

LAKE MANITOBA LAKE ST. MARTIN

OUTLET CHANNELS PROJECT

MANITOBA INFRASTRUCTURE

Environmental Protection Plan

November 18, 2020

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DISCLAIMER

This document was developed to support the Lake Manitoba and Lake St. Martin Outlet Channel Environmental Management and Monitoring Program. This document has been prepared by Manitoba Infrastructure as a way to share information and have discussion with Indigenous Communities and Groups and the public. This document has been prepared using existing environmental and preliminary engineering information, professional judgement as well as information from previous and ongoing public and Indigenous engagement and consultation. The contents of this document are based on conditions and information existing at the time the document was prepared and do not take into account any subsequent changes. The information, data, recommendations, and conclusions in this report are subject to change as the information has been presented as draft and will not be considered complete until further engagement and consultation is complete. The plans may be further revised based on information and direction received from provincial and federal environmental regulators. This draft report be read as a whole, and sections or parts should not be read out of context.

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PREFACE

The Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project (the “Project”) is proposed as a permanent flood control mitigation for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region of Manitoba. It will involve the construction and operation of two new diversion channels: the Lake Manitoba Outlet Channel (LMOC) will connect Lake Manitoba to Lake St. Martin and the Lake St. Martin Outlet Channel (LSMOC) will connect Lake St. Martin to Lake Winnipeg. Associated with these outlet channels are the development of bridges, control structures with power connections, a new realignment of PR 239, and other ancillary infrastructure.

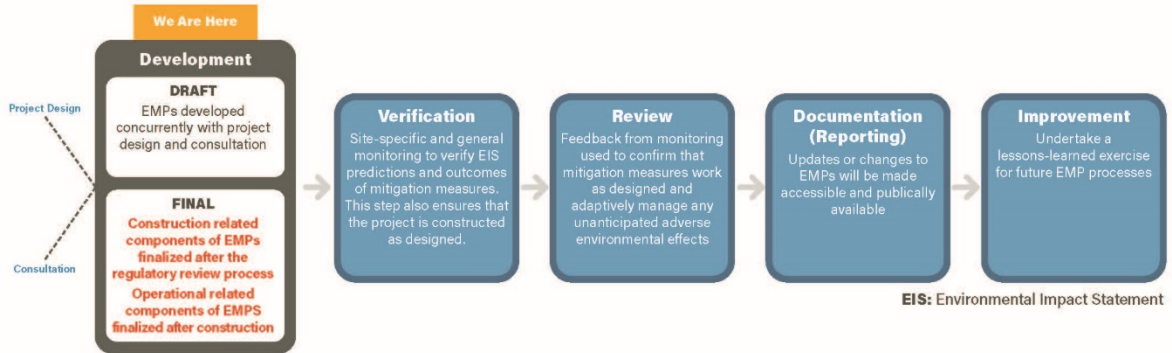
Manitoba Infrastructure (MI) is the proponent for the proposed Project. After receipt of the required regulatory approvals, MI will develop, manage and operate the Project. This Environmental Protection Plan is one component of the overall Environmental Management Program (EMP) framework which describes the environmental management processes that will be followed during the construction and operation phases of the Project. The goal of the EMP is to ensure that the environmental protection measures committed to in the Environmental Impact Statement (EIS) and the requirements of the Environment Act Licence and Federal Decision Statement Conditions are undertaken in a timely and effective manner. This includes the verification that environmental commitments are executed, monitored, and evaluated for effectiveness, and that information is reported back in a timely manner to the Project management team for adjustment if required.

Manitoba Infrastructure remains committed to ongoing engagement and consultation with Indigenous groups and other stakeholders that are potentially impacted by the Project. Detailed EMP review discussions have been incorporated into community-specific consultation work plans and additional engagement opportunities will be provided prior to EMP finalization. Engagement opportunities include virtual open house events and EMP-specific questionnaires. EMP-specific questionnaires will be provided to Indigenous groups and stakeholders to obtain feedback and views on the draft plans, in addition to exploring opportunities for Indigenous participation in follow-up monitoring. Feedback and recommendations will be used to inform the completion of the plans.

The EMP provides the overarching framework for the Construction Environmental Management Program (CEMP) and the Operation Environmental Management Program (OEMP), which will be finalized as separate documents prior to Project construction and ideally operation, respectively. Their finalization will consider applicable conditions of the Environment Act Licence and associated approvals, any other pertinent findings through the design and regulatory review processes and key relevant outcomes of the ongoing Indigenous and public engagement and Consultation processes.

The purpose of the CEMP and OEMP is to guide how environmental issues will be addressed during construction and operation, respectively, and how adverse effects of activities will be mitigated. The CEMP is supported by several specific or targeted management plans (e.g., surface water, groundwater, sediment, etc.), as shown in the Figure below, that will guide MI’s development of the Project’s contract documents and subsequently, the Contractor(s) activities, in constructing the Project in an environmentally responsible manner. The OEMP will likely include the same targeted plans developed to manage issues during construction, but prior to construction completion they would be revised and adapted to suit the specific needs during the operation phase.

Environmental Management Program (EMP) Process



EMPs

- | | |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction Environmental Management Program ¹ | Revegetation Management Plan |
| Operational Environmental Management Program ¹ | Biosecurity Management Plan |
| Environmental Protection Plan | Dust Control Plan |
| Project Environmental Requirements | Decommissioning Plan |
| Access Management Plan | Ice Management Plan |
| Quarry Management Plan | |
| Surface Water Management Plan | ¹ includes information on waste management, hazardous materials management, debris management, emergency response, heritage resources protection and wildlife protection planning |
| Ground Water Management Plan | |

**LAKE MANITOBA
LAKE ST. MARTIN**
OUTLET CHANNELS PROJECT



ACRONYMS

Acronyms

CEMP	Construction Environmental Management Program
DFO	Fisheries and Oceans Canada
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
ESS	Environmentally Sensitive Site
FDAV	forest damage appraisal and valuation
GWMP	Groundwater Management Plan
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
MB	Manitoba
MCC	Manitoba Conservation and Climate
MBCDC	Manitoba Conservation Data Centre
MI	Manitoba Infrastructure
MSD	Manitoba Sustainable Development
OEMP	Operation Environmental Management Plan
PER	Project Environmental Requirement
PR	provincial road
ROW	right-of-way
RM	rural municipality
SOCC	species of conservation concern
SWMP	Surface Water Management Plan
TC	Transport Canada

1.0 PURPOSE

Manitoba Infrastructure (MI) has developed this Environmental Protection Plan (EPP) for the Lake Manitoba and Lake St. Martin Outlet Channels Project (the “Project”). The EPP has been developed to support the Project’s compliance with regulatory requirements and conditions of approval. Specifically, the EPP:

- Provides a consolidated list of the environmental protection measures that will be implemented during the planning, site preparation and construction phases of the Project to avoid or reduce environmental effects
- Provides reference to detailed Environmental Management Plans (EMPs) and MI’s Project Environmental Requirements (PERs) to support decision making and environmental compliance during Project construction.

The environmental protection measures presented within this EPP were committed to within the environmental impact statement (EIS) and permits, licenses and approvals obtained for the Project. The environmental protection measures will be implemented throughout the Project to promote compliance with conditions of approval and reduce Project-related environmental effects.

For the operation phase, MI will develop an Operation Environmental Management Program (OEMP) prior to completion of the Project’s site preparation and construction phase. The OEMP will describe the long-term operation and maintenance procedures and environmental protection measures to be implemented after construction is complete.

1.1 Environmental Protection Plan

Appended to this document is the EPP mapbook (Appendix 1). Part of MI’s commitment to environmental protection includes a comprehensive Environmental Protection Program. This program includes the development of a EPP mapbook specific to the Project. The EPP mapbook provides site-specific environmental sensitivities and environmental protection measures. The EPP mapbook supplements the general environmental protection measures and is intended for use in the field by construction contractors and environmental staff during Project planning and construction.

More specifically, environmentally sensitive sites (ESS) have been identified for the Project. ESS are locations, features, areas, activities or facilities that were identified in the Project EIS to be ecologically, socially, economically, culturally or spiritually important or sensitive to disturbance and require protection during construction of the Project. The determination of ESS will include the consideration of Indigenous traditional knowledge.

The EPP mapbook has been developed for the Project to present the location and spatial extent of ESS. Each map has a corresponding tabular summary of information including ESS feature information and relevant mitigation measures to address the potential environmental effects at each ESS site. The mapping is an iterative process and will be updated and finalized prior to construction.

2.0 INTRODUCTION

2.1 Project Overview

The Project will develop a permanent flood control mitigation system for Lake Manitoba and Lake St. Martin for alleviating flooding in the Lake St. Martin region. This will be accomplished through construction of a new outlet channel from Lake Manitoba to Lake St. Martin (Lake Manitoba Outlet Channel) and a new outlet channel from Lake St. Martin to Lake Winnipeg (Lake St. Martin Outlet Channel). These new channels will allow for floodwaters to be moved more quickly through Lake Manitoba and Lake St. Martin into Lake Winnipeg. The Project will result in less flooding and reduced lake levels on Lake St Martin. Other works include re-alignment of Provincial Road (PR) 239 and a hydroelectric distribution line for operation of the Lake St. Martin Outlet Channel outlet structure.

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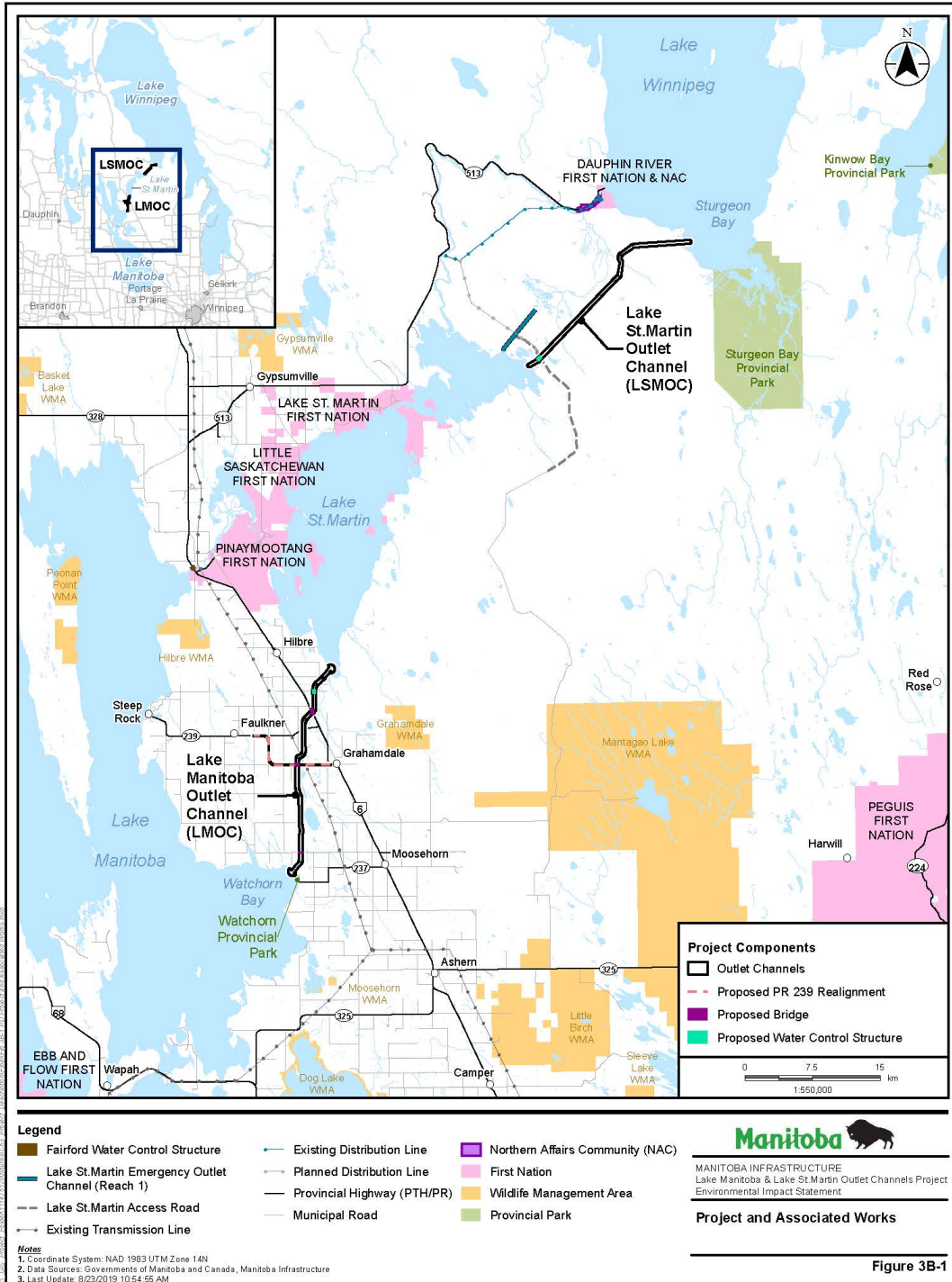


Figure 1: Project and Associated Works

2.2 Project Schedule

The overall schedule is contingent largely on receipt of the final regulatory approvals in 2020. Construction is tentatively expected to occur over a period of approximately 2.5 to 3 years from issuance of approval.

2.3 Regulatory Requirements

Relevant regulatory approvals for the Project will be obtained by MI or its contractors prior to construction. Documentation will be on site and available for the Project. Project licences, approvals, and permits are in Appendix 2.

Table 1: Federal and Provincial Acts Considered in this EPP

Federal or Provincial	Act	Guidance/Permits
Federal	<i>Canadian Environmental Assessment Act, 2012, SC 2012, c 19, s 52</i>	Project requires environmental assessment and approval.
Federal	<i>Canadian Environmental Protection Act, 1999 (S.C. 1999, c. 33, s 64, shed 1)</i>	Guidance in managing toxic/hazardous materials.
Federal	<i>The Hazardous Products Act, RS 1985 c H-3</i>	Guidance on use of hazardous products.
Federal	<i>Canada Water Act, RSC 1985, c C-11</i>	Protection of water resources, including water quality.
Federal	<i>Explosives Act, RSC 1985, c E-17</i>	Blasting activities, explosives storage and transport will need to be licensed.
Federal	<i>Federal Sustainable Development Act, S.C. 2008, c. 33</i>	Guidance on sustainable development.

Table 1: Federal and Provincial Acts Considered in this EPP

Federal or Provincial	Act	Guidance/Permits
Federal	<i>Fisheries Act, RSC 1985, c F-14</i>	Protects fish (as defined by the Act) from serious harm. Identifies general prohibitions, fisheries protections and pollution prevention, as well as requirements for authorization of works which may cause serious harm to fish prior to construction. Includes regulations to control and prevent the introduction of aquatic invasive species.
Federal	<i>Migratory Birds Convention Act, 1994, SC 1994, c 22</i>	Permit required to kill, capture, take, buy, sell, exchange, or possess migratory birds, or remove or eliminate birds or nests.
Federal	<i>Navigation Protection Act, RSC 1985, c N-22</i>	Identifies requirements for authorization of works, and the potential for opting in for works at non-scheduled waters prior to construction.
Federal	<i>Species at Risk Act, SC 2002, c 29</i>	Provides protection for plant and animal species at risk (SAR) and their habitats
Federal	<i>Transportation of Dangerous Goods Act, 1992, SC 1992, c 34</i>	Defines methods for handling, containment and transportation of substances that could cause damage to personal safety or the environment.
Provincial	<i>The Environment Act, C.C.S.M. c. E125</i>	Defines information required to apply for licensing under <i>The Environment Act</i> .
Provincial	Onsite Wastewater Management Systems Regulation, M.R. 83/2003	Defines proper construction and permitting for onsite water management systems.
Provincial	The Crown Lands Act, C.C.S.M. c. C340	Work permits will be required.
Provincial	<i>The Dangerous Goods Handling and</i>	Identifies requirements for handling, containment and transportation of substances that could cause damage to personal safety or the environment

Table 1: Federal and Provincial Acts Considered in this EPP

Federal or Provincial	Act	Guidance/Permits
	<i>Transportation Act, C.C.S.M. c. D12</i>	
Provincial	<i>The Endangered Species and Ecosystems Act, C.C.S.M. c. E111</i>	Permit needed to kill, take, collect or capture an endangered species.
Provincial	<i>The Fires Prevention and Emergency Response Act C.C.S.M. c. F80</i>	Work camp occupancy permit required.
Provincial	<i>The Forest Act, H 39.1</i>	Permit required to enter forest land to cut or remove timber.
Provincial	<i>The Groundwater and Water Well Act, C.C.S.M. c. G110</i>	Licence required for the operator to engage in the business of drilling wells.
Provincial	<i>The Heritage Resources Act, C.C.S.M. c. H39.1</i>	A permit is required for the HRIA.
Provincial	<i>The Highway Traffic Act, SM 1985-86, c. 3</i>	Provides guidelines and requirements for vehicles and driving on Manitoba highways.
Provincial	<i>The Mines and Minerals Act, C.C.S.M. c. M162</i>	Quarry permits will be required.
Provincial	<i>The Noxious Weeds Act, C.C.S.M. c. N110</i>	Identifies noxious weeds that may adversely impact Manitoba's environment or economy.

Table 1: Federal and Provincial Acts Considered in this EPP

Federal or Provincial	Act	Guidance/Permits
Provincial	<i>The Ozone Depleting Substances Act, C.C.S.M. c. O80 1990</i>	Provides for the prevention, reduction, and eventual elimination of ozone-depleting substances.
Provincial	<i>The Pesticides and fertilizers Control Act, C.C.S.M. c. P40</i>	Application licence and Pesticide Use Permit required.
Provincial	<i>The Public Health Act, C.C.S.M. c. P210</i>	Food handling permit is required for construction camps if they have kitchen facilities.
Provincial	<i>The Climate and Green Plan Act, C.C.S.M. c C134</i>	Guidance on sustainable development.
Provincial	<i>The Waste Reduction and Prevention Act, C.C.S.M. c. W40</i>	Guidance on managing solid waste.
Provincial	<i>The Water Protection Act, C.C.S.M. c. W65</i>	Provides protection and stewardship of Manitoba's water resources and aquatic ecosystems.
Provincial	<i>The Water Resources Administration Act, C.C.S.M. c. W70</i>	Outlines a framework for the use and administration of water control works, including requirements and processes for approval of operating guidelines.

2.4 Environmental Compliance

Environmental compliance is facilitated through sharing of information, providing environmental orientation/training, hiring qualified staff, and providing on-site inspection of activities through a proactive and adaptive inspection program.

The objectives of the mitigation measures in the EPP and the EPP mapbook are:

- To apply the relevant environmental regulatory requirements and approved environmental protection measures; and,
- To put processes in place that facilitate access to Project environmental information to aid in timely proactive decision making at the field level.

2.5 Project Contacts and Responsibilities

Table 2 outlines the responsibilities of key Project roles and responsibilities for those involved in the implementation of the EPP for the Project.

Table 2: Project Contacts and Responsibilities

Project Role	Responsibilities
Impact Assessment Agency	Issuance and compliance enforcement of approval conditions.
Manitoba Conservation and Climate	Issuance and compliance enforcement of Environment Act Licence conditions.
MI Project Manager	Planning, communication, procurement, and site management.
MI Environment Lead	Manage environmental components of the Project including field work, management plans, and regulatory approvals, reporting, and correspondence. Inform contractors of the environmental sensitivities and environmental protection measures prior to construction.
Construction Supervisor	Site planning and management, communication, procurement, and implementation of environmental protection measures and PERs, ensure adequate training of construction staff, reporting.
Construction Staff	Implementing environmental protection measures and PERs, and reporting non-compliances, accidents and/or incidents to the construction supervisor and environmental inspector.
Environmental Inspector	Confirming and supporting contractors with implementation of environmental protection measures and regulatory compliance. Communication and reporting.

3.0 ENVIRONMENTAL PROTECTION MEASURES

3.1 Project Planning

The following environmental protection measures presented in Table 3 were committed to within the EIS and will be implemented during Project planning and before the start of site preparation and construction activities.

Table 3: Environmental Protection Measures – Project Planning

Activity/Concern	Environmental Protection Measures
Approvals, Licenses and Permits	<ol style="list-style-type: none"> 1. All necessary licenses and permits will be obtained prior to commencement of construction. 2. Copies of necessary licenses and permits, as well as this EPP must always be onsite and readily available.
Notifications	<ol style="list-style-type: none"> 3. MI will provide Project development information on their website. 4. MI will continue to share Project information with public, interested stakeholders, rural municipalities (RMs), local communities, service providers, businesses, Indigenous groups and Indigenous business operators so that advanced planning can occur (e.g., so that detours can be communicated to residents and mitigate travel delays). 5. A schedule of construction and Project activities will be made available to interested stakeholders, and Indigenous groups that were engaged on the Project, so that sensitive areas and time periods of activity can be avoided. 6. Government agencies with jurisdiction in the Project area will be notified prior to construction. Landowners, lessees and other project stakeholders that may be affected by construction activities will also be notified. 7. Click Before You Dig MB, third party utility companies and municipalities having utilities or infrastructure/assets in the vicinity of construction must be notified prior to the commencement of construction. 8. MI will continue to share Project information with entities responsible for underground and above-ground utilities (e.g., the RM of Grahamdale, Manitoba Hydro), and will coordinate any utility re-routing as part of Project construction. 9. Notices to boaters, involving the posting of signage (i.e., danger, do not trespass warnings) will be implemented to communicate with boaters that the channels are not to be used for navigation.

