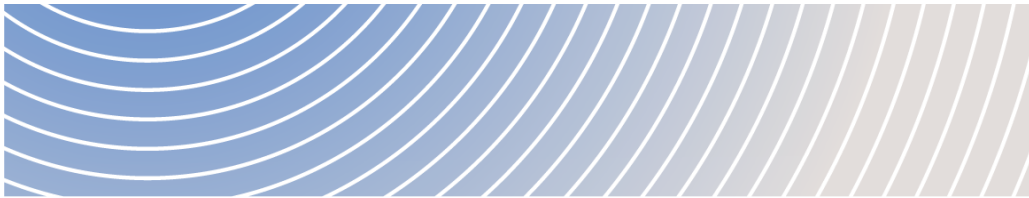




Impact Assessment
Agency of Canada

Agence d'évaluation
d'impact du Canada

Lake Manitoba and Lake St. Martin Outlet Channels Project



DRAFT ENVIRONMENTAL ASSESSMENT REPORT

April 2024



© His Majesty the King in Right of Canada, as represented by the Minister of Environment and Climate Change, 2024.

This publication may be reproduced for personal or internal use without permission, provided the source is fully acknowledged. However, multiple copy reproduction of this publication in whole or in part for purposes of redistribution requires the prior written permission from the Impact Assessment Agency of Canada, Ottawa, Ontario K1A 0H3, or information@iaac-aeic.gc.ca.

This document has been issued in French under the title: Le projet de canaux de déversement du lac Manitoba et du lac St. Martin - version provisoire du rapport d'évaluation environnementale



Executive Summary

Manitoba Transportation and Infrastructure (the Proponent) is proposing the construction and operation of a new permanent flood control management system located within the Interlake Region of central Manitoba in response to the catastrophic floods of 2011 and 2014. The Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project) would consist of two new outlet channels, each approximately 24 kilometres long, which would be supplemental to the greater flood protection infrastructure throughout the Assiniboine River and Lake Manitoba drainage basins.

The outlet channels would provide additional capacity to move water from Lake Manitoba through Lake St. Martin and into Lake Winnipeg during flood events. The Lake Manitoba Outlet Channel (LMOC) would convey water northwards from Watchorn Bay on Lake Manitoba to Birch Bay on Lake St. Martin, and the Lake St. Martin Outlet Channel (LSMOC) would convey water northeastwards from Lake St. Martin to Sturgeon Bay on Lake Winnipeg.

The Impact Assessment Agency of Canada (the Agency) is carrying out a federal environmental assessment for the Project under the requirements of the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). The Project is subject to CEAA 2012 as it includes activities described in the following schedule to the *Regulations Designating Physical Activities*:

Item 6: The construction, operation, decommissioning and abandonment of a new structure for the diversion of 10,000,000 cubic metres per year or more of water from a natural water body into another natural water body.

On August 28, 2019, *the Impact Assessment Act* came into force, and CEAA 2012 was repealed. In accordance with the transitional provisions of the *Impact Assessment Act*, the environmental assessment of the Project is being continued under CEAA 2012 as if that Act had not been repealed.

The Project is subject to a provincial environmental assessment under Manitoba's *The Environment Act*. The Environmental Approvals Branch of Manitoba Environment and Climate Change will make a licensing decision for the Project at the end of the provincial environmental assessment process.

This draft Environmental Assessment Report (EA Report) summarizes the assessment conducted by the Agency, including an evaluation of the potential environmental effects of the Project. This draft EA Report also includes the Agency's conclusions on whether the Project is likely to cause significant adverse environmental effects after taking into account the implementation of mitigation measures, monitoring, and follow-up programs. The Agency prepared this draft EA Report in consultation with Environment and Climate Change Canada, Fisheries and Oceans Canada, Indigenous Services Canada, Infrastructure Canada, Health Canada, Natural Resources Canada, and Transport Canada following a technical review of the Proponent's Environmental Impact Statement (EIS). Furthermore, this draft EA Report was informed



by comments submitted throughout the environmental assessment process by Indigenous groups, federal authorities, the Proponent, members of the Technical Advisory Group (TAG), and the public.

