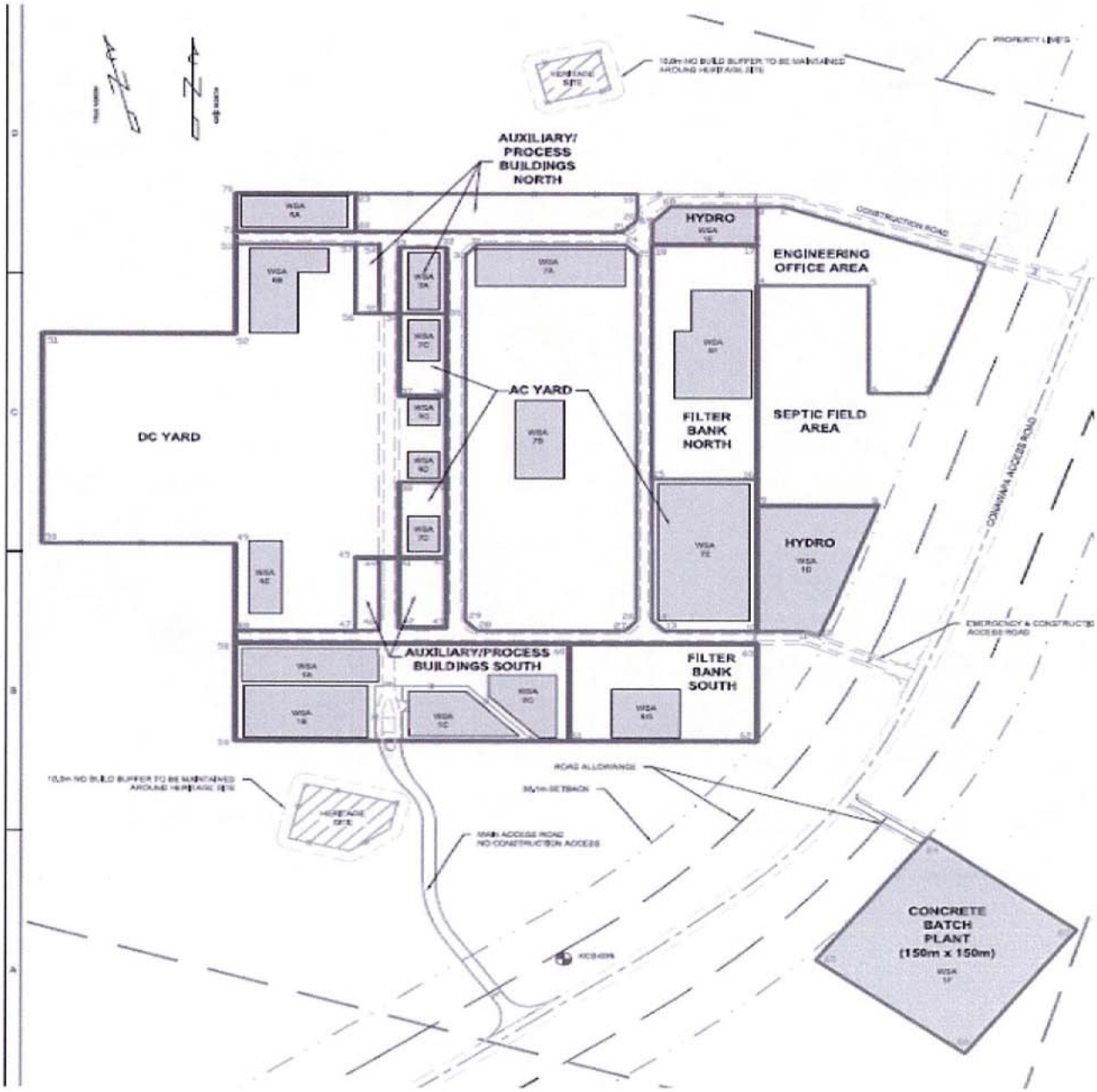
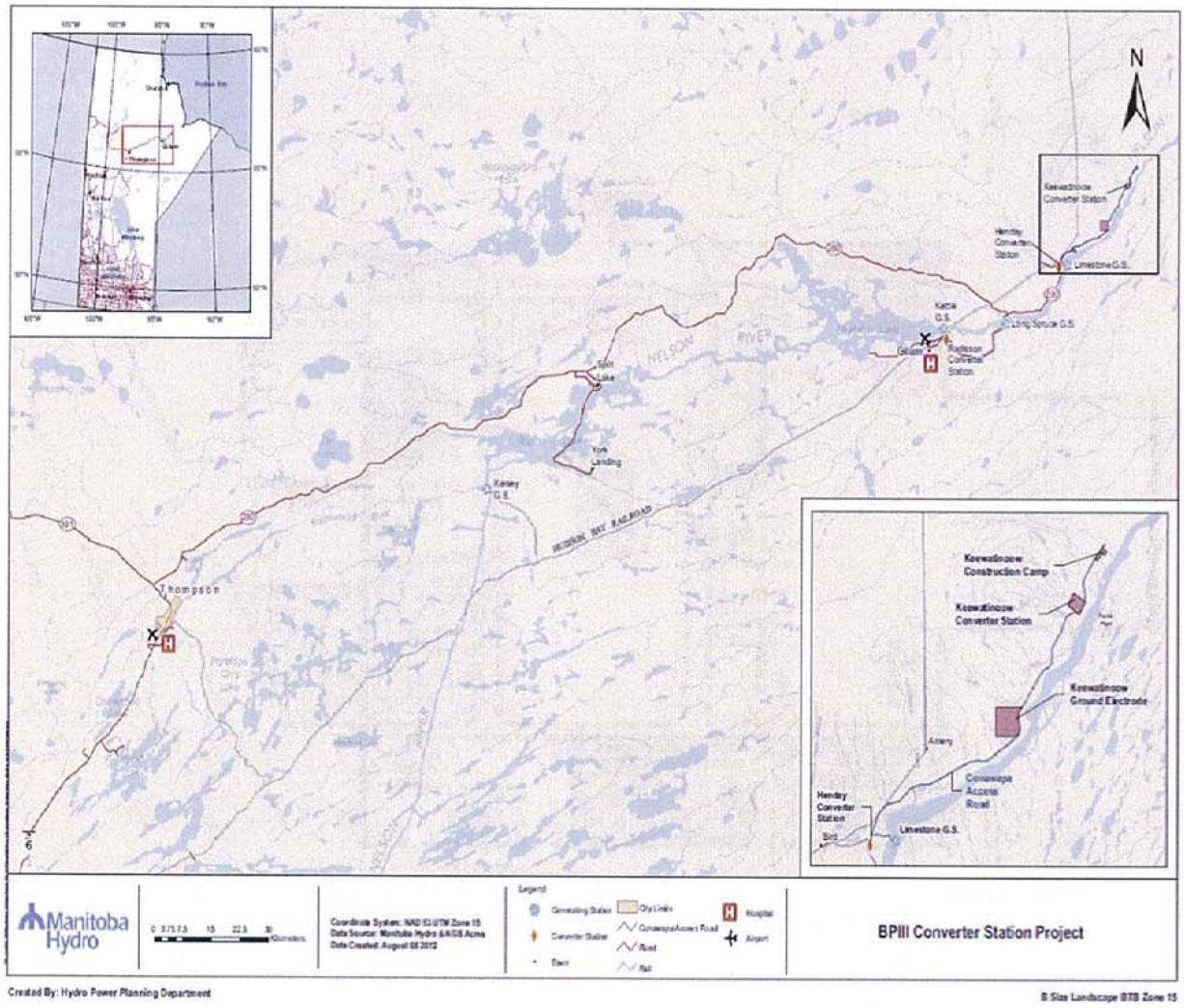
Appendix "D "Converter Station Site Location Map



Appendix "E "Keewatinoow Site Location Map



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Appendix "F "Keewatinoow Camp Map

Camp Map