Table 3: Environmental Protection Measures – Project Planning

Activity/Concern	Environmental Protection Measures
Emergency Response Planning	10. An Emergency Response Plan will be developed by the contractor during the Project planning stage and shared with Project personnel prior to construction. The plan will include measures to address emergency response communications, 24-hour emergency transport to hospital for occupational and non-occupational injuries and a plan for fire response and evacuation. Contractors will also be required to have emergency response plans in place.
Pre-job Training, Meetings, and Orientation	11. 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. 12. Orientation information will outline, for example, potential species at risk, biosecurity management, and typical heritage resource materials that could be observed as well as reporting procedures. 13. All workers will be required to work in a safe manner and complete health, safety, and environment training.
Pre-construction environmental surveys	14. If clearing is scheduled to occur within the nesting period (April 1 to August 31), a nest survey may be undertaken by a qualified wildlife biologist if warranted. In the event an active nest is found, it will be subject to site-specific mitigation measures (i.e., clearly marked protective buffer around the nest and/or non-intrusive monitoring) as described in Appendix 3.
Traditional Land Use Considerations	15. Opportunities will be provided for interested Indigenous groups to harvest traditionally used plants prior to construction. 16. MI will engage with Indigenous groups throughout construction and operation regarding mitigations to changes to cultural value or importance.
Surveying, Flagging, and Staking	17. The work area will be clearly staked or marked prior to clearing and construction. 18. Clearly identify and install exclusionary flagging or fencing, as appropriate, around environmentally sensitive sites (ESS) (e.g., dens, roosts, stick nests, hibernacula) or sensitive habitats prior to clearing and construction and evaluate features for additional mitigation measures (e.g., setbacks). See Appendix 1 EPP mapbook for specific locations of ESS.
Workforce	19. Project contractors and subcontractors will hire local trades and related workers. Non-local workers will be hired to meet labour requirements.

Table 3: Environmental Protection Measures – Project Planning

Activity/Concern	Environmental Protection Measures
	<p>20. MI will work with First Peoples Development Inc., a non-profit organization that connects First Nations Sub-Agreement Holders with employment and training initiatives, to identify and explore opportunities for working with Indigenous groups on MI projects.</p> <p>21. Construction, operation and maintenance personnel will undertake activities in such a way to avoid affecting neighbouring properties, structures or operations.</p>

3.2 Site Preparation and Construction

3.2.1 Lake Manitoba Outlet Channel

The environmental protection measures that were committed to within the EIS are presented in Table 4 and are applicable to all Project activities associated with the site preparation and the construction phase for the LMOC. However, many of these environmental protection measures are based on best management practices and are universally applicable to all Project components regardless of environmental issue or construction activity.

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
General	<ol style="list-style-type: none"> 1. MI will provide Project development information on their website. 2. Construction, operation and maintenance personnel will undertake activities in such a way to avoid affecting neighbouring properties, structures or operations. 3. Manitoba Hydro to determine and undertake the regulatory and permitting requirements for distribution line development, construction, and operation/maintenance. 4. Notices to boaters, involving the posting of signage (i.e., danger, do not trespass warnings) will be implemented to communicate with boaters that the channels are not to be used for navigation. 5. MI will communicate the schedule of Project activities throughout the construction and operation phases to affected local resource users and Manitoba Conservation and Climate (MCC) Regional representatives.

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<ol style="list-style-type: none"> 6. MI will continue to share Project information with the RMs, First Nations, local communities, service providers and businesses in the area about the construction workforce and timing of construction activities. 7. Locations of past personal permit areas (timber) will be identified to prevent damage from construction activities (e.g., errant construction equipment). 8. Loss of Crown productive forestland (if present) from channel clearing will require compensation to be paid by MI to MCC Forestry and Peatlands Management Branch based on the forest damage appraisal and valuation (FDAV) policy. <ul style="list-style-type: none"> – MCC’s FDAV policy identifies the parameters for the calculation of financial compensation, due to the Crown, or the removal of timber and the effect on high value silvicultural investments on productive Crown forestlands. – MCC Forestry and Peatlands Management Branch assesses a Timber Damage Appraisal Assessment for the merchantable timber found within a project area. – the appraisal takes into account the area of disturbance and the associated cost to re-establish the timber; the timber volumes and dues, the forest renewal charge and fire protection charges (MSD 2017b). 9. An Emergency Response Plan will be developed for the Project and shared with Project personnel. The plan will include measures to address emergency response communications, 24-hour emergency transport to hospital for occupational and non-occupational injuries and a plan for fire response and evacuation. Contractors will also be required to have emergency response plans in place. 10. MI will continue to share Project information with the RMs, First Nations, local communities and stakeholders in the area during construction so that detours can be communicated to residents and mitigate travel delays. 11. A Traffic Management Plan will be prepared for the Project, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays. 12. The contractor will be responsible for repairing roads if they are damaged during construction. 13. MI will continue to share Project information with entities responsible for underground and above-ground utilities (e.g., the RM of Grahamdale,

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>Manitoba Hydro), and will coordinate any utility re-routing as part of Project construction.</p> <p>14. MI will consider requiring self-provision of communications infrastructure for construction contracts.</p>
<p>Access Management</p>	<p>15. An Access Management Plan has been developed to manage access during the construction phase of the Project and should be referenced for access planning and requirements.</p> <p>16. A Traffic Management Plan will be prepared for the Project, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays.</p> <p>17. Through the Access Management Plan, MI will accommodate local land use and consider limitations to access for individual farm operations.</p> <p>18. There shall be no entry of personnel or equipment, or work conducted on private property without proper authority.</p> <p>19. Project-related vehicle traffic will be reduced by use of multi-passenger vehicles where feasible.</p> <p>20. Transportation of workers between construction camp/accommodations and worksites will be done in groups (e.g., using buses) to reduce the potential number of vehicles on the road network.</p> <p>21. Construction access will be restricted to existing roads, trails, or cut-lines when possible.</p> <p>22. Appropriate signage shall be erected to restrict access to authorized personnel where access routes are accessible by the public.</p> <p>23. Signs indicating potential areas of thin ice will be used at LMOC inlet and outlet areas in accordance with Transport Canada requirements.</p> <p>24. Signage will be implemented in the Project footprint to alert local resource users of Project construction activities and the presence of Project facilities.</p> <p>25. Vehicle speeds will not exceed posted speed limits and wildlife warning signs will be installed where appropriate.</p> <p>26. Temporary detours will be used to maintain access through the LMOC construction area to reduce/avoid potential effects on access interruption and maintain access for emergency medical services.</p> <p>27. Access roads not required for on-going maintenance will be restored to their original condition as soon as feasible following construction.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>28. The acquisition of lands for the Project will be conducted through expropriation and governed by <i>The Expropriation Act</i>.</p> <p>29. Access routes not required for ongoing maintenance will be leveled to natural or pre-existing grade and slope as part of decommissioning.</p> <p>30. Other than initial mobilization, de-mobilization, and transportation of construction materials Project construction-related traffic will be restricted to the Project footprint and associated temporary access routes to the extent practical and required.</p> <p>31. Sections of municipal roads will be reconstructed, realigned or extended to provide access across the LMOC at the bridge crossings to be constructed.</p> <p>32. The contractor will be responsible for repairing roads if they are damaged during construction.</p>
<p>Equipment Requirements</p>	<p>33. All construction equipment is required to be cleaned and decontaminated prior to arriving on site and before moving between work areas at different lakes and drainages. See the Agricultural Biosecurity Management Plan for additional details.</p> <p>34. Construction equipment shall be kept in good working order and free of fuel, oil or fluid leaks. Construction equipment that is found to be leaking any fuel, oil or other fluids shall be moved off the work site immediately for repairs.</p> <p>35. All construction equipment supplied for use on the Project shall be effectively “sound-reduced” by means of proper silencers, mufflers, acoustic linings, acoustic shields or acoustic sheds.</p> <p>36. Construction equipment and factory-supplied noise-abatement equipment (e.g., mufflers) must be maintained in good working order, and machinery idling will be minimized.</p> <p>37. Construction equipment will comply with emission standards in the Canadian Off-Road Compression-Ignition Engine Emission Regulations (Government of Canada 2019a). Engines and exhaust systems will be properly maintained. Equipment that shows excessive emissions of exhaust gases will not be operated until corrective repairs or adjustments are made.</p> <p>38. Construction vehicle idling times will be reduced to the extent possible to reduce emissions, as a best management practice.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>39. The concentration of sulphur in diesel fuel shall not exceed 15 mg/kg to comply with Sulphur in Diesel Fuel Regulations (Government of Canada 2019b).</p> <p>40. Cold starts will be limited to the extent possible to reduce emissions.</p> <p>41. All vehicles used to haul materials to or from the work site shall have the load covered with a tarpaulin cover during transport to minimize dust and prevent material loss.</p> <p>42. All vehicles and construction equipment must maintain and have spill control and clean-up equipment readily accessible.</p> <p>43. Any operation of construction equipment beyond dates or times as specified or regulated by applicable by-laws or adjacent communities or municipal authorities shall require an exemption in writing.</p> <p>44. A spill kit or sufficient supply of materials for clean-up or spill containment (i.e., absorbent material, high density polyethylene groundsheets and absorbent oil booms when working near water) will always be available on site and replenished as needed. If necessary, additional material will be made available at short notice.</p> <p>45. All internal-combustion engines (regardless of fuel type) will be shut down during fueling.</p>
<p>Clearing and Grubbing</p>	<p>46. Work area will be clearly staked or marked prior to clearing or grubbing. Clearing and grubbing will be limited to these staked or marked areas unless otherwise approved.</p> <p>47. Clearing will not occur between April 1 and August 31 to avoid disturbance to nesting birds and other wildlife (Environment and Climate Change Canada 2018a).</p> <p>48. Feathering the ROW edge during vegetation management will maintain taller trees and shrubs along the edge of the ROW and reduce the extent of edge effects.</p> <p>49. Treed habitats will be retained where safe and technically feasible to do so. If removal is required, removal activities will be scheduled, to the extent practical, outside the core maternity roosting season for bats (May 15 to August 31; Ontario Ministry of Natural Resources and Forestry 2014). If tree clearing is required during the maternity roosting period, a qualified biologist will review the trees to determine the likelihood of occupancy before removal.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction
Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>50. Remove and save snags (i.e., standing dead trees) containing nesting cavities or having potential to support nesting cavities along portions of the ROW that will be cleared. Snags saved prior to land clearing will be erected post-construction along new ROW edges in areas supporting potential red-headed woodpecker habitat.</p> <p>51. Removal of riparian vegetation will be minimized, to help maintain the stability of waterbody banks. The area over which vegetation in riparian areas is removed will affect no more than one third (1/3) of the total woody vegetation in the ROW within 30 m of the ordinary high-water mark of the waterbody. Vegetative root masses found within the waterbody banks will remain undisturbed unless specified.</p> <p>52. Clearing, grubbing and burning operations will be undertaken in accordance with the applicable Provincial and Municipal regulations and Acts.</p> <p>53. All brush and trees, except those designated to be saved shall be cut level with the ground unless otherwise authorized by the Engineer. All surface debris, excluding merchantable timber but including fallen timber, slash limbs, brush, grass and weeds will be disposed of in an appropriate manner.</p> <p>54. Large diameter snags will be retained where feasible/practical having potential to support red-headed woodpecker nests.</p> <p>55. If trees containing large stick nests and/or active dens or burrows are encountered, they will be left undisturbed and reported to the Environmental Inspector. The Environmental Inspector will protect these sensitive wildlife features by applying the appropriate buffer as per Appendix 3. Findings will be reported to the Natural Resources Officer.</p> <p>56. Trees will be felled towards the center of the area to be cleared. Any brush falling outside the area to be cleared will be moved back into the work area immediately.</p> <p>57. Cleared vegetation stockpiles will be dispersed to limit available fuel sources for wildfire ignition and spread.</p> <p>58. Slash shall be piled in a manner that allows for clean, efficient burning of all material. Soil shall not be mixed into slash.</p> <p>59. Harvested merchantable timber will be cleared of limbs and neatly stockpiled within the work limits.</p> <p>60. Hand clearing is required for when within 30 m of a waterbody and will occur during dry or frozen conditions whenever feasible.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction
Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>61. Disposal of cleared vegetation in wetlands, riparian areas, important traditional collection areas or known species of conservation concern (SOCC) locations is prohibited.</p> <p>62. Cleared trees and vegetation shall not obstruct waterways during any season and shall be kept above the ordinary high-water mark.</p> <p>63. Cleared tree and brush disposal will be undertaken in a manner approved by MI. Disposal may involve burning, compacting, piling, burying, windrowing and compacting, limbing and chipping.</p> <p>64. All stockpiled material located on Crown land shall be removed or disposed of by April 30 following clearing activities, where applicable.</p> <p>65. Grubbing will not occur within 2 m of standing timber to prevent damaging root systems of adjacent standing trees and to reduce the potential for future blow down.</p> <p>66. All grubbed organic and topsoil layers with leaf litter and root mass shall be stockpiled in appropriate locations and retained for reclamation efforts.</p> <p>67. Existing roads, road allowances, trails, portages, and other travel ways shall not be blocked or altered as a result of clearing and grubbing activities so as not to interfere with other users.</p> <p>68. There will be no bulldozing of trees or woody debris into standing timber.</p> <p>69. Loss of Crown productive forestland (if present) from channel clearing will require compensation to be paid by MI to MCC's Forestry and Peatlands Management Branch based on the FDAV policy.</p> <ul style="list-style-type: none"> – MCC's FDAV policy identifies the parameters for the calculation of financial compensation, due to the Crown, or the removal of timber and the effect on high value silvicultural investments on productive Crown forestlands. – MCC Forestry and Peatlands Management Branch assesses a Timber Damage Appraisal Assessment for the merchantable timber found within a project area. – the appraisal takes into account the area of disturbance and the associated cost to re-establish the timber; the timber volumes and dues, the forest renewal charge and fire protection charges (MSD 2017b).