The Agency analyzed environmental effects to areas of federal jurisdiction in relation to section 5 of CEAA 2012, including fish and fish habitat, aquatic species, migratory birds, federal lands, the health and socio-economic conditions of Indigenous peoples, physical and cultural heritage, the current use of lands and resources for traditional purposes by Indigenous peoples, and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance for Indigenous peoples. The Agency also considered effects related to changes to the environment that are directly linked or necessarily incidental to federal decisions that may be required for the Project, including: authorization(s) under the *Fisheries Act* (paragraphs 34.4(2)(b) and 35(2)(b)) by Fisheries and Oceans Canada; permit(s) under the *Species at Risk Act* (SARA) for effects to species that are listed as endangered or threatened on Schedule 1 by Environment and Climate Change Canada or Fisheries and Oceans Canada for listed aquatic species at risk (sections 32 and 33 and subsection 58(1)); and license(s) under the *Explosives Act* by Natural Resources Canada. In reviewing the potential environmental effects of the Project, the Agency also considered factors such as effects of potential accidents and malfunctions, extreme and periodic weather events, and cumulative effects in conjunction with other past, present, and reasonably foreseeable projects or physical activities.

This draft EA Report provides an assessment of impacts of the Project on Aboriginal and treaty rights, as recognized and affirmed by section 35 of the *Constitution Act*, 1982, held by First Nations and Métis peoples, including hunting, trapping, fishing, plant harvesting, and the use of sites and areas of cultural importance for the exercise of rights.

The Agency is of the view that, after taking into account the implementation of the key mitigation measures identified in this draft EA Report in relation to section 5 of CEAA 2012, the Project is likely to cause direct and cumulative significant adverse environmental effects on:

- Indigenous peoples' current use of lands and resources for traditional purposes, including from loss or alteration of access, effects to the availability and quality of resources, and effects to quality of experience;
- Indigenous peoples' physical and cultural heritage, including from effects to aspects of intangible cultural heritage, such as sense of place, spiritual connection to the land, and intergenerational knowledge transfer; and
- Indigenous peoples' sites or things of historical, archaeological, paleontological, or architectural significance, including from the loss of sites of importance and lack of mitigations for effects to sites outside the Project's footprint.

While the Project may result in residual effects to other valued components, the Agency is of the view that, after taking into account the implementation of the key mitigation measures identified in this draft EA Report in relation to section 5 of CEAA 2012, the Project is not likely to cause significant adverse environmental effects on fish and fish habitat, migratory birds, federal lands, and Indigenous peoples' health and socio-economic conditions. The Project may also result in residual environmental effects to species at risk that are of cultural importance to Indigenous groups, including from habitat loss and effects



to wildlife health and mortality. The Project may impact Aboriginal and treaty rights, including from loss or alteration of access to sites of traditional and cultural importance, and effects to the availability and quality of lands and resources of importance. The Proponent's project planning and design incorporates measures to mitigate potential adverse environmental effects of the Project. Mitigation measures include adherence to existing guidelines and regulations, and planning to identify, control, and monitor environmental risks.

The Agency identified key mitigation measures, monitoring, and follow-up programs that would prevent or reduce potential adverse environmental effects, verify the accuracy of the environmental assessment predictions, and verify the effectiveness of mitigation measures. The Agency, in selecting key mitigation measures, monitoring, and follow-up programs, was informed by the Proponent's commitments, advice from federal authorities and provincial ministries, and comments from Indigenous groups and the public.

Key mitigation, monitoring and follow-up measures include: minimizing atmospheric emissions and noise; monitoring and management of groundwater and surface water quantity and quality changes; managing sediment concentrations in potentially affected waterbodies by implementing erosion and sediment control measures; implementing a fish rescue plan and monitoring effects to fish and fish habitat; developing appropriate measures to offset fish habitat losses; carrying out project activities in a manner that protects and avoids harming, killing, or disturbing migratory birds, nests, eggs, or habitat that would directly affect migratory birds; continual engagement with Indigenous groups, including with respect to monitoring and access management; and development of an Environmental Advisory Committee (EAC) to support ongoing engagement and information sharing.

The Agency concludes that, taking into account the implementation of key mitigation measures, monitoring, and follow-up programs, the Project is likely to cause significant adverse environmental effects as defined under CEAA 2012. The Minister of Environment and Climate Change (the Minister) will consider the proposed key mitigation measures in establishing conditions as part of an Environmental Assessment Decision Statement under CEAA 2012. If the Minister of Environment and Climate Change determines that the Project is likely to cause significant adverse environmental effects, the Minister will refer the question of whether these effects are justified in the circumstances to the Governor-in-Council. If the Governor-in-Council decides that these effects are justified in the circumstances, the Minister will set out legally binding conditions for the Project for the Proponent under CEAA 2012. In addition, it is the Agency's expectation that all of the Proponent's commitments would be implemented in order for the Project to be carried out in a precautionary manner.