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
<p>Burning</p>	<p>70. A burning permit is required for open fires between April 1 and November 15. Burn permits may not be issued in dry conditions. The applicable regulator will be advised prior to any burning between November 16 and March 31. All fires will be completely extinguished by March 31.</p> <p>71. Wood and brush piled for burning will be located at least 15 m from other wood and brush piles or standing timber. If piles are windrowed for burning a 15 m break in the windrow should occur for every 100 m of length. Slash will be piled in a manner that allows for clean, efficient burning of all material. Avoid mixing soil into the slash.</p> <p>72. In the event that a wildfire occurs, it will be immediately reported to the Engineer and to Manitoba Conservation and Climate at 1-800-782-0076.</p> <p>73. All reasonable steps will be taken in order to prevent a fire from burning out of control or spreading from land owned or occupied for construction purposes.</p> <p>74. In the event that a wildfire is identified where construction activities are taking place, all reasonable attempts will be made in order to extinguish the wildfire. All available equipment, services and labor will be made available at the disposal of an officer for the purposes of wildfire protection operations.</p> <p>75. All construction and related activities taking place in the vicinity of a wildfire will cease until advised by the Engineer that it is safe to resume operations.</p>
<p>Soil Handling and Management</p>	<p>76. Stripped topsoil will be stored and used in the reclamation of the site.</p> <p>77. Mineral and organic topsoil horizons (i.e., O, LFH, A horizons) will be stripped and salvaged separately from subsoils to prevent admixing and stockpiled separately for later use in reclamation of disturbed areas, including temporary and permanent Project components. Only necessary volumes of topsoil will be stripped and stockpiled.</p> <p>78. Segregate better quality upper subsoil from poorer quality subsoil (i.e., cemented till) using separate lifts where subsoil is required for recontouring sites to be reclaimed. These lifts will be stockpiled separately for potential, future reclamation activities, as required. Only necessary volumes of upper subsoil will be excavated and stockpiled.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>79. If compaction of soils occurs beyond the Project footprint in areas under agricultural use, additional mitigation and rehabilitation measures will be identified.</p> <p>80. Salvaged and stockpiled organics and soils shall be spread back over the area from which they originated and seeded immediately following construction. If local soils are not available, other organic-based covers may be used to allow seed germination.</p> <p>81. Soil stockpiles will be stabilized by contouring (adhering to Project design side-slopes) and revegetation. If necessary, soil tackifiers, erosion blankets or other means will be used to control erosion prior to revegetation.</p> <p>82. Topsoil will be salvaged, temporarily stored, and spread over containment dikes to be used as a seed bed.</p> <p>83. Spoil piles, overburden and topsoil will not be placed within 100 m of any waterbody’s ordinary high-water mark.</p> <p>84. Spoil piles will be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.</p> <p>85. Topsoil in designated areas shall be stripped and stockpiled for later reuse in site restoration. Granular material or other surface preparation, as approved by the Engineer, shall be placed to ensure all weather accessibility.</p> <p>86. Halting work in adverse weather.</p>
<p>Excavation</p>	<p>87. Excavations will be limited to the minimum areas required to efficiently convey water into and out of the channels.</p> <p>88. Excavation spoil will be transferred to upland areas away from streams and waterbodies.</p> <p>89. Channel excavation will be limited to defined ROWs and associated access routes.</p> <p>90. Excavation will be completed within dewatering cofferdams, as required, so that excavations can be undertaken “in-the-dry”.</p> <p>91. Work at stream crossing locations will be completed during low flow or frozen conditions when feasible.</p> <p>92. Excavation within wetlands will be completed during dry or frozen conditions whenever feasible.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>93. Exclusionary fencing shall be installed around open excavations near wetlands when and where there is potential for entrapment of amphibians or other wildlife species.</p> <p>94. Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures, and operations.</p>
<p>Erosion and Sediment Control</p>	<p>95. A Sediment Management Plan has been developed and describes measures to minimize impacts of in-stream sediment during the construction phase of the Project. This plan should be referenced for planning purposes and detailed mitigation requirements.</p> <p>96. Where required, erosion and sediment control measures shall be properly installed before starting any work to prevent undesirable soil movement or the entry of sediment into any waterbody or wetland.</p> <p>97. Erosion and sediment control measures shall be inspected by the Engineer, and maintained by the Contractor daily, as well as during and after every major rain, runoff or spring melt event. Any necessary repairs and adjustments shall be made immediately to ensure that measures are effective in controlling erosion and sedimentation.</p> <p>98. All material stockpiles or spoil piles prone to wind erosion will be maintained as to minimize release of particulate matter or dust. This may include, but is not limited to, covering or stabilization of material stockpiled at the work site as required.</p> <p>99. Channels are to be constructed “in-the-dry” and will only be connected to upstream and downstream lakes once all in-channel erosion and sediment control measures have been installed.</p> <p>100. Any work that cannot be completed “in-the-dry” will be isolated if conducted outside sensitive timing windows for fish.</p> <p>101. Erosion and sediment control measures including maintenance of vegetation cover, where possible, long-term, temporary or emergency stabilization of soil, other erosion and sediment controls (e.g., erosion control blankets), setback of soil stockpiles from waterbodies, revegetation of disturbed areas, and runoff diversion to prevent undesirable soil movement or soil releases and discharges to a waterbody.</p> <p>102. Silt curtains should be installed around excavation areas as required.</p> <p>103. Channel bottom sediments should be compacted to the extent possible and rip-rap should be installed on channel sides where necessary.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>104. Install matting if working within wetlands unless the work is in dry or frozen conditions. If working during wet conditions, an Environmental Monitor will be on site.</p> <p>105. Vegetation cover within the work limits shall be preserved for as long as possible or left undisturbed if it does not inhibit work. All vegetated areas that are to be preserved or undisturbed shall be clearly staked and/or marked.</p> <p>106. Erosion and sediment control measures shall be maintained in all disturbed sites until soils have stabilized and complete revegetation of all disturbed areas is achieved as approved by the Engineer.</p> <p>107. Excavation of the inlet/outlet will be completed in a manner where suspension and transport of lakebed sediments is minimized and/or prevented.</p>
<p>Quarry Management and Blasting</p>	<p>108. All quarry operations are required to comply with the Quarry Management Plan.</p> <p>109. The Contractor shall comply with all legislation, licenses, authorizations and permits respecting the Project and quarries.</p> <p>110. Quarries shall be developed in accordance with the site plan submitted to the Engineer prior to the beginning of construction and, where applicable, the immediate quarry area plan provided to Manitoba Conservation and Climate as part of the work permit.</p> <p>111. Rock, aggregate and limestone will be obtained from existing quarries where possible.</p> <p>112. Quarry operations shall not encroach within 15 meters of any property boundary adjoining, private, municipal, or Crown leased land.</p> <p>113. Residents near construction noise-generating activities will proactively be notified. Temporary noise abatement barriers may be used to reduce noise levels. If noise abatement barriers are ineffective, a temporary reduction in the intensity of construction activities should be considered.</p> <p>114. Blasting activities shall adhere to set-back and charge sizes that comply with Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998).</p> <p>115. No blasting will be permitted within close (approximately 1 km) of known sensitive wildlife habitat during critical lifecycle periods.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>116. Surveys are required to determine presence or absence of bank swallows and or common nighthawk nests prior to reinstating a quarry or borrow site. Suspend work and contact the Engineer for further advice if nests are discovered.</p> <p>117. Blasting will comply with noise by-laws of the adjacent communities and municipal authorities.</p> <p>118. Use of ammonium nitrate-fuel oil mixtures as explosives is prohibited.</p> <p>119. Minimize blast charge weights and subdivide each charge into a series of smaller charges with a minimum 25 millisecond delay between charge detonations where necessary.</p> <p>120. Blasting mats will be placed over top of blast holes to minimize blast debris where necessary.</p> <p>121. Blast holes shall be back-filled with sand or gravel to grade to confine the blast where necessary.</p> <p>122. The Contractor shall possess all required blasting permits and certificates. Advanced notification shall be given to affected parties including site employees and the local general public prior to each blasting event.</p> <p>123. Reclamation of temporary construction areas and aggregate/quarry sites would occur following the completion of construction once the sites are no longer needed for operation and maintenance and would be expected to follow those measures in place at the time of remediation/decommissioning and in full compliance with legislation and regulatory standards.</p>
<p>Bridges, Water Control Structures, and Drop Structures</p>	<p>124. A Surface Water Management Plan has been developed for the Project and should be referenced for planning purposes prior working in or near water and for detailed mitigation requirements.</p> <p>125. All works must adhere to “Stream Crossing guidelines for the Protection of Fish and Fish Habitat” (Fisheries and Oceans Canada (DFO) and Manitoba Natural Resources 1996).</p> <p>126. Installation of stream crossings must only be conducted by experienced contractors.</p> <p>127. Work within stream crossings shall be conducted during low flow or frozen conditions.</p> <p>128. Isolate in-water work areas and conduct fish and mussel salvages prior to construction.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>129. Natural alignment of streams should be maintained to the extent feasible.</p> <p>130. Water flow should be maintained during in water work to permit the safe and uninterrupted passage of fish.</p> <p>131. Clear-span bridges and closed-bottom or open-bottom culverts must be installed to provide hydraulic conditions suitable for fish passage.</p> <p>132. All temporary diversions must be constructed to provide fish passage, constructed “in-the-dry”, sized to accommodate the expected diversion flow from storm, run-off, or spring melt events, and routinely inspected to identify potential erosion sites.</p> <p>133. Drainage channels and re-alignments on upgradient sides will channel water downslope and into the channels to minimize the risk of inundation and flooding as a result of channel presence.</p> <p>134. Surface drainage patterns for other Project components will be re-established where possible.</p> <p>135. The use of rip rap and gradient of side slopes will be minimized to the extent feasible to facilitate wildlife movement.</p> <p>136. Bridge structures will be designed to accommodate agriculture to the extent feasible.</p> <p>137. Transport Canada (TC) <i>Navigation Protection Act</i> approval(s) will be required for the construction of permanent or temporary waterbody crossings and/or other in-water structures. All conditions specified in the permit and other directives will apply to the work.</p>
<p>Temporary Construction Camps and Staging Areas</p>	<p>138. Siting of future temporary Project infrastructure (e.g., staging areas, construction camps, quarries) will be subject to a biophysical review to avoid ESSs or sensitive habitats.</p> <p>139. Construction camps and worksites will be kept clean and tidy. All food, garbage or waste that may attract wildlife shall be stored in an appropriate manner and be disposed of at an area which has been designated as an appropriate waste disposal site.</p> <p>140. Temporary camp sites and staging areas will be located in disturbed areas and/or using existing facilities wherever possible.</p> <p>141. Temporary staging areas will be located in the ROW wherever feasible and short shrubs and herbaceous, graminoid and non-vascular cover will be left in place, where feasible, to promote recovery of native vegetation.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>142. Designated Area(s) shall be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any designated area will be located at least 100 m away from any waterbody or wetland and will be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.</p> <p>143. Materials transported by truck will be compliant with weight restrictions, Spring Road Restrictions and geometric constraints set out by MI and the RMs of Grahamdale and West Interlake.</p> <p>144. Prior to removing temporary structures, an inspection will be conducted to determine the presence or absence of barn swallow nests. If nests are discovered, work will be suspended and the Engineer will be contacted for further advice.</p> <p>145. Land will be reclaimed and rehabilitated for equivalent agricultural land capability and use following use of these components in support of Project construction, as feasible.</p>
<p>Revegetation</p>	<p>146. A Revegetation Management Plan has been developed for the Project and should be referenced for planning purposes and prior to conducting reclamation or reseeding activities.</p> <p>147. Seeding will follow the Project-specific revegetation plan. However, seeding shall commence immediately upon completion of grading, capping and trimming operations, as conditions permit.</p> <p>148. Disturbed lands such as in areas vulnerable to erosion and sedimentation and will be seeded and/or planted in accordance with the Revegetation Management Plan. The Plan identifies locations and methods for the restoration of vegetation cover in disturbed areas.</p> <p>149. Immediately following construction and decommissioning, all salvaged and stockpiled organics and soils which were set aside during site development will be spread back over the area from which they originated and shall be seeded. If local soils are not available, other organic-based covers may be used to allow seed germination.</p> <p>150. Unless these features are being stabilized by rip-rap, channel banks, berms, dikes and ditches will be seeded with an appropriate native seed or erosion control mix as soon as feasible following construction.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>151. Add cover plantings (e.g., trees and shrubs) along select upland areas of the channels to facilitate movement of wildlife, provide escape cover and break up sight lines for species crossing the outlet channel ROWs.</p> <p>152. Where seeding is not required, temporary site locations will be left in a manner which promotes natural re-vegetation of the site.</p> <p>153. Recreation will not be allowed along the outlet channels through the life of the Project; MI will install warning signs indicating no authorized personnel where required.</p>
Dust Management	<p>154. A Dust Control Plan has been developed for the Project and should be referenced for a full listing of dust mitigation options and requirements.</p> <p>155. Only water or approved dust suppressants shall be used for dust control. The use of waste petroleum or petroleum by-products as dust suppressants is not allowed.</p> <p>156. All work shall be conducted in a manner that minimizes the raising of dust from construction.</p> <p>157. Dust suppressant application shall be limited to the roadway, driveway, or designated area.</p> <p>158. The application rate of all dust suppressants will be monitored to ensure adequate coverage without pooling or runoff of products.</p> <p>159. The amount of dust suppressant applied should not exceed the minimum amount required to effectively suppress dust.</p> <p>160. Dust suppressants must not migrate or run off the traveled portion of the roadway or designated area. Avoid over-application or application beyond the road shoulder.</p> <p>161. Dust suppressants must conform to the manufacturer's specifications and must not contain concentrations of contaminants that would not normally be found in the suppressant.</p> <p>162. Do not apply dust suppressant products if precipitation is occurring or forecast to occur before the product sets or cures.</p> <p>163. Ensure that dust suppressants do not enter and contaminate waterbodies, including surface and groundwater. Do not allow the product to leave the roadway.</p>
Water Management	<p>164. A Groundwater Management Plan (GWMP) and a Surface Water Management Plan (SWMP) have been developed for the Project and</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>should be referenced for planning purposes prior to conducting drilling activities, working in or near water, managing drainage and for detailed mitigation requirements.</p> <p>165. Groundwater monitoring in drill holes is required during drilling and channel excavation.</p> <p>166. Drill holes will be sealed as soon as possible following drilling activities or in the case of a groundwater level rise.</p> <p>167. Existing water wells within the Project footprint will be plugged and decommissioned to prevent groundwater contamination.</p> <p>168. Protection measures will be in place for sealing/grouting and pumping out drill holes in artesian well areas to prevent groundwater contamination. Refer to the Groundwater Management Plan for more information.</p> <p>169. Discharge groundwater from aquifer depressurization during construction of the LMOC to Birch Creek, Watchorn Creek, or to the lakes, wetlands, and drains to the east of the LMOC if required.</p> <p>170. Water level monitoring is required in wetlands along the outlet channels following construction. Monitoring will be completed in areas where shallow ground water is intersected and mitigated by either re-directing drainage into affected wetlands, or by modifying the outside drainage ditch design to reduce changes in wetland hydrology.</p> <p>171. Direct groundwater pumped from channels through settling ponds.</p> <p>172. Construction dewatering will be limited through appropriate construction planning and will be in accordance with terms and approval conditions of <i>The Groundwater and Water Well Act</i> and <i>The Water Rights Act</i>.</p> <p>173. Precautions will be taken where there is potential for mixing surface and groundwater to prevent interconnection of these waters.</p> <p>174. Contaminated runoff or water will be contained and prevented from entering any waterbody. The collected contaminated runoff or water will be hauled off site for disposal at an approved disposal facility.</p> <p>175. MI will engage with commercial fish harvesters, anglers and MCC Regional representatives to address potential conflict, disturbance, or access restrictions to fishing/harvesting areas in the Project footprint and availability of fish resources.</p> <p>176. South of 53rd parallel, the contractor will not undertake any in-water activities in fish bearing waters or potentially fish bearing waters between September 15 and June 30 of the following year, during periods of high</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>stream flow or identified spawning periods, unless otherwise authorized by DFO and MCC.</p> <p>177. A qualified drilling contractor with appropriate experience will be present for work in areas underlain by artesian aquifers (i.e., flowing and high-water well areas).</p> <p>178. Should situations arise where a decrease in water pressure occurs in domestic wells to noticeable levels (in comparison to the natural variability) or in livestock wells to unusable levels (for flowing wells) as a result of Project activities, appropriate measures to mitigate the resultant drop in water pressure will be implemented to ensure that potable water is available (i.e., providing landowners with new wells, pumps or temporary water during construction) as per the Groundwater Management Plan.</p> <p>179. Groundwater seepage can be mitigated by allowing seepage to either infiltrate back into the subsurface, or flow back into waterbodies via the surface drainage pathway (the channel) via provincial permit based on water quality testing.</p> <p>180. Drinking water could potentially be sourced from wells (existing permitted/licensed sources or otherwise to be permitted/licensed by contractors with approvals obtained in accordance with provincial acts and regulations) or delivered by truck from the nearest licensed/permitted water treatment facility.</p>
<p>Fuel and Waste Storage and Management</p>	<p>181. A Waste Management Plan will be prepared for the Project that will include practices for management of both general and hazardous wastes.</p> <p>182. Locations within designated areas where equipment, hazardous material and/or wastes will be stored or maintained shall be underlain with at least 30 cm of impermeable soil (i.e., till or overburden) or approved equal and lined with an impermeable groundsheet to contain spills and minimize cleanup costs.</p> <p>183. All spills (of quantities less than those defined) and without a potential impact to the environment will be contained and cleaned up immediately by on-site personnel in accordance with the approved on-site emergency response and containment plan and reported to the Engineer. See the Emergency Response Plan and Hazardous Materials Management Plan for additional details regarding spill response.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>184. Spills, leaks or releases shall be reported within 24 hours and contaminated soil shall be appropriately disposed of at a licensed facility or stored in a designated storage area to prevent secondary contamination.</p> <p>185. Designated Area(s) shall be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any Designated Area shall be located at least 100 m away from any waterbody or wetland and shall be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.</p> <p>186. Store hydrocarbon products in secondary containment and approved storage tanks.</p> <p>187. Prohibit re-fueling of machinery and storage of hydrocarbon products within 100 m from the high-water mark of waterbodies and watercourses.</p> <p>188. Soils within areas delineated as potential manure-impacted sites will be sampled and analyzed for nutrient concentrations and other pertinent parameters.</p> <p>189. Manure stockpiles should be relocated from the Project footprint prior to construction.</p> <p>190. A plan for treatment and/or disposal of impacted soils will be developed. This may include excavation and spreading of identified impacted soils onto agricultural lands outside of the LMOC construction area, as appropriate.</p> <p>191. Solid wastes generated as a result of Project-related construction and operation and maintenance phases will be regularly transferred to appropriately permitted/licensed facilities for recycling and/or disposal.</p> <p>192. Wastewater generated as a result of the Project construction (i.e., wastewater from work camps) will be stored and transferred for disposal to existing licensed facilities by qualified carriers.</p>
<p>Air Quality and Noise</p>	<p>193. Noise by-laws of the adjacent communities and municipal authorities shall be complied with.</p> <p>194. Machine idling should be minimized.</p> <p>195. A noise complaint response procedure will be implemented to address noise complaints should they arise.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>196. Residents near construction noise-generating activities will proactively be notified as required.</p> <p>197. Temporary noise abatement barriers may be used to reduce noise levels. If noise abatement barriers are ineffective, a temporary reduction in the intensity of construction activities should be considered.</p>
Light	<p>198. Lighting will be located so that the lights are not directed toward oncoming traffic on nearby roads on or off-site because of the objectionable nuisance and safety hazard this may present.</p> <p>199. Lights will be designed to avoid excessive use of the mobile flood lighting units and reduce potential effects by turning off lighting when they are not required.</p> <p>200. There will be adherence to lighting design guidelines and the lighting requirements for workspaces as enforced by Labour Canada.</p> <p>201. Full cut-off luminaire will be used wherever possible to reduce glare, light trespass, and sky glow from the Project lighting.</p> <p>202. As much as is possible, lighting will be located such that unavoidable light spill off the working area is not directed toward receptors outside of the Project footprint.</p>
Wildlife and Species of Conservation Concern (SOCC)	<p>203. Employees, workers and other staff shall not hunt, trap or harass wildlife on the construction sites.</p> <p>204. Terrestrial buffers, as identified by the Manitoba Conservation Data Centre’s (MBCDC) Recommended Development Setback Distances from Birds (MBCDC 2014) and/or Manitoba Sustainable Development’s Forest Management Guidelines for Terrestrial Buffers (Manitoba Sustainable Development 2017) will be adhered to for all applicable sites.</p> <p>205. Applicable setbacks will be applied to all known occurrences of provincially listed SOCC. Seed collection or transplanting will be conducted, in consultation with Manitoba Conservation and Climate, if occurrences cannot be avoided.</p> <p>206. To reduce the possibility of vehicle collisions with wildlife, vehicle speed will not exceed posted speed limits and wildlife warning signs will be installed where appropriate.</p> <p>207. No person will take or be in possession of or willfully destroy the nest or eggs of birds.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>208. No person will remove, disturb, spring or in any way interfere with any trap set out lawfully by any other person for the purpose of taking furbearing animals.</p> <p>209. Wildlife habitat will not be destroyed or damaged, except pursuant to a licence, permit or other authorization issued for the Project.</p> <p>210. Nuisance wildlife will be immediately reported to the Natural Resources Officer and the Engineer.</p> <p>211. The contractor will not remove, destroy or disturb species pursuant to Manitoba Regulation 25/98, or any future amendment thereof, respecting threatened, endangered and extirpated Species, or species listed in the federal <i>Species at Risk Act</i>.</p> <p>212. Applicable setbacks will be applied to all known occurrences of provincial listed SOCC. Where avoidance of SOCC is not possible, construction in sensitive areas will be restricted to the winter months (outside of the growing season).</p>
<p>Pest Management</p>	<p>213. Use of pesticides/herbicides will be restricted in areas of known SOCC.</p> <p>214. An integrated pest management approach will follow MI (2016) for controlling weeds, invasive non-native species and pests. Control methods may include mowing, controlled burns and pesticide application. Pesticides may be considered for areas with dangerous noxious weeds or invasive species not resolvable by other control methods. Only pesticides approved for use by provincial legislation will be used and application will be by licensed personnel.</p> <p>215. Construction will comply with the provincial aquatic invasive species regulations (<i>The Fisheries Act</i>).</p>
<p>Heritage Resources</p>	<p>216. The Historic Resources Branch will be informed immediately if any heritage resources, or objects thought to be heritage resources, are discovered during site preparation and construction.</p> <p>217. Protective barriers will be placed around heritage resource sites that are inadvertently found during construction so that the area can be protected while work proceeds.</p> <p>218. All heritage resources discovered during site preparation and construction will be left in their original position until the Project Archaeologist is contacted and provides instruction.</p>

Table 4: Lake Manitoba Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	219. The Contractor will report heritage resource materials immediately to the Construction Supervisor and will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes instruction. 220. The Heritage Resources Protection Plan will be adhered to during construction and operation phases of the Project.
Traffic Management	221. A Traffic Management Plan will be prepared for the Project, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays.

3.2.2 Lake St. Martin Outlet Channel

The environmental protection measures presented in Table 5 were committed to within the EIS and are applicable to all Project activities associated with the site preparation and the construction phase for the LSMOC. However, many of these environmental protection measures are based on best management practices and are universally applicable to all Project components regardless of environmental issue or construction activity.

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
General	<ol style="list-style-type: none"> 1. MI will provide Project development information on their website. 2. Construction, operation and maintenance personnel will undertake activities in such a way to avoid affecting neighbouring properties, structures or operations. 3. Manitoba Hydro to determine and undertake the regulatory and permitting requirements for distribution line development, construction, and operation/maintenance. 4. Notices to boaters, involving the posting of signage (i.e., danger, do not trespass warnings) will be implemented to communicate with boaters that the channels are not to be used for navigation.

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction
Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<ol style="list-style-type: none"> 5. MI will communicate the schedule of Project activities throughout the construction and operation phases to affected local resource users and MCC Regional representatives. 6. MI will continue to share Project information with the RMs, First Nations, local communities, service providers and businesses in the area about the construction workforce and timing of construction activities. 7. Locations of past personal permit areas (timber) will be identified to prevent damage from construction activities (e.g., errant construction equipment). 8. Loss of Crown productive forestland (if present) from channel clearing will require compensation to be paid by MI to MCC Forestry and Peatlands Management Branch based on the FDAV policy. <ul style="list-style-type: none"> – MCC’s FDAV policy identifies the parameters for the calculation of financial compensation, due to the Crown, or the removal of timber and the effect on high value silvicultural investments on productive Crown forestlands – MCC Forestry and Peatlands Management Branch assesses a Timber Damage Appraisal Assessment for the merchantable timber found within a project area – the appraisal takes into account the area of disturbance and the associated cost to re-establish the timber; the timber volumes and dues, the forest renewal charge and fire protection charges (MSD 2017b) 9. An Emergency Response Plan will be developed for the Project and shared with Project personnel. The plan will include measures to address emergency response communications, 24-hour emergency transport to hospital for occupational and non-occupational injuries and a plan for fire response and evacuation. Contractors will also be required to have emergency response plans in place. 10. MI will continue to share Project information with the RMs, First Nations, local communities and stakeholders in the area during construction so that detours can be communicated to residents and mitigate travel delays. 11. A Traffic Management Plan will be prepared for the Project, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays. 12. The contractor will be responsible for repairing roads if they are damaged during construction.

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<ul style="list-style-type: none"> 13. MI will continue to share Project information with entities responsible for underground and above-ground utilities (e.g., the RM of Grahamdale, Manitoba Hydro), and will coordinate any utility re-routing as part of Project construction. 14. MI will consider requiring self-provision of communications infrastructure for construction contracts.
<p>Access Management</p>	<ul style="list-style-type: none"> 15. An Access Management Plan has been developed to manage access during the construction phase of the Project and should be referenced for access planning and requirements. 16. A Traffic Management Plan will be prepared for the Project, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays. 17. Through the Access Management Plan, MI will accommodate local land use and consider limitations to access for individual farm operations. 18. There shall be no entry of personnel or equipment, or work conducted on private property without proper authority. 19. Project-related vehicle traffic will be reduced by use of multi-passenger vehicles where feasible. 20. Transportation of workers between construction camp/accommodations and worksites will be done in groups (e.g., using buses) to reduce the potential number of vehicles on the road network. 21. Construction access will be restricted to existing roads, trails or cut-lines when possible. 22. Appropriate signage shall be erected to restrict access to authorized personnel where access routes are accessible by the public. 23. Signs indicating potential areas of thin ice will be used at LSMOC inlet and outlet areas in accordance with Transport Canada requirements. 24. Signage will be implemented in the Project footprint to alert local resource users of Project construction activities and the presence of Project facilities. 25. Vehicle speeds will not exceed posted speed limits and wildlife warning signs will be installed where appropriate. 26. Temporary detours will be used to maintain access through the LSMOC construction area to reduce/avoid potential effects on access interruption and maintain access for emergency medical services.

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>27. Access roads not required for on-going maintenance will be restored to their original condition as soon as feasible following construction.</p> <p>28. The acquisition of lands for the Project will be conducted through expropriation and governed by <i>The Expropriation Act</i>.</p> <p>29. Access routes not required for ongoing maintenance will be leveled to natural or pre-existing grade and slope as part of decommissioning.</p> <p>30. Other than initial mobilization, de-mobilization, and transportation of construction materials Project construction-related traffic will be restricted to the Project footprint and associated temporary access routes to the extent practical and required.</p> <p>31. The contractor will be responsible for repairing roads if they are damaged during construction.</p>
<p>Equipment Requirements</p>	<p>32. All construction equipment is required to be cleaned and decontaminated prior to arriving on site and before moving between work areas at different lakes and drainages.</p> <p>33. Construction equipment shall be kept in good working order and free of fuel, oil or fluid leaks. Construction equipment that is found to be leaking any fuel, oil or other fluids shall be moved off the work site immediately for repairs.</p> <p>34. All construction equipment supplied for use on the Project shall be effectively “sound-reduced” by means of proper silencers, mufflers, acoustic linings, acoustic shields or acoustic sheds.</p> <p>35. Construction equipment and factory-supplied noise-abatement equipment (e.g., mufflers) must be maintained in good working order, and machinery idling will be minimized.</p> <p>36. Construction equipment will comply with emission standards in the Canadian Off-Road Compression-Ignition Engine Emission Regulations (Government of Canada 2019a). Engines and exhaust systems will be properly maintained. Equipment that shows excessive emissions of exhaust gases will not be operated until corrective repairs or adjustments are made.</p> <p>37. Construction vehicle idling times will be reduced to the extent possible to reduce emissions, as a best management practice.</p> <p>38. The concentration of sulphur in diesel fuel shall not exceed 15 mg/kg to comply with Sulphur in Diesel Fuel Regulations (Government of Canada 2019b).</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>39. Cold starts will be limited to the extent possible to reduce emissions.</p> <p>40. All vehicles used to haul materials to or from the work site shall have the load covered with a tarpaulin cover during transport to minimize dust and prevent material loss.</p> <p>41. All vehicles and construction equipment must maintain and have spill control and clean-up equipment readily accessible.</p> <p>42. Any operation of construction equipment beyond dates or times as specified or regulated by applicable by-laws or adjacent communities or municipal authorities shall require an exemption in writing.</p> <p>43. A spill kit or sufficient supply of materials for clean-up or spill containment (i.e., absorbent material, high density HDPE groundsheets and absorbent oil booms when working near water) will always be available on site and replenished as needed. If necessary, additional material will be made available at short notice.</p> <p>44. All internal-combustion engines (regardless of fuel type) will be shut down during fueling.</p>
<p>Clearing and Grubbing</p>	<p>45. Work area will be clearly staked or marked prior to clearing or grubbing. Clearing and grubbing will be limited to these staked or marked areas unless otherwise approved.</p> <p>46. Clearing will not occur between April 1 and August 31 to avoid disturbance to nesting birds and other wildlife (Environment and Climate Change Canada 2018a).</p> <p>47. Nest surveys are required to be conducted by a qualified wildlife biologist if clearing is scheduled to occur within the nesting period for owls and raptors (March 1 to August 31 [Bird Studies Canada 2019]). Found active nests will be subject to site-specific mitigation measures (e.g., clearly marked protective buffer around the nest and/or non-intrusive monitoring).</p> <p>48. Feathering the ROW edge during vegetation management will maintain taller trees and shrubs along the edge of the ROW and reduce the extent of edge effects.</p> <p>49. Treed habitats will be retained where safe and technically feasible to do so. If removal is required, removal activities will be scheduled, to the extent practical, outside the core maternity roosting season for bats (May 15 to August 31; Ontario Ministry of Natural Resources and Forestry 2014). If tree clearing is required during the maternity roosting period, a qualified</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>biologist will review the trees to determine the likelihood of occupancy before removal.</p> <p>50. Removal of riparian vegetation will be minimized, to help maintain the stability of waterbody banks. The area over which vegetation in riparian areas is removed will affect no more than one third (1/3) of the total woody vegetation in the ROW within 30 m of the ordinary high-water mark of the waterbody. Vegetative root masses found within the waterbody banks will remain undisturbed unless specified.</p> <p>51. Clearing, grubbing and burning operations will be conducted in accordance with the applicable Provincial and Municipal regulations and Acts.</p> <p>52. All brush and trees, except those designated to be saved shall be cut level with the ground unless otherwise authorized by the Engineer.</p> <p>53. If trees containing large stick nests and/or active dens or burrows are encountered, they will be left undisturbed and reported to the Environmental Inspector. The Environmental Inspector will protect these sensitive wildlife features by applying the appropriate buffer as per Appendix 3. Findings will be reported to the Natural Resources Officer.</p> <p>54. Trees will be felled towards the center of the area to be cleared. Any brush falling outside the area to be cleared will be moved back into the work area immediately.</p> <p>55. Cleared vegetation stockpiles will be dispersed to limit available fuel sources for wildfire ignition and spread.</p> <p>56. Slash shall be piled in a manner that allows for clean, efficient burning of all material. Soil shall not be mixed into slash.</p> <p>57. Harvested merchantable timber will be cleared of limbs and neatly stockpiled within the work limits.</p> <p>58. Hand clearing is required for when within 30 m of a waterbody and will occur during dry or frozen conditions whenever feasible.</p> <p>59. Disposal of cleared vegetation in wetlands, riparian areas, important traditional collection areas or known SOCC locations is prohibited.</p> <p>60. Cleared trees and vegetation shall not obstruct waterways during any season and shall be kept above the ordinary high-water mark.</p> <p>61. Cleared tree and brush disposal will be conducted in a manner approved by MI. Disposal may involve burning, compacting, piling, burying, windrowing and compacting, limbing and chipping.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>62. All stockpiled material located on Crown land shall be removed or disposed of by April 30 following clearing activities, where applicable.</p> <p>63. Grubbing will not occur within 2 m of standing timber to prevent damaging root systems of adjacent standing trees and to reduce the potential for future blow down.</p> <p>64. All grubbed organic and topsoil layers with leaf litter and root mass shall be stockpiled in appropriate locations and retained for reclamation efforts.</p> <p>65. Existing roads, road allowances, trails, portages, and other travel ways shall not be blocked or altered as a result of clearing and grubbing activities so as not to interfere with other users.</p> <p>66. There will be no bulldozing of trees or woody debris into standing timber.</p>
<p>Burning</p>	<p>67. A burning permit is required for open fires between April 1 and November 15. Burn permits may not be issued in dry conditions. The applicable regulator will be advised prior to any burning between November 16 and March 31. All fires will be completely extinguished by March 31.</p> <p>68. Wood and brush piled for burning will be located at least 15 m from other wood and brush piles or standing timber. If piles are windrowed for burning a 15 m break in the windrow should occur for every 100 m of length. Slash will be piled in a manner that allows for clean, efficient burning of all material. Avoid mixing soil into the slash.</p> <p>69. In the event that a wildfire occurs, it will be immediately reported to the Engineer and to Manitoba Conservation and Climate at 1-800-782-0076.</p> <p>70. All reasonable steps will be taken in order to prevent a fire from burning out of control or spreading from land owned or occupied for construction purposes.</p> <p>71. In the event that a wildfire is identified where construction activities are taking place, all reasonable attempts will be made in order to extinguish the wildfire. All available equipment, services and labor will be made available at the disposal of an officer for the purposes of wildfire protection operations.</p> <p>72. All construction and related activities taking place in the vicinity of a wildfire will cease until advised by the Engineer that it is safe to resume operations.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
<p>Soil Handling and Management</p>	<p>73. Stripped topsoil will be stored and used in the reclamation of the site.</p> <p>74. Mineral and organic topsoil horizons (i.e., O, LFH, A horizons) will be stripped and salvaged separately from subsoils to prevent admixing and stockpiled separately for later use in reclamation of disturbed areas, including temporary and permanent Project components. Only necessary volumes of topsoil will be stripped and stockpiled.</p> <p>75. Segregate better quality upper subsoil from poorer quality subsoil (i.e., cemented till) using separate lifts where subsoil is required for recontouring sites to be reclaimed. These lifts will be stockpiled separately for potential, future reclamation activities, as required. Only necessary volumes of upper subsoil will be excavated and stockpiled.</p> <p>76. If compaction of soils occurs beyond the Project footprint in areas under agricultural use, additional mitigation and rehabilitation measures will be identified.</p> <p>77. Salvaged and stockpiled organics and soils shall be spread back over the area from which they originated and seeded immediately following construction. If local soils are not available, other organic-based covers may be used to allow seed germination.</p> <p>78. Soil stockpiles will be stabilized by contouring (adhering to Project design side-slopes) and re-vegetation. If necessary, soil tackifiers, erosion blankets or other means will be used to control erosion prior to revegetation.</p> <p>79. Topsoil will be salvaged, temporarily stored, and spread over containment dikes to be used as a seed bed.</p> <p>80. Spoil piles, overburden and topsoil will not be placed within 100 m of any waterbody’s ordinary high-water mark.</p> <p>81. Spoil piles will be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.</p> <p>82. Topsoil in designated areas shall be stripped and stockpiled for later reuse in site restoration. Granular material or other surface preparation, as approved by the Engineer, shall be placed to ensure all weather accessibility.</p>
<p>Excavation</p>	<p>83. Excavations will be limited to the minimum areas required to efficiently convey water into and out of the channels.</p> <p>84. Excavation spoil will be transferred to upland areas away from streams and waterbodies.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>85. Channel excavation will be limited to defined ROWs and associated access routes.</p> <p>86. Excavation will be completed within dewatering cofferdams, as required, so that excavations can be conducted “in-the-dry”.</p> <p>87. Work at stream crossing locations will be completed during low flow or frozen conditions when feasible.</p> <p>88. Excavation within wetlands will be completed during dry or frozen conditions whenever feasible.</p> <p>89. Exclusionary fencing shall be installed around open excavations near wetlands when and where there is potential for entrapment of amphibians or other wildlife species.</p> <p>90. Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures, and operations.</p>
<p>Erosion and Sediment Control</p>	<p>91. A Sediment Management Plan has been developed and describes measures to minimize impacts of in-stream sediment during the construction phase of the Project. This plan should be referenced for planning purposes and detailed mitigation requirements.</p> <p>92. Where required, erosion and sediment control measures shall be properly installed before starting any work.</p> <p>93. Erosion and sediment control measures shall be inspected by the Engineer, and maintained by the Contractor daily, as well as during and after every major rain, runoff or spring melt event. Any necessary repairs and adjustments shall be made immediately to ensure that measures are effective in controlling erosion and sedimentation.</p> <p>94. All material stockpiles or spoil piles prone to wind erosion will be maintained as to minimize release of particulate matter or dust. This may include, but is not limited to, covering or stabilization of material stockpiled at the work site as required.</p> <p>95. Channels are to be constructed “in-the-dry” and will only be connected to upstream and downstream lakes once all in-channel erosion and sediment control measures have been installed.</p> <p>96. Any work that cannot be completed “in-the-dry” will be isolated if conducted outside sensitive timing windows for fish.</p> <p>97. Erosion and sediment control measures including maintenance of vegetation cover, where possible, long-term, temporary or emergency</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>stabilization of soil, other erosion and sediment controls (e.g., erosion control blankets), setback of soil stockpiles from waterbodies, revegetation of disturbed areas, and runoff diversion to prevent undesirable soil movement or soil releases and discharges to a waterbody.</p> <p>98. Vegetation cover maintenance; long-term, temporary or emergency soil stabilization; installation of erosion and sediment controls (e.g., erosion control blankets, silt fencing), setback of soil stockpiles from waterbodies, revegetation of disturbed areas, and runoff diversion should be implemented as required to reduce the potential for erosion and sedimentation.</p> <p>99. Silt curtains should be installed around excavation areas as required.</p> <p>100. Channel bottom sediments should be compacted to the extent possible and rip-rap should be installed on channel sides where necessary.</p> <p>101. Install matting if working within wetlands unless the work is in dry or frozen conditions. If working during wet conditions, an Environmental Monitor will be on site.</p> <p>102. Vegetation cover within the work limits shall be preserved for as long as possible or left undisturbed if it does not inhibit work. All vegetated areas that are to be preserved or undisturbed shall be clearly staked and/or marked.</p> <p>103. Erosion and sediment control measures shall be maintained in all disturbed sites until soils have stabilized and complete revegetation of all disturbed areas is achieved as approved by the Engineer.</p> <p>104. Excavation of the inlet/outlet will be completed in a manner where suspension and transport of lakebed sediments is minimized and/or prevented.</p>
<p>Quarry Management and Blasting</p>	<p>105. All quarry operations are required to comply with the Quarry Management Plan.</p> <p>106. The Contractor shall comply with all legislation, licenses, authorizations and permits respecting the Project and quarries.</p> <p>107. Quarries shall be developed in accordance with the site plan submitted to the Engineer prior to the beginning of construction and, where applicable, the immediate quarry area plan provided to Manitoba Conservation and Climate as part of the work permit.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>108. Rock, aggregate and limestone will be obtained from existing quarries where possible.</p> <p>109. Quarry operations shall not encroach within 15 meters of any property boundary adjoining, private, municipal, or Crown leased land.</p> <p>110. Residents near construction noise-generating activities will proactively be notified. Temporary noise abatement barriers may be used to reduce noise levels. If noise abatement barriers are ineffective, a temporary reduction in the intensity of construction activities should be considered.</p> <p>111. Quarries shall be located at least 100 m away from watercourses and waterbodies.</p> <p>112. Blasting activities shall adhere to set-back and charge sizes that comply with Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998).</p> <p>113. No blasting will be permitted within 1 km of known sensitive wildlife habitat during critical lifecycle periods.</p> <p>114. Surveys are required to determine presence or absence of bank swallows and or common nighthawk nests prior to reinstating a quarry or borrow site. Suspend work and contact the Engineer if nests are discovered.</p> <p>115. Blasting will comply with noise by-laws of the adjacent communities and municipal authorities.</p> <p>116. Use of ammonium nitrate-fuel oil mixtures as explosives is prohibited.</p> <p>117. Minimize blast charge weights and subdivide each charge into a series of smaller charges with a minimum 25 millisecond delay between charge detonations where necessary.</p> <p>118. Blasting mats will be placed over top of blast holes to minimize blast debris where necessary.</p> <p>119. Blast holes shall be back-filled with sand or gravel to grade to confine the blast where necessary.</p> <p>120. The Contractor shall possess all required blasting permits and certificates. Advanced notification shall be given to affected parties including site employees and the local general public prior to each blasting event.</p> <p>121. Reclamation of temporary construction areas and aggregate/quarry sites would occur following the completion of construction once the sites are no longer needed for operation and maintenance and would be expected to follow those measures in place at the time of</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	remediation/decommissioning and in full compliance with legislation and regulatory standards.
Bridges, Water Control Structures, and Drop Structures	<p>122. A Surface Water Management Plan has been developed for the Project and should be referenced for planning purposes prior working in or near water, managing drainage and for detailed mitigation requirements.</p> <p>123. All works must adhere to “Stream Crossing guidelines for the Protection of Fish and Fish Habitat” (DFO and Manitoba Natural Resources 1996).</p> <p>124. Installation of stream crossings must only be conducted by experienced contractors.</p> <p>125. Work within stream crossings shall be conducted during low flow or frozen conditions.</p> <p>126. Isolate in-water work areas and conduct fish and mussel salvages prior to construction.</p> <p>127. New water construction infrastructure shall be installed within lower sensitivity windows (i.e., fish spawning periods).</p> <p>128. Natural alignment of streams should be maintained to the extent feasible.</p> <p>129. Water flow should be maintained during in water work to permit the safe and uninterrupted passage of fish.</p> <p>130. Clear-span bridges and closed-bottom or open-bottom culverts must be installed to provide hydraulic conditions suitable for fish passage.</p> <p>131. All temporary diversions must be constructed to provide fish passage, constructed “in-the-dry”, sized to accommodate the expected diversion flow from storm, run-off, or spring melt events, and routinely inspected to identify potential erosion sites.</p> <p>132. Drainage channels and re-alignments on upgradient sides will channel water downslope and into the channels to minimize the risk of inundation and flooding as a result of channel presence.</p> <p>133. Surface drainage patterns for other Project components will be re-established where possible.</p> <p>134. Drop structures construction in the LSMOC must enable downstream movement of fish during most open-water flow conditions</p> <p>135. The use of rip rap and gradient of side slopes will be minimized to the extent feasible to facilitate wildlife movement.</p> <p>136. Transport Canada (TC) <i>Navigation Protection Act</i> approval(s) will be required for the construction of permanent or temporary waterbody</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	crossings and/or other in-water structures. All conditions specified in the permit and other directives will apply to the work.
<p>Temporary Construction Camps and Staging Areas</p>	<p>137. Siting of future temporary Project infrastructure (e.g., staging areas, construction camps, quarries) will be subject to a biophysical review to avoid ESSs or sensitive habitats.</p> <p>138. Construction camps and worksites will be kept clean and tidy. All food, garbage or waste that may attract wildlife shall be stored in an appropriate manner and be disposed of at an area which has been designated as an appropriate waste disposal site.</p> <p>139. Temporary camp sites and staging areas will be located in disturbed areas and/or using existing facilities wherever possible.</p> <p>140. Temporary staging areas will be located in the ROW wherever feasible and short shrubs and herbaceous, graminoid and non-vascular cover will be left in place, where feasible, to promote recovery of native vegetation.</p> <p>141. Designated Area(s) shall be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any designated area will be located at least 100 m away from any waterbody or wetland and will be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.</p> <p>142. Materials transported by truck will be compliant with weight restrictions, Spring Road Restrictions and geometric constraints set out by MI and the RMs of Grahamdale and West Interlake.</p> <p>143. Prior to removing temporary structures, an inspection will be conducted to determine the presence or absence of barn swallow nests. If nests are discovered, work will be suspended and the Engineer will be contacted for further advice.</p> <p>144. Land will be reclaimed and rehabilitated following use of these components in support of Project construction, as feasible.</p>
<p>Revegetation</p>	<p>145. A Revegetation Management Plan has been developed for the Project and should be referenced for planning purposes and prior to conducting reclamation or reseeding activities.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>146. Seeding will follow the Project-specific revegetation plan. However, seeding shall commence immediately upon completion of grading, capping and trimming operations, as conditions permit.</p> <p>147. Disturbed lands such as in areas vulnerable to erosion and sedimentation and will be seeded and/or planted in accordance with the Revegetation Management Plan. The Revegetation Management Plan will identify locations and methods for restoration of vegetation cover in disturbed areas.</p> <p>148. Immediately following construction and decommissioning, all salvaged and stockpiled organics and soils which were set aside during site development will be spread back over the area from which they originated and shall be seeded. If local soils are not available, other organic-based covers may be used to allow seed germination.</p> <p>149. Unless these features are being stabilized by rip-rap, channel banks, berms, dikes and ditches will be seeded with an appropriate native seed or erosion control mix as soon as feasible following construction.</p> <p>150. Add cover plantings (e.g., trees and shrubs) along select upland areas of the channels to facilitate movement of wildlife, provide escape cover and break up sight lines for species crossing the outlet channel ROWs.</p> <p>151. Where seeding is not required, temporary site locations will be left in a manner which promotes natural re-vegetation of the site.</p> <p>152. Recreation will not be allowed along the outlet channels through the life of the Project; MI will install warning signs indicating no authorized personnel where required.</p> <p>153. Immediately following construction and decommissioning, salvaged and stockpiled organics and soils set aside during site development will be spread back over the area from which they originated and will be seeded. If local soils are not available, other organic-based covers may be used to allow seed germination.</p> <p>154. Channel banks, berms, dikes and ditches will be seeded and revegetated with an appropriate native seed or erosion control mix to improve stability of these features, unless these features are being stabilized by rip-rap.</p>
Dust Management	<p>155. A Dust Control Plan has been developed for the Project and should be referenced for a full listing of dust mitigation options and requirements.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>156. Only water or approved dust suppressants shall be used for dust control. The use of waste petroleum or petroleum by-products as dust suppressants is not allowed.</p> <p>157. All work shall be conducted in a manner that minimizes the raising of dust from construction.</p> <p>158. Dust suppressant application shall be limited to the roadway, driveway, or designated area.</p> <p>159. The application rate of all dust suppressants will be monitored to ensure adequate coverage without pooling or runoff of products.</p> <p>160. The amount of dust suppressant applied should not exceed the minimum amount required to effectively suppress dust.</p> <p>161. Dust suppressants must not migrate or run off the traveled portion of the roadway or designated area. Avoid over-application or application beyond the road shoulder.</p> <p>162. Dust suppressants must conform to the manufacturer's specifications and must not contain concentrations of contaminants that would not normally be found in the suppressant.</p> <p>163. Do not apply dust suppressant products if precipitation is occurring or forecast to occur before the product sets or cures.</p> <p>164. Ensure that dust suppressants do not enter and contaminate waterbodies, including surface and groundwater. Do not allow the product to leave the roadway.</p>
<p>Water Management</p>	<p>165. A Groundwater Management Plan and a Surface Water Management Plan have been developed for the Project and should be referenced for planning purposes prior to conducting drilling activities, working in or near water, and for detailed mitigation requirements.</p> <p>166. Groundwater monitoring in drill holes is required during drilling and channel excavation.</p> <p>167. Drill holes will be sealed as soon as possible following drilling activities or in the case of a groundwater level rise.</p> <p>168. Existing water wells within the Project footprint will be plugged and decommissioned to prevent groundwater contamination.</p> <p>169. Protection measures will be in place for sealing/grouting and pumping out drill holes in artesian well areas to prevent groundwater contamination. Refer to the Groundwater Management Plan for more information.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>170. Water level monitoring is required in wetlands along the outlet channels following construction. Monitoring will be completed in areas where shallow ground water is intersected and re-directing drainage into affected wetlands or modify outside drainage ditch design to reduce changes in wetland hydrology.</p> <p>171. Direct groundwater pumped from channels through settling ponds.</p> <p>172. Construction dewatering will be limited through appropriate construction planning and will be in accordance with terms and approval conditions of <i>The Groundwater and Water Well Act</i> and <i>The Water Rights Act</i>.</p> <p>173. Precautions will be taken where there is potential for mixing surface and groundwater to prevent interconnection of these waters.</p> <p>174. Contaminated runoff or water will be contained and prevented entering any waterbody. The collected contaminated runoff or water will be hauled off site for disposal at an approved disposal facility.</p> <p>175. MI will engage with commercial fish harvesters, anglers and MCC Regional representatives to address potential conflict, disturbance, or access restrictions to fishing/harvesting areas in the Project footprint and availability of fish resources.</p> <p>176. South of 53rd parallel, the contractor will not undertake any in-water activities in fish bearing waters or potentially fish bearing waters between September 15 and June 30 of the following year, during periods of high stream flow or identified spawning periods, unless otherwise authorized by DFO and MCC.</p> <p>177. A qualified drilling contractor with appropriate experience will be present for work in areas underlain by artesian aquifers (i.e., flowing and high-water well areas).</p> <p>178. Should situations arise where a decrease in water pressure occurs in domestic wells to noticeable levels (in comparison to the natural variability) or in livestock wells to unusable levels (for flowing wells) as a result of Project activities, appropriate measures to mitigate the resultant drop in water pressure will be implemented to ensure that potable water is available (i.e., providing landowners with new wells, pumps or temporary water supply during construction) as per the Groundwater Management Plan.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>179. Groundwater seepage can be mitigated by allowing seepage to either infiltrate back into the subsurface, or flow back into waterbodies via the surface drainage pathway (the channel) via provincial permit based on water quality testing.</p> <p>180. Drinking water could potentially be sourced from wells (existing permitted/licensed sources or otherwise to be permitted/licensed by contractors with approvals obtained in accordance with provincial acts and regulations) or delivered by truck from the nearest licensed/permitted water treatment facility.</p>
<p>Fuel and Waste Storage and Management</p>	<p>181. A Waste Management Plan will be prepared for the Project that will include practices for management of both general and hazardous wastes.</p> <p>182. Locations within designated areas where equipment, hazardous material and/or wastes will be stored or maintained shall be underlain with at least 30 cm of impermeable soil (i.e., till or overburden) or approved equal and lined with an impermeable groundsheet to contain spills and minimize cleanup costs.</p> <p>183. All spills (of quantities less than those defined) and without a potential impact to the environment will be contained and cleaned up immediately by on-site personnel in accordance with the approved on-site emergency response and containment plan and reported to the Engineer. See the Emergency Response Plan and Hazardous Materials Management Plan for additional details regarding spill response.</p> <p>184. Spills, leaks or releases shall be reported within 24 hours and contaminated soil shall be appropriately disposed of at a licensed facility or stored in a designated storage area to prevent secondary contamination</p> <p>185. Designated Area(s) shall be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any Designated Area shall be located at least 100 m away from any waterbody or wetland and shall be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.</p> <p>186. Store hydrocarbon products in secondary containment and approved storage tanks.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>187. Prohibit re-fueling of machinery and storage of hydrocarbon products within 100 m from the high-water mark of waterbodies and watercourses.</p> <p>188. Soils within areas delineated as potential manure-impacted sites will be sampled and analyzed for nutrient concentrations and other pertinent parameters.</p> <p>189. Manure stockpiles should be relocated from the Project footprint prior to construction.</p> <p>190. Solid wastes generated as a result of Project-related construction and operation and maintenance phases will be regularly transferred to appropriately permitted/licensed facilities for recycling and/or disposal.</p> <p>191. Wastewater generated as a result of the Project construction (i.e., wastewater from work camps) will be stored and transferred for disposal to existing licensed facilities by qualified carriers.</p>
<p>Air Quality and Noise</p>	<p>192. Noise by-laws of the adjacent communities and municipal authorities shall be complied with.</p> <p>193. Machine idling should be minimized.</p> <p>194. A noise complaint response procedure will be implemented to address noise complaints should they arise.</p> <p>195. Residents near construction noise-generating activities will proactively be notified as required.</p> <p>196. Temporary noise abatement barriers may be used to reduce noise levels. If noise abatement barriers are ineffective, a temporary reduction in the intensity of construction activities should be considered.</p>
<p>Light</p>	<p>197. Lighting will be located so that the lights are not directed toward oncoming traffic on nearby roads on or off-site because of the objectionable nuisance and safety hazard this may present.</p> <p>198. Lights will be designed to avoid excessive use of the mobile flood lighting units and reduce potential effects by turning off lighting when they are not required.</p> <p>199. There will be adherence to lighting design guidelines and the lighting requirements for workspaces as enforced by Labour Canada.</p> <p>200. Full cut-off luminaire will be used wherever possible to reduce glare, light trespass, and sky glow from the Project lighting.</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>201. As much as is possible, lighting will be located such that unavoidable light spill off the working area is not directed toward receptors outside of the Project footprint.</p>
<p>Wildlife and SOCC</p>	<p>202. Employees, workers and other staff shall not hunt, trap or harass wildlife on the construction sites.</p> <p>203. Terrestrial buffers, as identified by the MBCDC’s Recommended Development Setback Distances from Birds (MBCDC 2014) and/or Manitoba Sustainable Development’s Forest Management Guidelines for Terrestrial Buffers (Manitoba Sustainable Development 2017) will be adhered to for all applicable sites.</p> <p>204. Applicable setbacks will be applied to all known occurrences of provincially listed SOCC. Seed collection or transplanting will be conducted, in consultation with Manitoba Conservation and Climate, if occurrences cannot be avoided.</p> <p>205. To reduce the possibility of vehicle collisions with wildlife, vehicle speed will not exceed posted speed limits and wildlife warning signs will be installed where appropriate.</p> <p>206. No person will take or be in possession of or willfully destroy the nest or eggs of birds.</p> <p>207. No person will remove, disturb, spring or in any way interfere with any trap set out lawfully by any other person for the purpose of taking furbearing animals.</p> <p>208. Wildlife habitat will not be destroyed or damaged, except pursuant to a licence, permit or other authorization issued for the Project.</p> <p>209. Nuisance wildlife will be immediately reported to the Natural Resources Officer and the Engineer.</p> <p>210. The contractor will not remove, destroy or disturb species pursuant to <i>Manitoba Regulation 25/98</i>, or any future amendment thereof, respecting threatened, endangered and extirpated Species, or species listed in the federal <i>Species at Risk Act</i>.</p> <p>211. Applicable setbacks will be applied to all known occurrences of provincial listed SOCC. Where avoidance of SOCC is not possible, construction in sensitive areas will be restricted to the winter months (outside of the growing season).</p>