Contents

Executive Summary	iii
List of Tables	xvii
List of Figures	xviii
List of Abbreviations and Acronyms	xix
Glossary	xxi
1 Introduction	1
1.1 Draft Environmental Assessment Report	1
1.2 Scope of the Environmental Assessment	2
1.2.1 Environmental Assessment	2
1.2.2 Factors Considered in the Environmental Assessment	3
1.2.3 Methodology and Approach.....	5
2 Project Overview	8
2.1 Project Location and Temporal and Spatial Boundaries	8
2.1.1 Spatial Boundaries	10
2.1.2 Temporal Boundaries	10
2.2 Project Components	10
2.3 Project Activities and Schedule.....	18
2.3.1 Construction Phase: Site Preparation, Construction, and Commissioning	18
2.3.2 Operation Phase: Operation and Maintenance.....	19
3 Purpose of Project and Alternative Means	20
3.1 Purpose of the Project.....	20
3.2 Alternative Means of Carrying out the Project	20
3.2.1 Proponent’s Alternative Means Assessment	21
Lake Manitoba Outlet Channel Routing	21
Lake St. Martin Outlet Channel Routing.....	23
Water Control Structures	25



Bridge Crossings.....	25
Realignment of Provincial Road 239.....	25
Electrical Distribution Line.....	25
Quarry and Borrow Areas	26
3.2.2 Views Expressed.....	26
3.2.3 Agency Analysis and Conclusions	27
4 Consultation and Engagement Activities.....	29
4.1 Crown Consultation with Indigenous Peoples	29
4.1.1 Consultation Led by the Agency.....	29
4.2 Proponent’s Indigenous Engagement Activities	33
4.3 Public Participation.....	34
4.3.1 Public Participation Led by the Agency	34
4.3.2 Public Participation Led by the Proponent.....	36
5 Existing Ecosystem	37
5.1 Biophysical Environment.....	37
5.2 Human Environment	40
6 Predicted Changes to the Environment	42
6.1 Surface Water.....	42
6.1.1 Proponent’s Assessment of Environmental Effects	42
Predicted Effects.....	44
Regional Flow and Water Levels	44
Regional and Local Fluvial and Shoreline Geomorphology	44
Local Drainage Areas and Local Drainage Patterns	45
Surface Water Quality.....	45
Regional and Local Sediment and Debris Transport	46
Regional and Local Ice Processes.....	48
6.1.2 Views Expressed	49
Federal Authorities	49
Indigenous Groups.....	50
Public Groups	52
6.1.3 Agency Analysis and Conclusion.....	53



Analysis of the Effects.....	53
Key Mitigation Measures and Monitoring to Avoid Significant Adverse Effects and Follow Up Program Requirements	55
Key Mitigation Measures	56
Follow-up and Monitoring	57
6.2 Groundwater and Hydrogeology	60
6.2.1 Proponent’s Assessment of Environmental Effects	60
Predicted Effects.....	62
Changes in groundwater quantity, levels and flow paths	62
LMOC	63
LSMOC.....	64
Quarry Development.....	65
Changes in local groundwater quality	66
LMOC	66
LSMOC.....	66
6.2.2 Views Expressed.....	67
Federal Authorities.....	67
Indigenous Groups.....	68
Public Groups	69
6.2.3 Agency Analysis and Conclusion.....	70
Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements	72
Mitigation Measures.....	73
Changes in groundwater quantity, levels and flow paths	73
Changes in groundwater quality	73
Follow-up and monitoring.....	73
6.3 Terrestrial Landscape.....	75
6.3.1 Proponent’s Assessment of Environmental Effects	75
Changes in Plant Species, Community and Landscape Diversity.....	77
Changes to Wildlife Habitat.....	79
Changes in Wetland Area and Functions.....	80
6.3.2 Views Expressed.....	82