Table 5: Lake St. Martin Outlet Channel – Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
Pest Management	<p>212. Use of pesticides/herbicides will be restricted in areas of known SOCC.</p> <p>213. An integrated pest management approach will follow MI (2016) for controlling weeds, invasive non-native species and pests. Control methods may include mowing, controlled burns and pesticide application. Pesticides may be considered for areas with dangerous noxious weeds or invasive species not resolvable by other control methods. Only pesticides approved for use by provincial legislation will be used and application will be by licensed personnel.</p> <p>214. Construction will comply with the provincial aquatic invasive species regulations (<i>The Fisheries Act</i>).</p>
Heritage Resources	<p>215. The Historic Resources Branch will be informed immediately if any heritage resources, or objects thought to be heritage resources, are discovered during site preparation and construction.</p> <p>216. Protective barriers will be placed around heritage resource sites that are inadvertently found during construction so that the area can be protected while work proceeds.</p> <p>217. All heritage resources discovered during site preparation and construction will be left in their original position until the Project Archaeologist is contacted and provides instruction.</p> <p>218. The Contractor will report heritage resource materials immediately to the Construction Supervisor and will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes instruction.</p> <p>219. The Heritage Resource Protection Plan will be adhered to during construction and operation phases of the Project.</p>
Traffic Management	<p>220. A Traffic Management Plan will be prepared for the Project, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays.</p>

3.2.3 PR 239 Realignment

The environmental protection measures presented in Table 6 were committed to within the EIS and are applicable to all Project activities associated with the site preparation and the construction phase for the PR 239 Realignment. However, many of these environmental protection measures are based on best

management practices and are universally applicable to all Project components regardless of environmental issue or construction activity.

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
<p>Access Management</p>	<ol style="list-style-type: none"> 1. An Access Management Plan has been developed to manage access during the construction phase of the Project and should be referenced for access planning and requirements. 2. A Traffic Management Plan will be prepared for the Project, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays. 3. There shall be no entry of personnel or equipment, or work conducted on private property without proper authority. 4. Access will be maintained into yard sites where possible for PR 239 road realignment. 5. Signs directing traffic to detours will be installed during construction of the realignment of PR 239 to address public safety. 6. Project-related vehicle traffic will be reduced by use of multi-passenger vehicles where feasible. 7. Transportation of workers between construction camp/accommodations and worksites will be done in groups (e.g., using buses) to reduce the potential number of vehicles on the road network. 8. Construction access will be restricted to existing roads and trails when possible. 9. Appropriate signage shall be erected to restrict access to authorized personnel where access routes are accessible by the public. 10. Signage will be implemented in the Project footprint to alert local resource users of Project construction activities and the presence of Project facilities. 11. Vehicle speeds will not exceed posted speed limits and wildlife warning signs will be installed where appropriate. 12. Access roads not required for on-going maintenance will be restored to their original condition as soon as feasible following construction. 13. The acquisition of lands for the Project will be conducted through expropriation and governed by <i>The Expropriation Act</i>. 14. Access routes not required for ongoing maintenance will be leveled to natural or pre-existing grade and slope as part of decommissioning. 15. Other than initial mobilization, de-mobilization, and transportation of construction materials Project construction-related traffic will be restricted to