Federal Authorities.....	82
Indigenous Groups.....	82
Plant Species, Community and Landscape Diversity.....	82
Wildlife Habitat.....	83
Wetlands.....	83
6.3.3 Agency Analysis and Conclusions	84
Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-up Program Requirements	85
Mitigation Measures.....	85
Follow-up and Monitoring.....	87
7 Predicted Effects to Valued Components	89
7.1 Fish and Fish Habitat	89
7.1.1 Proponent’s Assessment of Environmental Effects	89
Predicted Effects.....	89
Permanent Alteration or Destruction of Fish Habitat.....	89
Change in Fish Passage.....	94
Change in Fish Health and Mortality	95
Proponent Conclusions	97
7.1.2 Views Expressed.....	97
Federal Authorities.....	97
Indigenous Groups.....	99
Public Groups	102
7.1.3 Agency Analysis and Conclusion	103
Analysis of the Effects.....	103
Permanent Alteration or Destruction of Fish and Fish Habitat	103
Change in Fish Passage.....	106
Change in Fish Health and Mortality	107
Conclusions	108
Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements	108
Permanent Alteration or Destruction of Fish and Fish Habitat	109
Change in Fish Passage.....	110



Change in Fish Health and Mortality	110
Follow-up and Monitoring.....	110
7.2 Migratory Birds	112
7.2.1 Proponent’s Assessment of Environmental Effects	112
Habitat Loss or Alteration.....	113
Change in Mortality Risk	115
7.2.2 Views Expressed.....	116
Federal Authorities.....	116
Indigenous Groups.....	117
Public Groups	118
7.2.3 Agency Analysis and Conclusion	118
Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements	120
Mitigation Measures.....	120
Follow-up and Monitoring.....	121
7.3 Species at Risk.....	122
7.3.1 Proponent’s Assessment of Environmental Effects	122
Little Brown Myotis and Northern Myotis.....	123
Change in Habitat.....	124
Change in Mortality Risk.....	124
Change in Movement.....	124
Northern Leopard Frog and Snapping Turtle	125
Change in Habitat	125
Change in Mortality Risk.....	126
Change in Movement.....	126
Short-eared owl.....	126
7.3.2 Views Expressed.....	127
Federal Authorities.....	127
Indigenous Groups.....	127
Public Groups	128
7.3.3 Agency Analysis and Conclusion	128



Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements	129
Mitigation Measures	130
Follow-up and Monitoring	130
7.4 Indigenous Peoples - Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance	131
7.4.1 Current Use of Lands and Resources for Traditional Purposes	131
7.4.1.1 Proponent's Assessment of Effects	131
Access for Current Use	133
Availability and Quality of Resources for Current Use	134
Quality of Experience	138
Proponent Conclusions on Current Use	138
7.4.1.2 Views Expressed	139
Federal Authorities	139
Indigenous Groups	139
7.4.1.3 Agency Analysis and Conclusions for Current Use	143
Access for Current Use	143
Availability and Quality of Resources for Current Use	144
Quality of Experience	145
Overall Conclusions	145
7.4.2 Physical and Cultural Heritage, and Sites of Significance	147
7.4.2.1 Proponent's Assessment of Effects	147
Overview of Effects to Physical and Cultural Heritage	149
Overview of Effects to Cultural and Spiritual Sites	149
Proponent Conclusions	152
7.4.2.2 Views Expressed	152
Indigenous Groups	153
Public Groups	156
7.4.2.3 Agency Analysis and Conclusions for Physical and Cultural Heritage and Sites of Significance	156
Physical and Cultural Heritage and Sites of Significance Within the Project Development Area	156



Physical and Cultural Heritage and Sites of Significance Within the Local Assessment Area and Regional Assessment Area.....	158
Intangible Aspects of Cultural Heritage.....	159
Overall Conclusions.....	159
7.4.3 Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements.....	160
Mitigation Measures.....	160
Follow-Up and Monitoring.....	166
7.5 Indigenous Peoples – Health and Socio-Economic Conditions.....	168
7.5.1 Effects to Indigenous Peoples’ Health.....	169
7.5.1.1 Proponent’s Assessment of Effects.....	169
Atmospheric Environment.....	169
Water Quality.....	169
Acoustic Environment.....	170
Country Foods.....	170
Proponent’s Conclusions.....	171
7.5.1.2 Views Expressed.....	173
Indigenous Groups.....	173
Federal Authorities.....	174
7.5.1.3 Agency Analysis and Conclusions for Indigenous Peoples’ Health.....	174
7.5.2 Effects to Indigenous Peoples’ Socio-economic Conditions.....	175
7.5.2.1 Proponent’s Assessment of Effects.....	175
Availability and Quality of Lands and Resources.....	176
Availability of Community Services and Infrastructure.....	176
Economy.....	176
Proponent Conclusions.....	177
7.5.2.2 Views Expressed.....	177
Indigenous Groups.....	177
7.5.2.3 Agency Analysis and Conclusions for Indigenous Peoples’ Socio-economic Conditions.....	180
7.5.3 Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements.....	181
Indigenous Peoples’ Health.....	181