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>the Project footprint and associated temporary access routes to the extent practical and required.</p> <p>16. Sections of municipal roads will be reconstructed, realigned or extended to provide access across the LMOC at the bridge crossings to be constructed.</p> <p>17. The contractor will be responsible for repairing roads if they are damaged during construction.</p>
<p>Equipment Requirements</p>	<p>18. All construction equipment is required to be cleaned and decontaminated prior to arriving on site and before moving between work areas at different lakes and drainages. See the Agricultural Biosecurity Management Plan for additional details.</p> <p>19. Construction equipment shall be kept in good working order and free of fuel, oil or fluid leaks. Construction equipment that is found to be leaking any fuel, oil or other fluids shall be moved off the work site immediately for repairs.</p> <p>20. All construction equipment supplied for use on the Project shall be effectively “sound-reduced” by means of proper silencers, mufflers, and acoustic linings.</p> <p>21. Construction equipment and factory-supplied noise-abatement equipment (e.g., mufflers) must be maintained in good working order, and machinery idling will be minimized.</p> <p>22. Construction equipment will comply with emission standards in the Canadian Off-Road Compression-Ignition Engine Emission Regulations (Government of Canada 2019a). Engines and exhaust systems will be properly maintained. Equipment that shows excessive emissions of exhaust gases will not be operated until corrective repairs or adjustments are made.</p> <p>23. Construction vehicle idling times will be reduced to the extent possible to reduce emissions, as a best management practice.</p> <p>24. The concentration of sulphur in diesel fuel shall not exceed 15 mg/kg to comply with Sulphur in Diesel Fuel Regulations (Government of Canada 2019b).</p> <p>25. Cold starts will be limited to the extent possible to reduce emissions.</p> <p>26. All vehicles used to haul materials to or from the work site shall have the load covered with a tarpaulin cover during transport to minimize dust and prevent material loss.</p> <p>27. All vehicles and construction equipment must maintain and have spill control and clean-up equipment readily accessible.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>28. Any operation of construction equipment beyond dates or times as specified or regulated by applicable by-laws or adjacent communities or municipal authorities shall require an exemption in writing.</p> <p>29. A spill kit or sufficient supply of materials for clean-up or spill containment (i.e., absorbent material, high density HDPE groundsheets and absorbent oil booms when working near water) will always be available on site and replenished as needed. If necessary, additional material will be made available at short notice.</p> <p>30. All internal-combustion engines (regardless of fuel type) will be shut down during fueling.</p>
<p>Clearing and Grubbing</p>	<p>31. Work area will be clearly staked or marked prior to clearing or grubbing. Clearing and grubbing will be limited to these staked or marked areas unless otherwise approved.</p> <p>32. Clearing will not occur between April 1 and August 31 to avoid disturbance to nesting birds and other wildlife (Environment and Climate Change Canada 2018a).</p> <p>33. Nest surveys are required to be undertaken by a qualified wildlife biologist if clearing is scheduled to occur within the breeding bird nesting period (March 1 to August 31 [Bird Studies Canada 2019]). Found active nests will be subject to site-specific mitigation measures (e.g., clearly marked protective buffer around the nest and/or non-intrusive monitoring) as described in Appendix 3.</p> <p>34. Feathering the ROW edge during vegetation management will maintain taller trees and shrubs along the edge of the ROW and reduce the extent of edge effects.</p> <p>35. Treed habitats will be retained where safe and technically feasible to do so. If removal is required, removal activities will be scheduled, to the extent practical, outside the core maternity roosting season for bats (May 15 to August 31; Ontario Ministry of Natural Resources and Forestry 2014). If tree clearing is required during the maternity roosting period, a qualified biologist will review the trees to determine the likelihood of occupancy before removal.</p> <p>36. Remove and save snags (i.e., dead standing trees) containing nesting cavities or having potential to support nesting cavities along portions of the ROW that will be cleared. Snags saved prior to land clearing will be erected post-construction along new ROW edges in areas supporting potential red-headed woodpecker habitat.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>37. Removal of riparian vegetation will be minimized, to help maintain the stability of waterbody banks. The area over which vegetation in riparian vegetation areas is removed will affect no more than one third (1/3) of the total woody vegetation in the ROW within 30 m of the ordinary high-water mark of the waterbody. Vegetative root masses found within the waterbody banks will remain undisturbed unless specified.</p> <p>38. Clearing, grubbing and burning operations will be undertaken in accordance with the applicable Provincial and Municipal regulations and Acts.</p> <p>39. All brush and trees, except those designated to be saved shall be cut level with the ground unless otherwise authorized by the Engineer. All surface debris, excluding merchantable timber but including fallen timber, slash limbs, brush, grass and weeds will be disposed of in an appropriate manner.</p> <p>40. Large diameter snags will be retained where feasibly/practical having potential to support red-headed woodpecker nests.</p> <p>41. If trees containing large stick nests and/or active dens or burrows are encountered, they will be left undisturbed and reported to the Environmental Inspector. The Environmental inspector will protect these sensitive wildlife features by applying the appropriate buffer as per Appendix 3. Findings will be reported to the Natural Resources Officer.</p> <p>42. Trees will be felled towards the center of the area to be cleared. Any brush falling outside the area to be cleared will be moved back into the work area immediately.</p> <p>43. Cleared vegetation stockpiles will be dispersed to limit available fuel sources for wildfire ignition and spread.</p> <p>44. Slash shall be piled in a manner that allows for clean, efficient burning of all material. Soil shall not be mixed into slash.</p> <p>45. Harvested merchantable timber will be cleared of limbs and neatly stockpiled within the work limits.</p> <p>46. Hand clearing is required for when within 30 m of a waterbody and will occur during dry or frozen conditions whenever feasible.</p> <p>47. Disposal of cleared vegetation in wetlands, riparian areas, important traditional collection areas or known SOCC locations is prohibited.</p> <p>48. Cleared trees and vegetation shall not obstruct waterways during any season and shall be kept above the ordinary high-water mark.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>49. Cleared tree and brush disposal will be undertaken in a manner approved by MI. Disposal may involve burning, compacting, piling, burying, windrowing and compacting, limbing and chipping.</p> <p>50. All stockpiled material located on Crown land shall be removed or disposed of by April 30 following clearing activities, where applicable.</p> <p>51. Grubbing will not occur within 2 m of standing timber to prevent damaging root systems of adjacent standing trees and to reduce the potential for future blow down.</p> <p>52. All grubbed organic and topsoil layers with leaf litter and root mass shall be stockpiled in appropriate locations and retained for reclamation efforts</p> <p>53. Existing roads, road allowances, trails, portages, and other travel ways shall not be blocked or altered as a result of clearing and grubbing activities so as not to interfere with other users.</p> <p>54. There will be no bulldozing of trees or woody debris into standing timber.</p> <p>55. Loss of Crown productive forestland (if present) from channel clearing will require compensation to be paid by MI to MCC Forestry and Peatlands Management Branch based on the FDAV policy.</p> <ul style="list-style-type: none"> – MCC’s FDAV policy identifies the parameters for the calculation of financial compensation, due to the Crown, or the removal of timber and the effect on high value silvicultural investments on productive Crown forestlands – MCC Forestry and Peatlands Management Branch assesses a Timber Damage Appraisal Assessment for the merchantable timber found within a project area – the appraisal takes into account the area of disturbance and the associated cost to re-establish the timber; the timber volumes and dues, the forest renewal charge and fire protection charges (MSD 2017b)
Burning	<p>56. A burning permit is required for open fires between April 1 and November 15. Burn permits may not be issued in dry conditions. The applicable regulator will be advised prior to any burning between November 16 and March 31. All fires will be completely extinguished by March 31.</p> <p>57. Wood and brush piled for burning will be located at least 15 m from other wood and brush piles or standing timber. If piles are windrowed for burning a 15 m break in the windrow should occur for every 100 m of length. Slash will be piled in a manner that allows for clean, efficient burning of all material. Avoid mixing soil into the slash.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>58. In the event that a wildfire occurs, it will be immediately reported to the Engineer and to Manitoba Conservation and Climate at 1-800-782-0076.</p> <p>59. All reasonable steps will be taken in order to prevent a fire from burning out of control or spreading from land owned or occupied for construction purposes.</p> <p>60. In the event that a wildfire is identified where construction activities are taking place, all reasonable attempts will be made in order to extinguish the wildfire. All available equipment, services and labor will be made available at the disposal of an officer for the purposes of wildfire protection operations.</p> <p>61. All construction and related activities taking place in the vicinity of a wildfire will cease until advised by the Engineer that it is safe to resume operations.</p>
<p>Soil Handling and Management</p>	<p>62. Stripped topsoil will be stored and used in the reclamation of the site.</p> <p>63. Mineral and organic topsoil horizons (i.e., O, LFH, A horizons) will be stripped and salvaged separately from subsoils to prevent admixing and stockpiled separately for later use in reclamation of disturbed areas, including temporary and permanent Project components. Only necessary volumes of topsoil will be stripped and stockpiled.</p> <p>64. Segregate better quality upper subsoil from poorer quality subsoil (i.e., cemented till) using separate lifts where subsoil is required for recontouring sites to be reclaimed. These lifts will be stockpiled separately for potential, future reclamation activities, as required. Only necessary volumes of upper subsoil will be excavated and stockpiled.</p> <p>65. If compaction of soils occurs beyond the Project footprint in areas under agricultural use, additional mitigation and rehabilitation measures will be identified.</p> <p>66. Salvaged and stockpiled organics and soils shall be spread back over the area from which they originated and seeded immediately following construction. If local soils are not available, other organic-based covers may be used to allow seed germination.</p> <p>67. Soil stockpiles will be stabilized by contouring (adhering to Project design side-slopes) and revegetation. If necessary, soil tackifiers, erosion blankets or other means will be used to control erosion prior to revegetation.</p> <p>68. Topsoil will be salvaged, temporarily stored, and spread over containment dikes to be used as a seed bed.</p> <p>69. Spoil piles, overburden and topsoil will not be placed within 100 m of any waterbody’s ordinary high-water mark.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>70. Spoil piles will be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.</p> <p>71. Topsoil in designated areas shall be stripped and stockpiled for later reuse in site restoration. Granular material or other surface preparation, as approved by the Engineer, shall be placed to ensure all weather accessibility.</p> <p>72. Halting work in adverse weather.</p>
Excavation	<p>73. Excavation spoil will be transferred to upland areas away from streams and waterbodies.</p> <p>74. Excavation will be completed within dewatering cofferdams, as required, so that excavations can be undertaken “in-the-dry”.</p> <p>75. Work at stream crossing locations will be completed during low flow or frozen conditions when feasible.</p> <p>76. Excavation within wetlands will be completed during dry or frozen conditions whenever feasible.</p> <p>77. Exclusionary fencing shall be installed around open excavations near wetlands when and where there is potential for entrapment of amphibians or other wildlife species.</p> <p>78. Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures, and operations.</p>
Erosion and Sediment Control	<p>79. A Sediment Management Plan has been developed and describes measures to minimize impacts of in-stream sediment during the construction phase of the Project. This plan should be referenced for planning purposes and detailed mitigation requirements.</p> <p>80. Where required, erosion and sediment control measures shall be properly installed before starting any work to prevent undesirable soil movement or the entry of sediment into any waterbody or wetland.</p> <p>81. Erosion and sediment control measures shall be inspected by the Engineer, and maintained by the Contractor daily, as well as during and after every major rain, runoff or spring melt event. Any necessary repairs and adjustments shall be made immediately to ensure that measures are effective in controlling erosion and sedimentation.</p> <p>82. All material stockpiles or spoil piles prone to wind erosion will be maintained as to minimize release of particulate matter or dust. This may include, but is not</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>limited to, covering or stabilization of material stockpiled at the work site as required.</p> <p>83. Erosion and sediment control measures including maintenance of vegetation cover, where possible, long-term, temporary or emergency stabilization of soil, other erosion and sediment controls (e.g., erosion control blankets), setback of soil stockpiles from waterbodies, revegetation of disturbed areas, and runoff diversion to prevent undesirable soil movement or soil releases and discharges to a waterbody.</p> <p>84. Vegetation cover maintenance; long-term, temporary or emergency soil stabilization; installation of erosion and sediment controls (e.g., erosion control blankets, silt fencing), setback of soil stockpiles from waterbodies, revegetation of disturbed areas, and runoff diversion should be implemented as required to reduce the potential for erosion and sedimentation.</p> <p>85. Silt curtains should be installed around excavation areas as required.</p> <p>86. Install matting if working within wetlands unless the work is in dry or frozen conditions. If working during wet conditions, an Environmental monitor will be on site.</p> <p>87. Vegetation cover within the work limits shall be preserved for as long as possible or left undisturbed if it does not inhibit work. All vegetated areas that are to be preserved or undisturbed shall be clearly staked and/or marked.</p> <p>88. Erosion and sediment control measures shall be maintained in all disturbed sites until soils have stabilized and complete revegetation of all disturbed areas is achieved as approved by the Engineer.</p>
<p>Quarry Management and Blasting</p>	<p>89. All quarry operations are required to comply with the Quarry Management Plan.</p> <p>90. The Contractor shall comply with all legislation, licenses, authorizations and permits respecting the Project and quarries.</p> <p>91. Quarries shall be developed in accordance with the site plan submitted to the Engineer prior to the beginning of construction and, where applicable, the immediate quarry area plan provided to Manitoba Conservation and Climate as part of the work permit.</p> <p>92. Rock, aggregate and limestone will be obtained from existing quarries where possible.</p> <p>93. Quarry operations shall not encroach within 15 meters of any property boundary adjoining, private, municipal, or Crown leased land.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>94. Residents near construction noise-generating activities will proactively be notified. Temporary noise abatement barriers may be used to reduce noise levels. If noise abatement barriers are ineffective, a temporary reduction in the intensity of construction activities should be considered.</p> <p>95. Quarries shall be located at least 100 m away from watercourses and waterbodies.</p> <p>96. Blasting activities shall adhere to set-back and charge sizes that comply with Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998.)</p> <p>97. No blasting will be permitted within close (approximately 1 km) of known sensitive wildlife habitat during critical lifecycle periods.</p> <p>98. Surveys are required to determine presence or absence of bank swallows and or common nighthawk nests prior to reinstating a quarry or borrow site. Suspend work and contact the Engineer for further advice if nests are discovered.</p> <p>99. Blasting will comply with noise by-laws of the adjacent communities and municipal authorities.</p> <p>100. Use of ammonium nitrate-fuel oil (ANFO) mixtures as explosives is prohibited.</p> <p>101. Minimize blast charge weights and subdivide each charge into a series of smaller charges with a minimum 25 millisecond delay between charge detonations where necessary.</p> <p>102. Blasting mats will be placed over top of blast holes to minimize blast debris where necessary.</p> <p>103. Blast holes shall be backfilled with sand or gravel to grade to confine the blast where necessary.</p> <p>104. The Contractor shall possess all required blasting permits and certificates. Advanced notification shall be given to affected parties including site employees and the local general public prior to each blasting event.</p> <p>105. Reclamation of temporary construction areas and aggregate/quarry sites would occur following the completion of construction once the sites are no longer needed for operation and maintenance and would be expected to follow those measures in place at the time of remediation/decommissioning and in full compliance with legislation and regulatory standards.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
<p>Bridges, Water Control Structures, and Drop Structures</p>	<p>106. A Surface Water Management Plan has been developed for the Project and should be referenced for planning purposes prior working in or near water, managing drainage and for detailed mitigation requirements.</p> <p>107. All works must adhere to “Stream Crossing guidelines for the Protection of Fish and Fish Habitat” (DFO and Manitoba Natural Resources 1996).</p> <p>108. Installation of stream crossings must only be by experienced contractors.</p> <p>109. Work within stream crossings shall be undertaken during low flow or frozen conditions.</p> <p>110. Isolate in-water work areas and conduct fish and mussel salvages prior to construction.</p> <p>111. New in-water infrastructure shall be installed within lower sensitivity windows (i.e., fish spawning periods).</p> <p>112. Natural alignment of streams should be maintained to the extent feasible.</p> <p>113. Water flow should be maintained during in water work to permit the safe and uninterrupted passage of fish.</p> <p>114. Clear-span bridges and closed-bottom or open-bottom culverts must be installed to provide hydraulic conditions suitable for fish passage</p> <p>115. All temporary diversions must be constructed to provide fish passage, constructed “in-the-dry”, sized to accommodate the expected diversion flow from storm, run-off, or spring melt events, and routinely inspected to identify potential erosion sites.</p> <p>116. Surface drainage patterns will be re-established where possible.</p> <p>117. The use of rip rap and gradient of side slopes will be minimized to the extent feasible to facilitate wildlife movement.</p> <p>118. Bridge structures will be designed to accommodate agriculture to the extent feasible.</p> <p>119. Transport Canada (TC) <i>Navigation Protection Act</i> approval(s) will be required for the construction of permanent or temporary waterbody crossings and/or other in-water structures. All conditions specified in the permit and other directives will apply to the work.</p>
<p>Temporary Construction Camps and Staging Areas</p>	<p>120. Construction camps and worksites will be kept clean and tidy. All food, garbage or waste that may attract wildlife shall be stored in an appropriate manner and be disposed of at an area which has been designated as an appropriate waste disposal site.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>121. Siting of future temporary Project infrastructure (e.g., staging areas, construction camps, quarries) will be subject to a biophysical review to avoid ESSs or sensitive habitats.</p> <p>122. Temporary staging areas will be located in the ROW wherever feasible and short shrubs and herbaceous, graminoid and non-vascular cover will be left in place, where feasible, to promote recovery of native vegetation.</p> <p>123. Designated Area(s) shall be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any designated area will be located at least 100 m away from any waterbody or wetland and will be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.</p> <p>124. Materials transported by truck will be compliant with weight restrictions, Spring Road Restrictions and geometric constraints set out by MI in the RMs of Grahamdale and West Interlake.</p> <p>125. Prior to removing temporary structures, an inspection will be conducted to determine the presence or absence of barn swallow nests. If nests are discovered, work will be suspended and the Engineer will be contacted for further advice.</p> <p>126. Land will be reclaimed and rehabilitated for equivalent agricultural land capability and use following use of these components in support of Project construction, as feasible.</p>
<p>Revegetation</p>	<p>127. A Revegetation Management Plan has been developed for the Project and should be referenced for planning purposes and prior to conducting reclamation or reseeding activities.</p> <p>128. Seeding will follow the Project-specific revegetation plan However, seeding shall commence immediately upon completion of grading, capping and trimming operations, as conditions permit.</p> <p>129. Disturbed lands such as in areas vulnerable to erosion and sedimentation and will be seeded and/or planted in accordance with the Revegetation Management Plan. The Revegetation Management Plan identifies locations and methods for restoration of vegetation cover in disturbed areas.</p> <p>130. Immediately following construction and decommissioning, all salvaged and stockpiled organics and soils which were set aside during site development will be spread back over the area from which they originated and shall be</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>seeded. If local soils are not available, other organic-based covers may be used to allow seed germination.</p> <p>131. Unless these features are being stabilized by rip-rap, ditches will be seeded with an appropriate native seed or erosion control mix as soon as feasible following construction.</p> <p>132. Where seeding is not required, temporary site locations will be left in a manner which promotes natural re-vegetation of the site.</p> <p>133. Immediately following construction and decommissioning, salvaged and stockpiled organics and soils set aside during site development will be spread back over the area from which they originated and will be seeded. If local soils are not available, other organic-based covers may be used to allow seed germination.</p>
Dust Management	<p>134. A Dust Control Plan has been developed for the Project and should be referenced for a full listing of dust mitigation options and requirements.</p> <p>135. Only water or approved dust suppressants shall be used for dust control. The use of waste petroleum or petroleum by-products as dust suppressants is not allowed.</p> <p>136. All work shall be undertaken in a manner that minimizes the raising of dust from construction.</p> <p>137. Dust suppressant application shall be limited to the roadway, driveway, or designated area.</p> <p>138. The application rate of all dust suppressants will be monitored to ensure adequate coverage without pooling or runoff of products.</p> <p>139. The amount of dust suppressant applied should not exceed the minimum amount required to effectively suppress dust.</p> <p>140. Dust suppressants must not migrate or run off the traveled portion of the roadway or designated area. Avoid over-application or application beyond the road shoulder.</p> <p>141. Dust suppressants must conform to the manufacturer's specifications and must not contain concentrations of contaminants that would not normally be found in the suppressant.</p> <p>142. Do not apply dust suppressant products if precipitation is occurring or forecast to occur before the product sets or cures.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>143. Ensure that dust suppressants do not enter and contaminate waterbodies, including surface and groundwater. Do not allow the product to leave the roadway.</p>
<p>Water Management</p>	<p>144. A Groundwater Management Plan and a Surface Water Management Plan have been developed for the Project and should be referenced for planning purposes prior to conducting drilling activities, working in or near water, managing drainage and for detailed mitigation requirements.</p> <p>145. Groundwater monitoring in drill holes is required during drilling.</p> <p>146. Drill holes will be sealed as soon as possible following drilling activities.</p> <p>147. Existing water wells within the Project footprint will be plugged and decommissioned to prevent groundwater contamination.</p> <p>148. Protection measures will be in place for sealing/grouting and pumping out drill holes in artesian well areas to prevent groundwater contamination. Refer to the Groundwater Management Plan for more information.</p> <p>149. Water quality must be monitored when working in or near water to confirm compliance with applicable guidelines.</p> <p>150. Construction dewatering will be limited through appropriate construction planning and will be in accordance with terms and approval conditions of <i>The Groundwater and Water Well Act</i> and <i>The Water Rights Act</i>.</p> <p>151. Precautions will be taken where there is potential for mixing surface and groundwater to prevent interconnection of these waters.</p> <p>152. Contaminated runoff or water will be contained and prevented entering any waterbody. The collected contaminated runoff or water will be hauled off site for disposal at an approved disposal facility.</p> <p>153. MI will engage with commercial fish harvesters, anglers and MCC Regional representatives to address potential conflict, disturbance, or access restrictions to fishing/harvesting areas in the vicinity of the Project, and availability of fish resources.</p> <p>154. South of 53rd parallel, the contractor will not undertake any in-water activities in fish bearing waters or potentially fish bearing waters between September 15 and June 30 of the following year, during periods of high stream flow or identified spawning periods, unless otherwise authorized by DFO and MCC.</p> <p>155. A qualified drilling contractor with appropriate experience will be present for work in areas underlain by artesian aquifers (i.e., flowing and high-water well areas).</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>156. Should situations arise where a decrease in water pressure occurs in domestic wells to noticeable levels (in comparison to the natural variability) or in livestock wells to unusable levels (for flowing wells) as a result of Project activities, appropriate measures to mitigate the resultant drop in water pressure will be implemented to ensure that potable water is available (i.e., providing landowners with new wells, pumps or temporary water supply during construction) as per the Groundwater Management Plan.</p> <p>157. Groundwater seepage can be mitigated by allowing seepage to either infiltrate back into the subsurface, or flow back into waterbodies via the surface drainage pathway (the channel) via provincial permit based on water quality testing.</p> <p>158. Drinking water could potentially be sourced from wells (existing permitted/licensed sources or otherwise to be permitted/licensed by contractors with approvals obtained in accordance with provincial acts and regulations) or delivered by truck from the nearest licensed/permitted water treatment facility.</p>
<p>Fuel and Waste Storage and Management</p>	<p>159. A Waste Management Plan will be prepared for the Project that will include practices for management of both general and hazardous wastes.</p> <p>160. Locations within Designated Areas where equipment, hazardous material and/or wastes will be stored or maintained shall be underlain with at least 30 cm of impermeable soil (i.e., till or overburden) or approved equal and lined with an impermeable groundsheet to contain spills and minimize cleanup costs.</p> <p>161. All spills (of quantities less than those defined) and without a potential impact to the environment will be contained and cleaned up immediately by on-site personnel in accordance with the approved on-site emergency response and containment plan and reported to the Engineer. See the Emergency Response Plan and Hazardous Materials Management Plan for additional details regarding spill response.</p> <p>162. Spills, leaks or releases shall be reported within 24 hours and contaminated soil shall be appropriately disposed of at a licensed facility or stored in a designated storage area to prevent secondary contamination</p> <p>163. Designated Area(s) shall be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any Designated Area shall be located at least 100 m away from any waterbody or wetland and shall</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.</p> <p>164. Store hydrocarbon products in secondary containment and approved storage tanks.</p> <p>165. Prohibit re-fueling of machinery and storage of hydrocarbon products within 100 m from the high-water mark of waterbodies and watercourses.</p> <p>166. Soils within areas delineated as potential manure-impacted sites will be sampled and analyzed for nutrient concentrations and other pertinent parameters.</p> <p>167. Manure stockpiles should be relocated from the Project footprint prior to construction.</p> <p>168. Solid wastes generated as a result of Project-related construction and operation and maintenance phases will be regularly transferred to appropriately permitted/licensed facilities for recycling and/or disposal.</p> <p>169. Wastewater generated as a result of the Project construction (i.e., wastewater from work camps) will be stored and transferred for disposal to existing licensed facilities by qualified carriers.</p>
<p>Air Quality and Noise</p>	<p>170. Noise by-laws of the adjacent communities and municipal authorities shall be complied with.</p> <p>171. Machine idling should be minimized.</p> <p>172. A noise complaint response procedure will be implemented to address noise complaints should they arise.</p> <p>173. Residents near construction noise-generating activities will proactively be notified as required.</p> <p>174. Temporary noise abatement barriers may be used to reduce noise levels. If noise abatement barriers are ineffective, a temporary reduction in the intensity of construction activities should be considered.</p>
<p>Light</p>	<p>175. Lighting will be located so that the lights are not directed toward oncoming traffic on nearby roads on or off-site because of the objectionable nuisance and safety hazard this may present.</p> <p>176. Lights will be designed to avoid excessive use of the mobile flood lighting units and reduce potential effects by turning off lighting when they are not required.</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	<p>177. There will be adherence to lighting design guidelines and the lighting requirements for workspaces as enforced by Labour Canada.</p> <p>178. Full cut-off luminaire will be used wherever possible to reduce glare, light trespass, and sky glow from the Project lighting.</p> <p>179. As much as is possible, lighting will be located such that unavoidable light spill off the working area is not directed toward receptors outside of the Project footprint.</p>
<p>Wildlife and SOCC</p>	<p>180. Employees, workers and other staff shall not hunt, trap or harass wildlife on the construction sites.</p> <p>181. Terrestrial buffers, as identified by the MBCDC Recommended Development Setback Distances from Birds (MBCDC 2014) and/or Manitoba Sustainable Development’s Forest Management Guidelines for Terrestrial Buffers (Manitoba Sustainable Development 2017) will be adhered to for all applicable sites.</p> <p>182. Applicable setbacks will be applied to all known occurrences of provincially listed SOCC. Seed collection or transplanting will be conducted, in consultation with Manitoba Conservation and Climate, if occurrences cannot be avoided.</p> <p>183. To reduce the possibility of vehicle collisions with wildlife, vehicle speed will not exceed posted speed limits and wildlife warning signs will be installed where appropriate.</p> <p>184. No person will take or be in possession of or willfully destroy the nest or eggs of birds.</p> <p>185. No person will remove, disturb, spring or in any way interfere with any trap set out lawfully by any other person for the purpose of taking furbearing animals.</p> <p>186. Wildlife habitat will not be destroyed or damaged, except pursuant to a licence, permit or other authorization issued for the Project.</p> <p>187. Nuisance wildlife will be immediately reported to the Natural Resources Officer and the Engineer.</p> <p>188. The contractor will not remove, destroy or disturb species pursuant to <i>Manitoba Regulation 25/98</i>, or any future amendment thereof, respecting threatened, endangered and extirpated Species, or species listed in the federal <i>Species at Risk Act</i>.</p> <p>189. Applicable setbacks will be applied to all known occurrences of provincial listed SOCC. Where avoidance of SOCC is not possible, construction in</p>

Table 6: PR 239 Realignment– Site Preparation and Construction Environmental Protection Measures

Activity/Concern	Environmental Protection Measures
	sensitive areas will be restricted to the winter months (outside of the growing season).
Pest Management	<p>190. Use of pesticides/herbicides will be restricted in areas of known SOCC.</p> <p>191. An integrated pest management approach will follow MI (2016) for controlling weeds, invasive non-native species and pests. Control methods may include mowing, controlled burns and pesticide application. Pesticides may be considered for areas with dangerous noxious weeds or invasive species not resolvable by other control methods. Only pesticides approved for use by provincial legislation will be used and application will be by licensed personnel.</p> <p>192. Construction will comply with the provincial aquatic invasive species regulations (<i>The Fisheries Act</i>).</p>
Heritage Resources	<p>193. The Historic Resources Branch will be informed immediately if any heritage resources, or objects thought to be heritage resources, are discovered during site preparation and construction.</p> <p>194. Protective barriers will be placed around heritage resource sites that are inadvertently found during construction so that the area can be protected while work proceeds.</p> <p>195. All heritage resources discovered during site preparation and construction will be left in their original position until the Project Archaeologist is contacted and provides instruction.</p> <p>196. The Contractor will report heritage resource materials immediately to the Construction Supervisor and will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes instruction.</p> <p>197. The Heritage Resources Protection Plan will be adhered to during construction and operation phases of the Project.</p>

4.0 MANAGEMENT AND CONTINGENCY PLANS

The management and contingency plans listed in Table 7 have been developed to reduce the risk of adverse effects on the environment, communities, as well as public health and safety. Specifically, these management plans will provide site-specific mitigation measures for known ESS and are to be used in concert with the EPP mapbook (Appendix 1). Management and contingency plan requirements may vary based on the Project component and risk of issues or unplanned events. In addition to adhering to these plans, contractors working on the Project will be required to develop, implement, and maintain their own management and contingency plans to deal with Project or site-specific issues or unplanned events.

Table 7: Management and Contingency Plan Overview

Management or Contingency Plan	Description
Access Management Plan	<p>Access Management Plan (AMP) identifies specific measures that will be undertaken to manage access to the Project site during the construction phase. The AMP will address access-related issues of concern expressed by stakeholders, the public, and Indigenous groups` during the Indigenous and Public engagement process; it also integrates any technical access-related effects on the environment. The AMP will outline how the following goals will be achieved:</p> <ul style="list-style-type: none"> • provide safe passage through the Project work area zone for the general public • provide safe, coordinated access to the Project for workers • support sustainable use through the protection of the area’s natural resources
Agricultural Biosecurity Management Plan	<p>The Agricultural Biosecurity Management Plan identifies biosecurity issues and risk sites and risk types as well as specific mitigation requirements such as landowner communication, notification, and equipment cleaning and disinfection requirements.</p>
Complaint Resolution Process	<p>The Complaint Resolution Process outlines the methods for complaint initiation, records management, and process tracking, as well as the process for complaint notification, investigation, and resolution.</p>

Table 7: Management and Contingency Plan Overview

Management or Contingency Plan	Description
Construction Decommissioning Plan	The Construction Decommissioning Plan describes the process and environmental requirements for closure and reclamation of temporary construction facilities and borrow pits.
Dust Control Plan	The Dust Control Plan describes the products to use and the methods of their application on PR 239 and other access roads used during the construction of the Project.
Emergency Response Plan	<p>The Emergency Response Plan identifies <u>how</u> the contractor(s) will build the Project in a manner that protects people and the environment. The emergency response plan will, at minimum, include:</p> <ul style="list-style-type: none"> • a response plan for spills of fuels and fluids associated with construction • a response plan for medical incidents that includes provision for 24-hour emergency transport to hospital • a plan for fire response and evacuation • a security plan • an emergency contact list and emergency notification plan for government and response agencies and communities adjacent to the right-of-way and/or impacted work sites
Environmental Protection Plan	The <u>Environmental Protection Plan</u> identifies environmental protection measures that <u>will</u> be implemented during the planning and site preparation and <u>construction</u> phases of the Project, outlines instructions for completing construction activities to avoid or reduce environmental effects, and is a reference document for MI and their consultants/team to support their decision making.
Groundwater Management Plan	The Groundwater Management Plan describes measures to take to avoid or minimize adverse effects on the groundwater quality and quantity in the vicinity of the Project. It will outline measures to manage groundwater which is brought to the surface as a result of depressurization activities, as well as measures to prevent/mitigate groundwater impacts to local well users. It will identify adaptive measures to take if the outlined monitoring reveals the need for additional steps.

Table 7: Management and Contingency Plan Overview

Management or Contingency Plan	Description
Hazardous Materials Management Plan	<p>The Hazardous Materials Management Plan describes safe practices for managing hazardous materials to protect the health and safety of employees, the public and the environment. It will, at minimum, include:</p> <ul style="list-style-type: none"> • spill response guidelines • hazardous waste management guidelines • managing specific hazardous materials
Heritage Resources Protection Plan	<p><i>Under development at the time of this writing.</i></p>
Quarry Management Plan	<p>The Quarry Management Plan describes how quarries will be developed, operated and decommissioned (where applicable). This plan will build upon the requirements listed in the PERs to ensure that quarrying activities are undertaken in accordance with all applicable permitting requirements and commitments made in the Project’s Environmental Impact Statement. This will also include details on the transport and storage of explosives and measures to ensure advanced planning and notice for blasting activities, such as requirements for contractor submissions.</p>
Revegetation Management Plan	<p>The Revegetation Management Plan identifies the locations and methods of providing new or restoring existing vegetation cover through the process of describing:</p> <ul style="list-style-type: none"> • areas affected by construction of the Project • areas designated for revegetation treatments, such as sites along the side slopes of the Lake Manitoba and Lake St. Martin outlet channels • the approach for determining rehabilitation treatments for specific, disturbed areas • the rehabilitation treatment options for regenerating vegetation in disturbed areas, including methods for site preparation that will contribute to revegetation success • how the rehabilitation will be implemented • how the rehabilitated areas will be monitored, the process for how improvements, if required, will be made, and how and to whom the results will be reported

Table 7: Management and Contingency Plan Overview

Management or Contingency Plan	Description
Sediment Management Plan	The Sediment Management Plan (SMP) describes measures to minimize the impacts of in-stream sediment from construction activities. The management and monitoring of total suspended solids (TSS) inputs into the waterway that may occur as a result of in-channel and construction, river management, shoreline erosion, and commissioning of the LMOC and LSMOC.
Surface Water Management Plan	The Surface Water Management Plan describes measures and methods to be used for the temporary diversion of surface water (including but not limited to ditches and drains, dewatering or deposition), management of water resulting from precipitation events (e.g., winter snow accumulation in excavated channel or heavy rainfall event), and management of natural watershed flows during construction. Measures identified in this plan shall minimize impacts to the environment (e.g., fisheries) and people (e.g., consideration given to avoid localized flooding due to surface water management activities).
Waste Management Plan	The Waste Management Plan describes how solid and non-hazardous liquid waste will be managed and disposed of.

5.0 REFERENCES

5.1 Literature Cited

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- Wright and Hopky. 1998. Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters.

APPENDIX 1

Environmental Protection Plan Mapbook

DRAFT

Lake Manitoba and Lake St. Martin Outlet Channel Project - Environmental Protection Plan Mapping Overview

The EPP is comprised of three separate documents for each of the following project components:

1. Lake Manitoba Outlet Channel (LMOC)
2. Lake St. Martin Outlet Channel (LSMOC)
3. PR 293 Realignment (PR 239)

Each document consists of a mapbook of 1:5,000 scale maps that cover the entire length of the specified project component, as well as a corresponding Environmentally Sensitive Site (ESS) summary and mitigation page for each map. ESS summary pages provide site location information for all ESS identified on the corresponding map, as well as construction mitigation measures applicable to each ESS.