Mitigation Measures.....	181
Monitoring and Follow-Up Programs	181
Indigenous Peoples' Socio-economic conditions	182
7.6 Federal Lands	184
7.6.1 Proponent's Assessment of Environmental Effects	184
Changes to Surface Water.....	186
Changes to Vegetation and Wetlands.....	186
Changes to Health and Socio-economic Conditions	186
7.6.2 Views Expressed.....	187
Indigenous Groups.....	187
7.6.3 Agency Analysis and Conclusions	188
Key Mitigation Measures to Avoid Significant Adverse Effects	189
8 Other Effects Considered	190
8.1 Effects of Accidents and Malfunctions.....	190
8.1.1 Proponent's Assessment of Environmental Effects	190
Breach or Overtopping of the Containment Dyke and Water Control Structure Failure	190
Hazardous Material Spills	191
Fires	192
Proponent Conclusions	192
8.1.2 Views Expressed.....	192
Federal Authorities	192
Public Groups	193
Indigenous Groups.....	193
8.1.3 Agency Analysis and Conclusions	194
Analysis of the Effects.....	194
Key Mitigation Measures and Monitoring to Avoid Significant Adverse Effects and Follow-Up Program Requirements	196
8.2 Effects of the Environment on the Project	197
8.2.1 Proponent's Assessment of Environmental Effects	197
Extreme Weather and Hydrologic Conditions	197
Ice and Ice Formation	198



Climate Change	199
Fire Hazards	200
Proponent Conclusions	200
8.2.2 Views Expressed.....	200
Federal Authorities.....	200
Indigenous Groups.....	200
Public Groups	202
8.2.3 Agency Analysis and Conclusions	202
Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements	203
8.3 Cumulative Environmental Effects.....	204
8.3.1 Proponent’s Assessment of Cumulative Environmental Effects	205
Cumulative Effects to Fish and Fish Habitat	211
Cumulative Effects to the Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance.....	212
Cumulative Effects to Indigenous Health and Socio-economic Conditions	213
Proponent Conclusions	214
8.3.2 Views Expressed.....	214
Federal Authorities.....	214
Indigenous Groups.....	214
Cumulative Effects to Fish and Fish Habitat	216
Cumulative Effects to Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance	216
Cumulative Effects to Indigenous Peoples’ Health and Socio-economic Conditions	217
Mitigation, Monitoring and Follow-up	217
Public Groups	218
8.3.3 Agency Analysis and Conclusions	218
Fish and Fish Habitat.....	219
Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Structures, Sites, and Things of Historical, Archaeological, Paleontological, or Architectural Significance	220
Indigenous Health and Socio-economic Conditions.....	220



Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements	221
9 Impacts on Aboriginal and Treaty Rights	222
9.1 Existing Aboriginal or Treaty Rights	222
9.1.1 Context in Which Impacts on Rights Would Occur	226
9.2 Potential Adverse Impacts of the Project on Section 35 Rights.....	228
9.2.1 Hunting, Trapping, and Fishing Rights	228
Hunting and Trapping Rights	228
Context in Which Impacts on Hunting and Trapping Rights Would Occur	229
Pathways of Impact from the Project on Hunting and Trapping Rights.....	229
Assessment of Impact on Hunting and Trapping Rights	232
Fishing Rights	233
Context in Which Impacts on Fishing Rights Would Occur	233
Pathways of Impact from the Project on Fishing Rights.....	234
Assessment of Impact on Fishing Rights	235
9.2.2 Right to Continued Way of Life.....	236
Cultural Continuity.....	237
Context in Which Impacts on Cultural Continuity Would Occur	237
Pathways of Impact from the Project on Cultural Continuity	238
Stewardship	241
Context in Which Impacts on Stewardship Would Occur.....	241
Pathways of Impact from the Project on Stewardship.....	242
Assessment of the Level of Impact to Way of Life Rights	243
9.3 Issues to be Addressed During the Regulatory Approval Phase.....	244
9.4 Agency Conclusions Regarding Impacts on Section 35 Rights.....	245
9.4.1 Agency Conclusions.....	246
10 Conclusions and Recommendations of the Agency.....	258
Appendices	259
Appendix A: Environmental Effects Rating Criteria	259
Appendix B: Species at Risk	269
Appendix C: Summary of the Crown Consultation with Indigenous Groups.....	273