ESS within the Project Development Area (PDA) are organized into general “Categories”, and then into more detailed “Types” (see Table 1). ESS are displayed and symbolized on each map according to these categories and types. Each individual ESS is assigned a unique id associated to its category and type classification. Further site details are identified in the “ESS Name” field within the ESS Summary tables corresponding to each individual map. ESS outside the PDA are also identified on the map but are not symbolized or identified by a unique id.

Table 1: ESS Classification and Naming Convention

ESS CATEGORY (Category Abbreviation)	ESS TYPE (Number Series Representing Type within ESS Category)	ESS-ID
Potential Access Points (Acc)	Road (100)	Acc-100
Infrastructure (Infra)	Trail (100)	Infra-100
	Transmission Line (200)	Infra-200
Heritage (Her)	Historic (100)	Her-100
Land Use (LUse)	All Land Use Types (100)	LUse-100
Soils (Soil)	Soil Type (100)	Soil-100
	Manure Impacted Site (200)	Soil-200
Aquatics (AQ)	Watercourse Crossing (100)	AQ-100
	Waterbody Crossing (200)	AQ-200
	Inlet/Outlet (300)	AQ-300
	Groundwater (400)	AQ-400
Wetlands (Wet)	Shallow Open Water (100)	Wet-100
	Bogs/Fens/Swamp (200)	Wet-200
Vegetation (Veg)	Species of Conservation Concern (100)	Veg-100
	Invasive Species (200)	Veg-200
Wildlife (Wild)	Bird Habitat (100)	Wild-100
	Species of Conservation Concern (200)	Wild-200

The following maps provide a sample of the EPP mapping product, with ESS symbolized according to the classified category and type, and labeled with a unique ID. This is followed by a sample ESS summary and mitigation page for each map. The purpose of these sample maps is to provide examples of a final product which would be developed for the entirety of the Project components listed earlier (LMOC, LSMOC, PR239). Information shown on the sample maps is current as of August 2019; final maps will be updated to include recent, relevant project info.

The table below outlines the format of an ESS summary and mitigation table that would correspond to an EPP map. The following details are included in the table:

1. ESS category classification of ESS shown on the map
2. ESS location summary table including the following information:
 - a. ESS ID – unique ID assigned to each ESS according to category and type classification
 - b. ESS Name – description or name of the ESS
 - c. Map Feature – identifies the geometry type of the ESS
 - d. Location – identifies start/stop points of intersection between proposed channel centerline and ESS; if feature does not intersect the channel centerline, a coordinate for the centroid of the feature is provided
 - e. Start/Stop XY – provides UTM coordinates of start/stop points of intersection between proposed channel centerline and ESS. All coordinates are reported in **UTM Zone 14N, NAD 83**.
 - f. Length (m) – length of ESS feature intersected by channel centerline
 - g. Area (ha) – area of ESS within the PDA
3. Potential Effects – briefly lists potential effects of construction on ESS
4. Mitigation Measures – construction mitigation measures identified for the specific ESS

1 ESS CATEGORY: WATERBODY CROSSING

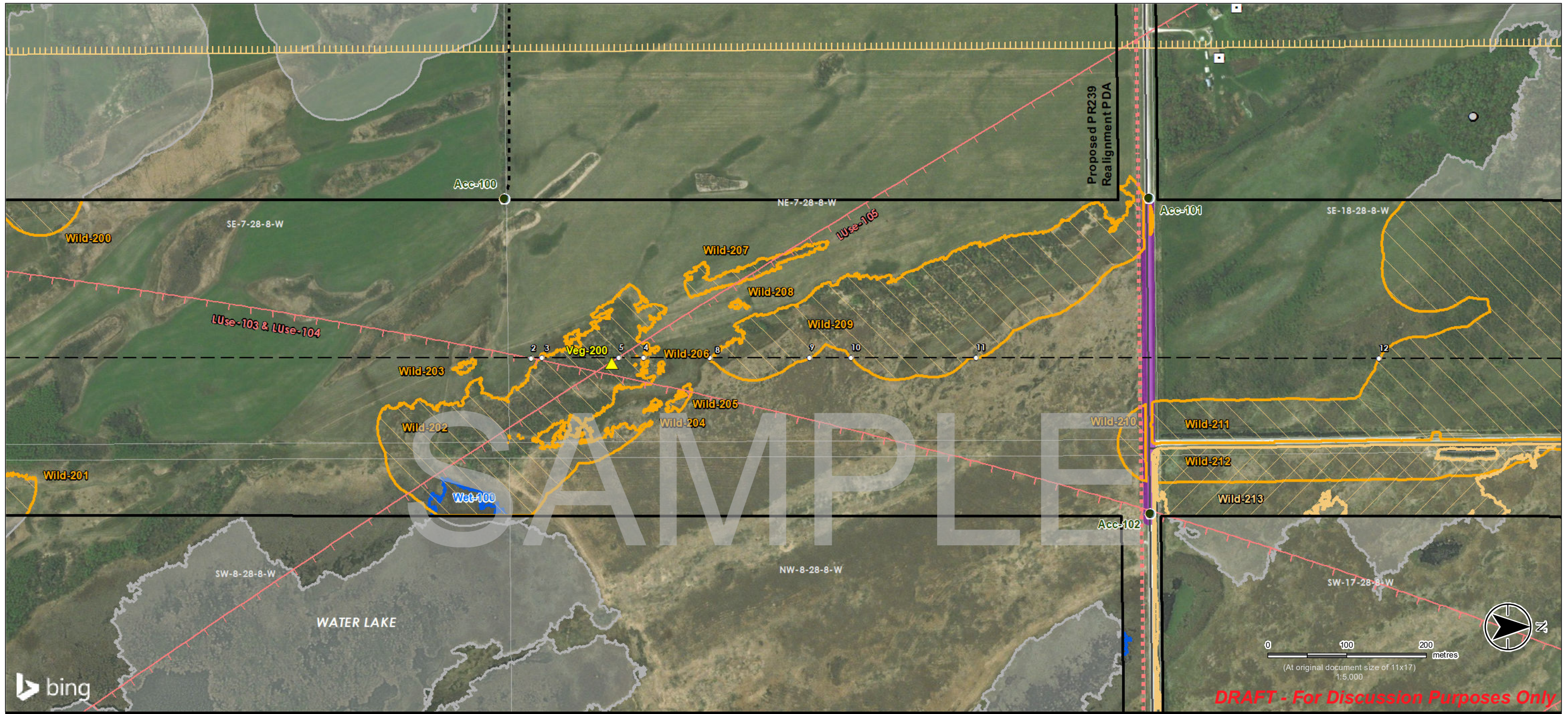
ESS ID	ESS Name	Map Feature	Location	Start X	Start Y	Stop X	Stop Y	Length (m)	Area in PDA (ha)
Aqua – 200	Unnamed Waterbody	Polygon	1 to 2	530398	5692774	530455	5693012	320	1.25
Aqua – 201	Lake Name	Polygon	3 to 4	530612	5673485	530700	5673500	75	0.75

3 Potential Effects of Construction on ESS:

Text will provide a brief description of potential environmental effects of construction on the specified Environmentally Sensitive Site

4 Mitigation Measures (PLACEHOLDER TEXT):

- Mitigation #1 – mitigation measure for specified ESS to be verified in final version of EPP
- Mitigation #2 – mitigation measure for specified ESS to be verified in final version of EPP
- Mitigation #3 – mitigation measure for specified ESS to be verified in final version of EPP
- Mitigation #4 – mitigation measure for specified ESS to be verified in final version of EPP
- Mitigation #5 – mitigation measure for specified ESS to be verified in final version of EPP
- Number of mitigation measures listed will vary depending on ESS feature



Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Stantec Consulting, Manitoba Infrastructure, Government of Manitoba, EcoLogic Environmental Inc., Local First Nation Communities
 3. Background Imagery: Service Layer Credits: © 2020 Microsoft Corporation © 2020 Maxar © CNES (2020) Distribution Airbus DS

- Legend**
- Lake Manitoba Outlet Channel (LMOC) Project Development Area
 - LMOC Approximate Centerline
 - Proposed PR239 Realignment
 - Proposed Bridge Location
 - Major Road
 - Quarter Sections
 - Potential Access Management Route (AMR)
 - ESS Start/Stop Locations Along Channel Centerline

- ESS Outside PDA***
- Point ESS
 - Line ESS
 - Polygon ESS
 - Potential High Noise Receptor
- Predicted Noise Receptors During Project Construction**

- ESS within PDA***
- Vegetation**
- Invasive Plant Species
- Access**
- Potential Access Points

- Land Use****
- Land Use Site
 - Wetlands
 - Shallow Open Water
 - Wildlife**
 - Red-headed woodpecker critical habitat grid square ***

- Potential Bird SOCC Breeding Habitat (RHWO)
- Potential Bird SOCC Breeding Habitat (LEBI)

NOTES:
 *Sample maps are based on data in hand as of August 2019
 **Land Use Sites Present in Current Map Extent: LUse -100 through 107
 ***Land Use Sites shown in the legend but not visible on the map have boundaries that encompass and extend beyond the current map extent.
 ***ESS does not intersect LMOC PDA; addressed in PR239 Realignment CEnvPP



Project Location
 Near Lake Manitoba & Lake St. Martin
 Manitoba

Prepared by JH on 2020-11-06
 TR by GK on 2020-11-06

Client/Project
 Manitoba Infrastructure
 Lake Manitoba Outlet Channel
 Construction Environmental Protection Plan

111475120 REV00

Figure No.
Map 1-7

Title
**Lake Manitoba Outlet Channel
 Construction Environmental Protection
 Plan**

DRAFT

LAKE MANITOBA OUTLET CHANNEL - ENVIRONMENTAL PROTECTION PLAN (DRAFT – SAMPLE)

ESS CATEGORY: WILDLIFE

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Length** (m)	Area in PDA (ha)
Wild – 200	Potential Breeding Habitat for Bird Species of Conservation Concern (SOCC) - Red-headed Woodpecker (RHWP)	Polygon	See Map	530202	5691990	N/A	N/A	N/A	0.36
Wild – 201	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530555	5691902	N/A	N/A	N/A	0.87
Wild – 202	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	3 to 4	530387	5692624	530388	5692752	128	4.86
Wild – 203	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530399	5692527	N/A	N/A	N/A	0.02
Wild – 204	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530445	5692769	N/A	N/A	N/A	0.01
Wild – 205	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530448	5692793	N/A	N/A	N/A	0.05
Wild – 206	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530398	5692774	N/A	N/A	N/A	0.006
Wild – 207	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530295	5692838	N/A	N/A	N/A	0.30
Wild – 208	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530322	5692872	N/A	N/A	N/A	0.01
Wild – 209	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	8 to 9	530389	5692837	530389	5692963	126	5.67
Wild – 209	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	10 to 11	530390	5693015	530391	5693173	158	5.67
Wild – 210	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530499	5693370	N/A	N/A	N/A	0.25
Wild – 211	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	12 to 13	530394	5696382	530449	5694109	431	15.47
Wild – 212	Potential Breeding Habitat for Bird SOCC - RHWP	Polygon	See Map	530525	5693642	N/A	N/A	N/A	1.99

* For features that do not intersect channel centerline, the ‘start’ coordinate represents centroid of the feature within the PDA and no “stop” coordinate is recorded

**Length of ESS intersection by channel centerline

Potential Effects of Construction on ESS:

Change in habitat availability of red-headed woodpecker.

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Dying or dead trees containing nesting cavities or having potential to support nesting cavities (diameter >18 cm) will be removed and saved. Snags saved will be erected post-construction along new ROW edges in areas supporting potential red-headed woodpecker habitat (See locations for red-headed woodpecker habitat restoration in Revegetation Management Plan).
- Clearing will not occur between April 1 and August 31 to avoid disturbance to nesting birds and other wildlife (ECCC 2018a).
- No blasting will be permitted within close proximity (approximately 1 km) to known sensitive wildlife habitat during critical lifecycle periods.
- Trees containing large nests of sticks and areas where active dens or burrows are identified during construction will be left undisturbed and reported to the environmental inspector and/or Natural Resources Officer. The environmental inspector will apply the appropriate terrestrial buffer, as identified by the Manitoba Conservation Data Centre’s Recommended Development Setback Distances from Birds (MB CDC 2015) and/or Manitoba Conservation and Climate’s Forest Management Guidelines for Terrestrial Buffers (MSD 2017).
- Existing trails, roads, or cut lines will be used for access wherever possible, as per the Project Access Management Plan.

ESS CATEGORY: WILDLIFE

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Area in PDA (ha)
Wild – 213	Potential Breeding Habitat for Bird Species of Conservation Concern (SOCC) - Least Bittern (LEBI)	Polygon	See Map	530548	5693621	N/A	N/A	3.93

* For features that do not intersect channel centerline, the ‘start’ coordinate represents centroid of the feature within the PDA and no “stop” coordinate is recorded

Potential Effects of Construction on ESS:

Change in habitat availability, mortality risk and/or movement of Least Bittern

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Effective erosion and sediment control measures will be properly installed along the ROW edge before starting any work to prevent undesirable soil movement or the entry of sediment into adjacent least bittern habitat (i.e., wetland located east of the ROW). Erosion and sediment control measures will be inspected by the Engineer, and maintained daily by the Contractor, as well as during and after every major rain, runoff or spring melt event. Any necessary repairs and adjustments will be made immediately to ensure that measures are effective in controlling erosion and sedimentation, as per the Project Sediment Management Plan.
- Clearing will not occur between April 1 and August 31 to avoid disturbance to nesting birds and other wildlife (ECCC 2018a).
- To reduce effects to adjacent least bittern habitat, clearing within 30 m of this waterbody will be done by hand and under frozen conditions.
- No blasting will be permitted within approximately 1 km of this sensitive wildlife habitat during critical lifecycle period (April 1 and August 31).

ESS CATEGORY: WETLANDS

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Area in PDA (ha)
Wet – 100	Shallow Open Water	Polygon	See Map	530754	5693359	TBD	TBD	0.25

*For features that do not intersect channel centerline, the ‘start’ coordinate represents centroid of the feature within the PDA and no “stop” coordinate is recorded

Potential Effects of Construction on ESS:

Change in wetland function; change in diversity of species, community and/or landscape

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Effective erosion and sediment control measures will be properly installed before starting any work to prevent undesirable soil movement or the entry of sediment into adjacent wetland (i.e., Water Lake). Erosion and sediment control measures will be inspected by the Engineer, and maintained daily by the Contractor, as well as during and after every major rain, runoff or spring melt event. Any necessary repairs and adjustments will be made immediately to ensure that measures are effective in controlling erosion and sedimentation, as per the Project Sediment Management Plan.
- To reduce effects to Water Lake, clearing within 30 m of this waterbody will be done by hand and under frozen conditions.
- Cleared trees and woody debris will not be pushed into (or adjacent) to standing timber, or within the high-water mark of wetlands or waterbodies. Stockpiles or windrows of any material are to be kept a minimum of 100 m from any waterbody’s ordinary high-water mark.
- Spoil piles, overburden and topsoil will not be placed within 100 m of any waterbody’s ordinary highwater mark. Spoil piles shall be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.

LAKE MANITOBA OUTLET CHANNEL - ENVIRONMENTAL PROTECTION PLAN (DRAFT – SAMPLE)

- Immediately after disturbance or upon completion of the work in or around waterbodies, waterbody banks, and riparian vegetation areas, the disturbed areas along Water Lake shall be restored to the original contour and gradient and cover treatment applied. If an area cannot be restored to its original contour and gradient due to instability or other reasons, a stable gradient shall be constructed, and cover treatment applied.
- Maintenance and repair of vehicles, equipment, and machinery 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. All machinery working near waterbodies will be kept clean, free of leaks, and inspected regularly.
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion.
- Construction matting will be used to protect the area from rutting and exposure to soil during non-frozen ground conditions.
- Maintain shrub and herbaceous vegetation to the extent possible.

ESS CATEGORY: LAND USE

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Length (m)**	Area in PDA (ha)
LUse – 100	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD	TBD
LUse – 101	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD	TBD
LUse – 102	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD	TBD
LUse – 103	Land Use	Polygon	1 to 2	530788	5686567	530388	5692611	1,800	TBD
LUse – 104	Land Use	Polygon	1 to 2	530788	5686567	530388	5692611	1,800	TBD
LUse – 105	Land Use	Polygon	5 to end of LMOC	530388	5692721	534025	5704026	TBD	TBD
LUse – 106	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD	TBD
LUse – 107	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent		TBD

* For features that do not have a stop or start point in the map extent, coordinates are not recorded

**Length of ESS intersection by channel centerline

Potential Effects of Construction on ESS:

Change in availability of traditional resources for current land use; change in access to traditional resources and areas for current land use; change to cultural and spiritual sites or areas, change to the cultural value or importance, associated with current land use

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Vegetation control will occur through mechanical methods where feasible, and hand clearing will occur along shorelines to mitigate effects to plant harvesting. Chemical vegetation control will only be used when mechanical methods are not feasible. Where chemical control is used, the least toxic, least persistent and most target-specific pesticides pre-approved for use by Provincial legislation are preferred. The applications are targeted to the season where the pest is most susceptible to treatment, applied by trained personnel who meet provincial licensing requirements, and applied using methods and equipment designed to minimize potential for drift and overspray.
- Natural revegetation will be encouraged. Disturbed lands such as in areas vulnerable to erosion and sedimentation and will be seeded and/or planted in accordance with the Project Revegetation Management Plan. The Revegetation Management Plan forms part of the Construction Environmental Management Program (CEMP) and will identify locations and methods for restoration of vegetation cover in disturbed areas.

- Project-related traffic will be restricted to the Project right-of-way (ROW) and associated access routes required during Project construction and maintenance, as per the Project Access Management Plan. Where access routes are accessible by the public, signage restricting access to authorized personnel will be erected.
- Exclusionary flagging or fencing will be clearly identified and installed, as appropriate, around environmentally sensitive sites (e.g., dens, roosts, stick nests, hibernacula) or sensitive habitats prior to clearing and construction, and evaluate features for additional mitigation measures (e.g., setbacks). Vegetation clearing and construction activities will be limited to the ROW and not extend beyond the PDA
- The Project Access Management plan will include site-specific Traffic Management Plans, which will describe anticipated detours and schedules specific to mitigate travel delays.
- Employees, workers and other staff will not hunt, trap or harass wildlife on the construction sites.
- No person will remove, disturb, spring or in any way interfere with any trap set out lawfully by any other person for the purpose of taking furbearing animals.
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion.
- Construction matting will be used to protect the area from rutting and exposure to mineral soil during wet ground conditions.
- Inspect excavated materials or surface disturbance for heritage resources and report any finds to Environmental Inspector. Heritage and Resource Protection Plan will be followed when a suspected cultural or heritage resource is discovered.

ESS CATEGORY: ACCESS

ESS ID	ESS Name	Map Feature	X	Y
Acc – 100	Potential PDA Access Point	Point	530186	5692578
Acc – 101	Potential PDA Access Point	Point	530189	5693392
Acc – 102	Potential PDA Access Point	Point	530589	5693392

Potential Effects of Construction on ESS:

Change in road traffic and road network; change in access to local area

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- The Project Access Management Plan specifies control measures such as gating approaches to Project access roads to restrict public access to the PDA.
- The Project Access Management plan will include site-specific Traffic Management Plans, which will include a traffic control plan to describe anticipated detours and schedules specific to the Project design to mitigate travel delays.
- Project-related traffic will be restricted to the Project ROW and associated access routes required during Project construction and maintenance. Where access routes are accessible by the public, signage restricting access to authorized personnel will be erected.
- The amount of Project-related vehicle traffic will be reduced by encouraging use of multi-passenger vehicles where feasible.
- The contractor will restore access roads not required for on-going maintenance to their original condition.
- Existing roads, road allowances, trails, portages, and other travel ways will not be blocked or altered as a result of clearing and grubbing activities so as not to interfere with other users.
- Transportation of workers between construction camp/accommodations and worksites will be done in groups (e.g., vans) and often using the PDA itself for access, to reduce the potential number of vehicles on the road network.
- Sections of municipal roads will be reconstructed, realigned, or extended to provide access across the LMOC at the bridge crossings to be constructed.
- Temporary detours will be used to maintain access through the LMOC PDA during construction to reduce/avoid potential effects on access interruption and maintain access for emergency medical services.
- Other than initial mobilization, de-mobilization, and transportation of construction materials Project construction-related traffic will be restricted to the Project PDA and associated temporary access routes to the extent practical and required.
- The contractor will be responsible for repairing roads if they are damaged during construction.

LAKE MANITOBA OUTLET CHANNEL - ENVIRONMENTAL PROTECTION PLAN (DRAFT – SAMPLE)

ESS CATEGORY: VEGETATION

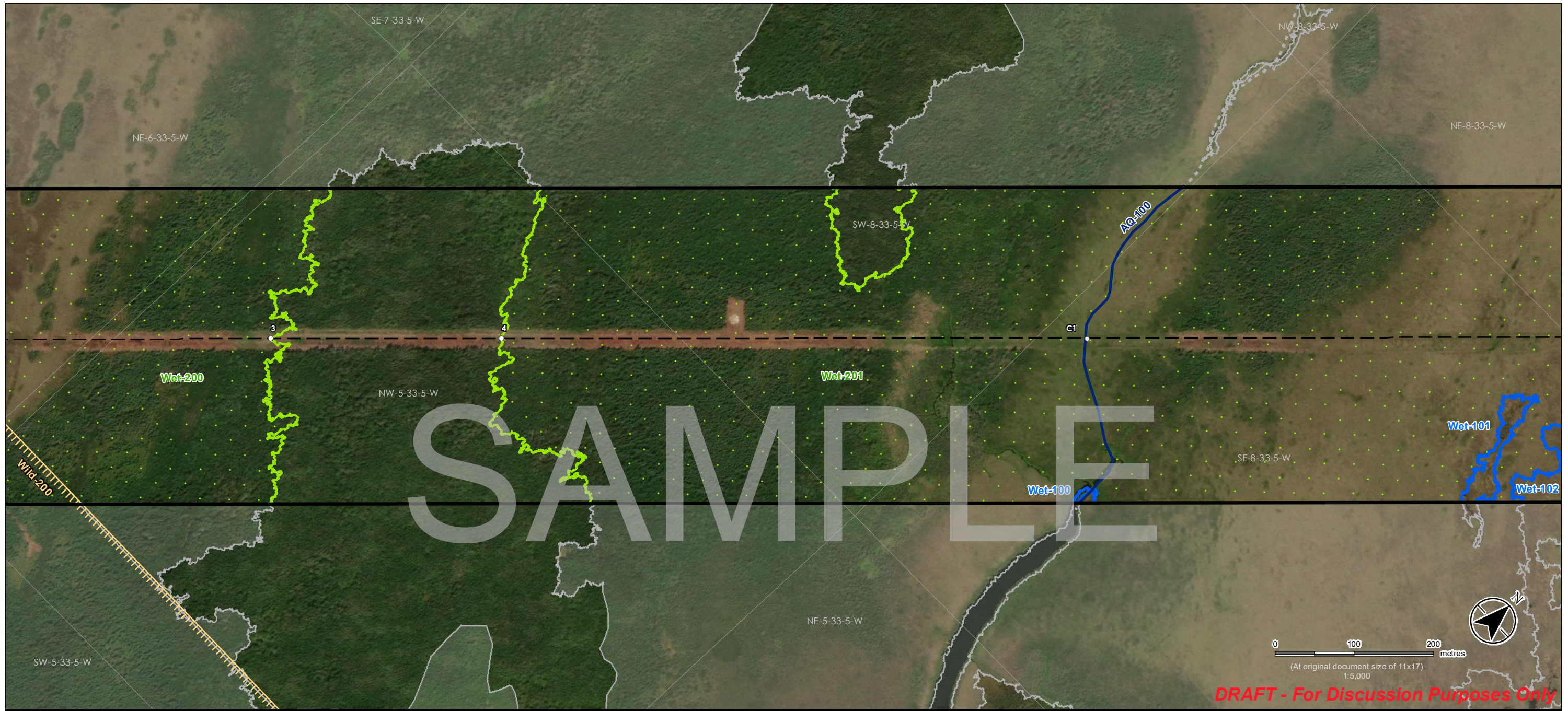
ESS ID	ESS Name	Map Feature	X	Y
Veg – 200	Invasive Plant Species - Smooth Brome, Kentucky Bluegrass, Meadow Buttercup, Perennial Sow Thistle, Stinging Nettle	Point	530394	5692712

Potential Effects of Construction on ESS:

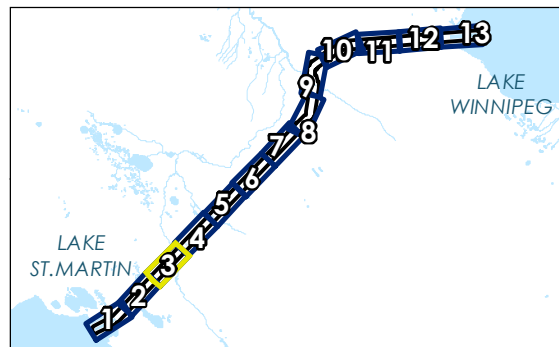
Increased abundance and spread of invasive species; change in diversity of community, species and/or landscape

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- *The Project Agricultural Biosecurity Plan will be adhered to regarding potential transfer of invasive plant species between Project sites.*
- *An integrated pest management approach will follow Manitoba Infrastructure (2016b) for controlling weeds, invasive non-native species and pests. Control methods may include mowing, controlled burns and pesticide application. Pesticides may be considered for areas with dangerous noxious weeds or invasive species not resolvable by other control methods. Only pesticides approved for use by Provincial legislation will be used and application will be by licensed personnel.*
- *Machinery will arrive on site in a clean condition and shall be kept in good working order and free of fuel, oil or fluid leaks. Machinery that is found to be leaking any fuel, oil or other fluids will be moved off the work site immediately for repair.*
- *Prior to clearing or grubbing, the work area will be clearly staked or marked.*
- *Clearing, grubbing, and burning operations will be conducted in accordance with the applicable Provincial and Municipal regulations and Acts.*
- *Clearing and grubbing will be limited to the construction or contract limits unless otherwise approved.*
- *Use of pesticides/herbicides will be restricted in areas of known SOCC.*
- *Confine vehicle traffic to established trails to the extent possible.*



DRAFT - For Discussion Purposes Only



- Legend**
- Lake St. Martin Outlet Channel (LSMOC) Project Development Area (PDA)
 - LSMOC Approximate Centerline
 - Quarter Sections
 - ESS Start/Stop Locations Along Channel Centerline
 - ESS Outside PDA**
 - Point ESS
 - Line ESS
 - Polygon ESS
 - ESS within PDA**
 - Aquatics Watercourse Crossing
 - Land Use****
 - Land Use Site
 - Wetlands**
 - Shallow Open Water
 - Bog, Swamp, Fen
 - Wildlife**
 - Eastern whip-poor-will critical habitat grid square

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Data Sources: Government of Manitoba, Stantec Consulting, Manitoba Infrastructure, Government of Manitoba, EcoLogic Environmental Inc., Local First Nation Communities
3. Imagery: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

NOTES:

- *Sample maps are based on data in hand as of August 2019
- **Land Use sites present in current map extent include: LUse-100 through 107
- **Land Use Sites shown in the legend but not visible on the map have boundaries that encompass and extend beyond the current map extent.



Project Location
Near Lake Manitoba & Lake St. Martin
Manitoba

Prepared by JH on 2020-11-06
TR by GK on 2020-11-06

Client/Project
Manitoba Infrastructure
Lake St. Martin Outlet Channel
Construction Environmental Protection Plan

111475120 REVA

Figure No.
Map 1-3

Title
**Lake St. Martin Outlet Channel
Construction Environmental Protection
Plan**

DRAFT

LAKE ST. MARTIN OUTLET CHANNEL - ENVIRONMENTAL PROTECTION PLAN (DRAFT – SAMPLE)

ESS CATEGORY: WILDLIFE

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Length (m)**	Area in PDA (ha)
Wild – 200	Critical Habitat for Bird Species of Conservation Concern (SOCC) – Eastern-whip-poor-will (EWPW)	See Map	Start of LSMOC to 1	557102	5738293	558741	5739998	2,400	148

**Length of ESS intersection by channel centerline

Potential Effects of Construction on ESS:

Change in habitat availability of Eastern Whip-poor-will.

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Clearing will not occur between April 1 and August 31 to avoid disturbance to nesting birds and other wildlife (ECCC 2018a).
- No blasting will be permitted within close (approximately 1 km) to known sensitive wildlife habitat during critical lifecycle periods.
- Terrestrial buffers, as identified by the Manitoba Conservation Data Centre's Recommended Development Setback Distances from Birds (MB CDC 2015) and/or Manitoba Conservation and Climate's Forest Management Guidelines for Terrestrial Buffers (MSD 2017) will be adhered to for all applicable sites.
- Exclusionary flagging or fencing will be clearly identified and installed, as appropriate if and when required, around ESSs (e.g., dens, roosts, stick nests, hibernacula) or sensitive habitats prior to clearing and construction, and evaluate features for additional mitigation measures (e.g., setbacks).
- Existing trails, roads, or cut lines will be used for access wherever possible, as per the Project Access Management Plan.

ESS CATEGORY: WETLANDS

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Area in PDA (ha)
Wet – 100	Shallow Open Water	Polygon	See Map	559901	5740932	N/A	N/A	0.02
Wet – 101	Shallow Open Water	Polygon	See Map	560220	5741346	N/A	N/A	0.33
Wet – 102	Shallow Open Water	Polygon	See Map	560300	5741377	N/A	N/A	4.85

*For features that do not intersect channel centerline, the 'start' coordinate represents centroid of the feature within the PDA and no "stop" coordinate is recorded

Potential Effects of Construction on ESS:

Potential to alter wetland function from changes in wetland abundance, vegetation cover and structure, and altered water inputs and drainage patterns.

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Machinery will arrive on site in a clean condition and shall be kept in good working order and free of fuel, oil or fluid leaks. Machinery that is found to be leaking any fuel, oil or other fluids will be moved off the work site immediately for repair.
- Maintenance and repair of vehicles, equipment, and machinery 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. All machinery working near waterbodies will be kept clean, free of leaks, and inspected regularly.
- Effective erosion and sediment control measures will be properly installed before starting any work to prevent undesirable soil movement or the entry of sediment into any waterbody or wetland. Erosion and sediment control measures will be inspected by the Engineer, and maintained by the Contractor on a daily basis, as well as during and after every major rain, runoff or spring melt event. Any necessary repairs and adjustments will be made immediately to ensure that measures are effective in controlling erosion and sedimentation, as per the Project Sediment Management Plan.
- Clearing within 30 m of a waterbody will be done by hand.

- Cleared trees and vegetation will not obstruct waterways during any season and will be kept above the ordinary high-water mark. Stockpiles or windrows of any material are to be kept a minimum of 100 m from any waterbody's ordinary high-water mark.
- Spoil piles, overburden and topsoil will not be placed within 100 m of any waterbody's ordinary highwater mark. Spoil piles shall be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.
- Designated area(s) will be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any designated area will be located at least 100 m away from any waterbody or wetland and will be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion.
- Construction matting will be used to protect the area from rutting and exposure to soil during non-frozen ground conditions.
- Maintain shrub and herbaceous vegetation to the extent possible.

ESS CATEGORY: WETLANDS

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Length (m)**	Area in PDA (ha)
Wet – 200	Bogs/Fens/Swamp	Polygon	2 to 3	558483	5739730	559047	5740320	816	79.0
Wet – 201	Bogs/Fens/Swamp	Polygon	4 to 5	559249	5740531	560447	5741784	1,730	67.44

*For features that do not intersect channel centerline, the 'start' coordinate represents centroid of the feature within the PDA and no "stop" coordinate is recorded

**Length of ESS intersection by channel centerline

Potential Effects of Construction on ESS:

Potential to alter wetland function from changes in wetland abundance, vegetation cover and structure, and altered water inputs and drainage patterns.

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Machinery will arrive on site in a clean condition and shall be kept in good working order and free of fuel, oil or fluid leaks. Machinery that is found to be leaking any fuel, oil or other fluids will be moved off the work site immediately for repair.
- Maintenance and repair of vehicles, equipment, and machinery 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. All machinery working near waterbodies will be kept clean, free of leaks, and inspected regularly.
- Effective erosion and sediment control measures will be properly installed before starting any work to prevent undesirable soil movement or the entry of sediment into any waterbody or wetland. Erosion and sediment control measures will be inspected by the Engineer, and maintained by the Contractor on a daily basis, as well as during and after every major rain, runoff or spring melt event. Any necessary repairs and adjustments will be made immediately to ensure that measures are effective in controlling erosion and sedimentation.
- Designated area(s) will be established for fuel storage, materials handling and storage, equipment cleaning, refueling and servicing. Any designated area will be located at least 100 m away from any waterbody or wetland and will be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection.
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion.
- Construction matting will be used to protect the area from rutting and exposure to soil during non-frozen ground conditions.
- Maintain shrub and herbaceous vegetation to the extent possible.

LAKE ST. MARTIN OUTLET CHANNEL - ENVIRONMENTAL PROTECTION PLAN (DRAFT – SAMPLE)

ESS CATEGORY: AQUATICS

ESS ID	ESS Name	Map Feature	Location	X	Y
AQ – 100	Unnamed watercourse Crossing	Line	C1	559762	5741067

Potential Effects of Construction on ESS:

Change in aquatic habitat quality and availability; change in drainage patterns; introduction of aquatic invasive species.

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Machine fording will be avoided, and be limited to onetime events, if necessary.
- Any instream work will be limited to low flow periods when waterbodies or watercourses are dry or frozen.
- Silt curtains will be installed appropriately around excavation areas.
- Excavation spoil will be transferred to upland areas away from streams and waterbodies.
- Potential sources of erosion and releases of sediment will be managed as per the Project Sediment Management Plan.
- Clearing within 30 m of a waterbody will be done by hand.
- Spoil piles, overburden and topsoil will not be placed within 100 m of any waterbody's ordinary highwater mark. Spoil piles shall be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.

ESS CATEGORY: LAND USE

ESS ID	ESS Name	Map Feature	Location	Start X*	Start Y*	Stop X*	Stop Y*	Area in PDA (ha)
LUse – 100	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD
LUse – 101	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD
LUse – 102	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD
LUse – 103	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD
LUse – 104	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD
LUse – 105	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD
LUse – 106	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD
LUse – 107	Land Use	Polygon	Covers Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	Beyond Map Extent	TBD

* For features that do not have a stop or start point in the map extent, coordinates are not recorded

Potential Effects of Construction on ESS:

Change in availability of traditional resources for current land use; change in access to traditional resources and areas for current land use; change to cultural and spiritual sites or areas, change to the cultural value or importance, associated with current land use

Mitigation Measures (Sample of potential mitigation measures applicable to Project construction):

- Vegetation control will occur through mechanical methods where feasible, and hand clearing will occur along shorelines to mitigate effects to plant harvesting. Chemical vegetation control will only be used when mechanical methods are not feasible. Where chemical control is used, the least toxic, least persistent and most target-specific pesticides pre-approved for use by Provincial legislation are

preferred. The applications are targeted to the season where the pest is most susceptible to treatment, applied by trained personnel who meet provincial licensing requirements, and applied using methods and equipment designed to minimize potential for drift and overspray.

- Natural revegetation will be encouraged. Disturbed lands such as in areas vulnerable to erosion and sedimentation and will be seeded and/or planted in accordance with the Project Revegetation Management Plan. The Revegetation Management Plan forms part of the Construction Environmental Management Program (CEMP) and will identify locations and methods for restoration of vegetation cover in disturbed areas.
- Project-related traffic will be restricted to the Project ROW and associated access routes required during Project construction and maintenance, as per the Project Access Management Plan. Where access routes are accessible by the public, signage restricting access to authorized personnel will be erected.
- Exclusionary flagging or fencing will be clearly identified and installed, as appropriate, around environmentally sensitive sites (e.g., dens, roosts, stick nests, hibernacula) or sensitive habitats prior to clearing and construction, and evaluate features for additional mitigation measures (e.g., setbacks). Vegetation clearing and construction activities will be limited to the ROW and not extend beyond the PDA
- The Project Access Management plan will include site-specific Traffic Management Plans, which will describe anticipated detours and schedules specific to mitigate travel delays.
- Employees, workers and other staff will not hunt, trap or harass wildlife on the construction sites.
- No person will remove, disturb, spring or in any way interfere with any trap set out lawfully by any other person for the purpose of taking furbearing animals.
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion.
- Construction matting will be used to protect the area from rutting and exposure to mineral soil during wet ground conditions.
- Inspect excavated materials or surface disturbance for heritage resources and report any finds to Environmental Inspector. Heritage Resource Protection Plan will be followed when a suspected cultural or heritage resource is discovered.

APPENDIX 2

Approvals, Licences, and Permits

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APPENDIX 3

Recommended Setback Distances and Restricted Activity Periods

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Recommended Setback Distances and Restricted Activity Periods for the Lake Manitoba and Lake St. Martin Outlet Channels Project

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Mammals						
American badger^a	<i>Taxidea taxus</i>	Active den	Year round	100	500	500
Black bear^b	<i>Ursus americanus</i>	Active den	Year round	150	150	150
Little brown myotis^{a,c}	<i>Myotis lucifugus</i>	Roost	May 1 – August 31	100	500	500
Northern myotis^{a,c}	<i>Myotis septentrionalis</i>	Roost	May 1 – August 31	100	500	500
Bat cave^d	-	Cave	Year round	200	200	200
Wolverine^e	<i>Gulo gulo</i>	Den	Year round	100	250	500
Mineral lick^b	-	Mineral lick	Year round	120	120	120
Denning species (e.g., red fox, coyote, gray wolf, American marten, fisher, least weasel)^c	-	Active den	Year round	50	50	50
Birds						
American white pelican	<i>Pelecanus erythrorhynchos</i>	Nesting colony	April 1 - August 31	500	750	100
Bald eagle	<i>Haliaeetus leucocephalus</i>	Active or traditional nest site	March 15 - July 15	250	500	1000

Recommended Setback Distances and Restricted Activity Periods for the Lake Manitoba and Lake St. Martin Outlet Channels Project

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Bank swallow	<i>Riparia riparia</i>	Nesting colony	May 15 - July 31	50	150	300
Barn swallow	<i>Hirundo rustica</i>	Nest site	May 15 - Sept. 30	50	100	100
Barred owl	<i>Strix varia</i>	Active or traditional nest site	March 15 - July 15	250	500	1000
Bobolink	<i>Dolichonyx oryzivorus</i>	Nest site	May 15 - August 15	100	250	400
Boreal Owl	<i>Aegolius funereus</i>	Nest Site	March 1 - July 15	250	500	1000
Canada warbler	<i>Cardellina canadensis</i>	Nest site	May 1 - July 31	200	300	450
Common nighthawk	<i>Chordeiles minor</i>	Nest site	May 1 - August 31	100	200	300
Double-crested cormorant	<i>Phalacrocorax auritus</i>	Nesting colony	April 1 - August 31	400	500	750
Eastern whip-poor-will	<i>Antrostomus vociferous</i>	Nest site	May 15 - July 16	100	200	300
Eastern wood-pewee	<i>Contopus virens</i>	Nest site	May 15 - August 15	50	150	300
Golden-winged warbler	<i>Vermivora chrysoptera</i>	Nest site	May 15 - August 6	200	300	450
Great gray owl	<i>Strix nebulosa</i>	Active or traditional nest site	Feb. 15 - July 15	250	500	1000
Grebes	-	Nesting colony	May 15 - July 15	100	200	400

Recommended Setback Distances and Restricted Activity Periods for the Lake Manitoba and Lake St. Martin Outlet Channels Project

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Gulls/terns	-	Nesting colony	May 1 - July 15	400	500	750
Herons	-	Nesting colony	April 1 - August 31	400	500	750
Horned grebe	<i>Podiceps auratus</i>	Nest site	May 1 - Sept. 15	100	200	400
Least bittern	<i>Ixobrychus exilis</i>	Nest site	May 1 - July 31	100	200	400
Northern hawk owl	<i>Surnia ulula</i>	Nest site	Feb. 15 - July 15	250	500	1000
Osprey	<i>Pandion haliaetus</i>	Nest site	August 1 to March 31	100	100	100
Olive-sided flycatcher	<i>Contopus cooperi</i>	Nest site	May 1 - August 31	50	150	300
Piping plover	<i>Charadrius melodus</i>	Active or traditional nest site	April 15 - August 15	200	400	600
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Nest site	April 15 - August 15	50	100	200
Rusty blackbird	<i>Euphagus carolinus</i>	Nest site	May 1 - July 31	50	150	300
Sharp-tailed grouse³	<i>Tympanuchus phasianellus</i>	Lek	Mar 15 - May 15	200	500	100
Short-eared owl	<i>Asio flammeus</i>	Nest site	April 15 - Sept. 15	200	300	500
Trumpeter swan	<i>Cygnus buccinator</i>	Nest site	April 1 - July 31	500	750	1000

Recommended Setback Distances and Restricted Activity Periods for the Lake Manitoba and Lake St. Martin Outlet Channels Project

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Yellow rail	<i>Coturnicops noveboracensis</i>	Nest site	May 1 - July 15	100	150	300
Amphibians and Reptiles						
Northern leopard frog ^a	<i>Lithobates pipiens</i>	Hibernaculum and breeding habitat	Year round	10	200	500
Red-sided garter snake ^b	<i>Thamnophis sirtalis</i>	Hibernaculum	Year round	200	200	200
Snapping turtle ^{3, a}	<i>Chelydra serpentine</i>	Nest site	March 15 - June 30	0	400	400

¹ - Recommended setback distances and restricted activity periods are derived from Manitoba Conservation Data Centre's Recommended Development Setback Distances from Birds document (MB CDC 2015) unless otherwise specified (see a-c below)

^a - Saskatchewan Ministry of Environment's Saskatchewan Activity Restriction Guidelines for Sensitive Species (SK MOE 2017)

^b - Manitoba Hydro's Manitoba-Minnesota Transmission Project Construction Environmental Protection Plan

^c - Core maternity roost period for bats as defined by Fenton and Barclay (1980) and Barclay (1982 and 1984)

^d - Manitoba's Forest Management Guidelines for Terrestrial Buffers (Government of Manitoba 2017)

^e - Environment Canada's Petroleum Industry Activity Guidelines for Wildlife Species at Risk in the Prairie and Northern Region (Environment Canada 2009)

² - Low: foot traffic, occasional/infrequent/short-term small vehicle (<1 ton) or ATV use; medium: trucks>1 ton, regular/frequent/long-term small vehicle (<1 ton) or ATV use; High: road, distribution line, or outlet channel construction, forest harvest, rock crushing, asphalt batching, quarry or gravel pit operation

³ - low disturbance category considered as foot traffic only, all other activities (i.e., occasional/infrequent/short-term small vehicle (<1 ton) or ATV use considered medium disturbance).