Appendix D: Species at Risk, Migratory Birds, and Species of Cultural Importance
Setbacks and Mitigation Measures 352



List of Tables

Table 1 Valued Components Selected by the Agency	3
Table 2 Key Project Components of the Lake Manitoba and Lake St. Martin Outlet Channels	14
Table 3 Public and Indigenous Groups Comment Opportunities during the Environmental Assessment Process	32
Table 4 Construction-Related Sediment in the Lake Manitoba and Lake St. Martin Outlet Channels	47
Table 5 Changes to Bedrock Aquifer Groundwater Discharge Rates in the Local Assessment Area in Lake Manitoba, Lake St. Martin, Lake Winnipeg, and Outlet Channels Due to Operation of the Project	63
Table 6 Estimated Loss of Upland and Wetland Wildlife Habitat in the Project Development Area, Local Assessment Area and Regional Assessment Area	77
Table 7 Estimated Loss of Wetland Types in the Project Development Area, Local Assessment Area and Regional Assessment Area	80
Table 8 Wetland Cover Classes in the Project Development Area, Local Assessment Area and Regional Assessment Area	81
Table 9 Quantitative Estimates of Harmful Alteration, Disruption or Destruction of Fish Habitat Due to the Project	93
Table 10 Migratory Bird Species at Risk Habitat Losses within the Project Development Area, Local Assessment Area, and Regional Assessment Area	114
Table 11 Direct Habitat Losses for Amphibian and Mammal Species at Risk within the Regional Assessment Area	123
Table 12 Projects and Physical Activities Included in the Cumulative Effects Assessment	206
Table 13 Degree of Severity for Adverse Impacts on Rights of Indigenous Peoples	246
Table 14 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups located along the Fairford River, Lake St. Martin, and Dauphin River and that have identified preferred use of directly affected areas, including Dauphin River First Nation, Fisher River Cree Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Little Saskatchewan First Nation, Lake St. Martin First Nation, Peguis First Nation, Pinaymootang First Nation, and the Manitoba Métis Federation	248
Table 15 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups upstream of the Project and surrounding Lake Manitoba, including Dakota Tipi First Nation, Ebb and Flow First Nation, Keeseekoowenin Ojibway First Nation, O-Chi-Chak-Ko-Sipi First Nation, Pine Creek First Nation, Sandy Bay Ojibway First Nation, and Skownan First Nation	250
Table 16 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups surrounding Lake Winnipeg, including Berens River First Nation, Black River First Nation, Bloodvein First Nation, Brokenhead Ojibway First Nation, Hollow Water First Nation, Misipawistik Cree Nation, Poplar River First Nation, and Sagkeeng Anicinabe First Nation	252



Table 17 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups located along the Nelson River and Split Lake, including Fox Lake Cree Nation, Pimicikamak Okimawin, Norway House Cree Nation, Tataskweyak Cree Nation, and York Factory Cree Nation	254
Table 18 General Definitions of Criteria Used to Assess Residual Environmental Effects to Valued Components	259
Table 19 Definitions for Criteria That Vary by Valued Component Used to Assess Residual Environmental Effects.....	262

List of Figures

Figure 1 Regional Location of the Lake Manitoba and Lake St. Martin Outlet Channels Project.....	9
Figure 2 Project Components of the Lake Manitoba Outlet Channel	11
Figure 3 Project Components of the Lake St. Martin Outlet Channel.....	12
Figure 4 Alternative Routes for the Lake Manitoba Outlet Channel	22
Figure 5 Alternative Routes for the Lake St. Martin Outlet Channel.....	24
Figure 6 Surface Water Spatial Boundaries.....	43
Figure 7 Groundwater Spatial Boundaries.....	61
Figure 8 Local and Regional Assessment Area for Vegetation, Wetlands and Wildlife	76
Figure 9 Local and Regional Assessment Area for Fish and Fish Habitat	91
Figure 10 Spatial Boundaries for the Proponent's Assessment of Effects to Traditional Land and Resource Use	132
Figure 11 Spatial Boundaries for the Proponent's Assessment of Effects to Heritage Resources	148
Figure 12 Indigenous Health and Socio-Economic Assessment Areas	172
Figure 13 Indigenous Group Reserve and Community Locations Engaged on the Project	185
Figure 14 Past, Present and Reasonably Foreseeable Future Projects and Physical Activities in the Regional Assessment Area	209
Figure 15 Project Location in Regional Assessment Area with Other Flood Management Infrastructure	210
Figure 16 Treaty Areas for Indigenous Groups Potentially Impacted by the Project.....	225



List of Abbreviations and Acronyms

Abbreviation/Acronym	Definition
Agency	Impact Assessment Agency of Canada
AIS	Aquatic Invasive Species
CCME	Canadian Council of Ministers of the Environment
CEAA 2012	<i>Canadian Environmental Assessment Act, 2012</i>
COPC	Contaminant of Potential Concern
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
Current use	Indigenous peoples' current use of lands and resources for traditional purposes
EAC	Environmental Advisory Committee
EA Report	Environmental Assessment Report
EIS	Environmental Impact Statement
EOC	Emergency Outlet Channel
FRWCS	Fairford River Water Control Structure
HRB	Heritage Resources Branch (Government of Manitoba)
HRIA	Heritage Resources Impact Assessment
HRPP	Heritage Resources Protection Plan
LAA	Local Assessment Area
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
MWQSOG	<i>Manitoba Water Quality Standards, Objectives, and Guidelines</i>
Minister	Minister of Environment and Climate Change
PDA	Project Development Area
PR	Provincial Road
Project	Lake Manitoba and Lake St. Martin Outlet Channels Project



Proponent	Manitoba Transportation and Infrastructure
RAA	Regional Assessment Area
RM	Rural Municipality
ROW	Right of Way
SARA	<i>Species at Risk Act</i>
SOCC	Species of Conservation Concern
Section 35 rights	Aboriginal and treaty rights protected under section 35 of the <i>Constitution Act, 1982</i>
Site of significance	Any structure, site, or object that is of historical, archaeological, paleontological, or architectural significance for Indigenous peoples
TAG	Technical Advisory Group
WCS	Water Control Structure



Glossary

Term	Definition
Aquifer	A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs.
Artesian (aquifer, pressure)	Refers to ground water under sufficient hydrostatic head to rise above the aquifer containing it. When an artesian aquifer is penetrated by a well, the water level will rise above the top of the aquifer; a flowing artesian well is when the water level will rise above ground surface.
Basal heave	A fracture in the till unit that results in uncontrollable discharge of groundwater under high pressure to the surface. Basal heave may occur during construction or operation of the Project where the weight above the bedrock aquifer is insufficient to counter the groundwater pressure.
Baseflow	For the purpose of this Project, baseflow refers to the water that will be conveyed through the LMOC and LSMOC year-round to maintain water quality and oxygen levels for fish, particularly during winter, under ice conditions.
Bedrock	The solid rock that lies beneath the soil and other loose material on the Earth's surface.
Bedrock Aquifer	An aquifer comprised of a carbonate bedrock.
Bedrock grouting	A process of injecting material into the bedrock aquifer fractures to reduce the groundwater flow to surface and to strengthen the rock mass
Central Flyaway	A bird migration route that encompasses North America's interior from Canadian Boreal Forest, along the Great Plains to the USA Gulf Coast and includes the RAA.
Chlorophyll a	The green pigment of plants and photosynthetic algae and bacteria that traps the energy of sunlight for photosynthesis. This pigment can



be used as a proxy to measure primary productivity (i.e., algae growth) in a lake.

Confined Aquifer	An aquifer that is bounded above and below by formations of distinctly lower permeability than that of the aquifer. An aquifer containing confined groundwater.
Conveyance time	The length of time water is conveyed from one water body to the next
Critical habitat	Habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species (<i>Species at Risk Act</i> , section 2(1)).
Deleterious substance	A substance is deleterious if it is harmful to fish, if it limits the use of fish by humans (for example contamination of fish by dioxins or shellfish by <i>E. coli</i>), or if by going through some process of degradation, it harms the water quality (for example, oxygen-depleting wastes). A substance is also deleterious if it exceeds a level prescribed by regulation.
Depressurization	Action of decreasing hydrostatic pressure. Active depressurization involves the use of pumps. Passive depressurization does not involve the use of pumps, but rather uses a relation between hydrostatic pressure elevation and topographic elevation.
Design flood	Flood volumes and velocities as defined in the Canadian Dam Association Dam Safety Guidelines (2013), understood to be a 1 in 300-year flood event for the Project.
Dewatering	Removal or draining groundwater or surface water from a riverbed or construction site by pumping or evaporation.
Drainage area	A land base that drains to the same location, whereas drainage patterns refer to the path by which water takes to reach that location
Edge effects	An abrupt transition between two different adjoining ecological communities with respect to the numbers and types of organisms in the marginal habitat



Environmental Impact Statement	The document prepared by the Proponent that identifies and assesses the environmental effects of the Project, and the measures proposed to mitigate those effects, in accordance with the Environmental Impact Statement Guidelines provided by the Agency.
Environmental Impact Statement Guidelines	The document prepared by the Agency that identifies the requirements for the preparation of the Environmental Impact Statement. This document specifies the nature, scope and extent of the information required from the Proponent for the Project.
Environmental sensitive sites	Represents one or more of the following: critical wintering habitat; critical breeding habitat; species fidelity to dens and nests; and/or may be culturally significant sites.
Escape cover	Vegetation that by reason of strategic location or natural formation assists the escape of animals from their predators
Fluvial geomorphology	The physical shapes of rivers, their water and sediment transport processes, and the landforms they create.
Follow-up Program	A program, whose elements are outlined by the Agency, to verify the accuracy of environmental conclusions and evaluate the effectiveness of mitigation measures.
Frazil ice	Small discs of ice ranging in size from less than 0.1 millimetres to a few millimetres, formed in turbulent water.
Groundwater	Water that occurs beneath the land surface and fills the pore spaces of soil or rock below saturated zone.
Groundwater Discharge Site	The release of water from the zone of saturation
Groundwater Recharge Site	A location where surface water or precipitation can infiltrate into the ground and replenish the water supply of an aquifer.
Hanging ice dam	Ice accumulation created by the deposition of entrained ice on the underside of an ice cover.



Groundwater Under Direct Influence	When surface water enters a groundwater resource.
Heritage resources	A land or resource (e.g., an artifact, object, or place) that is considered as heritage or any structure, site, or thing is distinguished from other lands and resource by the value placed on it.
Habitat fragmentation	A process by which large and contiguous habitats are divided into smaller, isolated patches of habitat
Heritage sites	Sites with potential cultural or heritage value.
Ice jam	Generic term referring to the accumulation of ice fragments in a watercourse that restricts flow and causes staging of water levels upstream.
Important Bird Area	A discrete site that supports specific groups of birds (e.g. threatened birds, large groups of birds and birds restricted by range or by habitat). They are identified using internationally defined criteria. Canada's Important Bird and Biodiversity Areas Program is a non-regulatory program that identifies areas that are important for birds and works with local communities, landowners, individuals and organizations to ensure that people and birds can co-exist in these areas.
Interlake	The area between Lake Winnipeg and Lake Manitoba.
Invert (channel)	The stream bed or floor within a structure or channel.
Residence time	The length of time water stays within a body of water
Reverse drain	A groundwater pressure relief system that allows the upward movement of groundwater to the surface due to high groundwater pressure. The bedrock aquifer is covered with granular material which acts as a filter for water moving between the bedrock at the base of the outlet channel.



Rights of Indigenous Peoples	"Rights of Indigenous peoples" and "rights" refer to the rights recognized in section 35 of <i>the Constitution Act, 1982</i> , which include Aboriginal and treaty rights.
Riprap	A stone covering used to protect soil or surface bedrock from erosion by water or the elements.
Runoff	Surface water that flows overland and into streams, wetlands or waterbodies, or into drainage systems.
Sediment Plume	Water having a having a total suspended solids concentration above 5 micrograms per litre increase over background, as defined by the Proponent for this Project.
Shoreline geomorphology	Physical characteristics of the shoreline influenced by winds, waves, currents and changes to water levels.
Species of conservation concern	Species that are tracked either federally (<i>Species at Risk Act</i> , Committee on the Status of Endangered Wildlife in Canada), or provincially (<i>The Endangered Species and Ecosystems Act</i> and Manitoba Conservation Data Centre) and are considered rare or at risk of extinction; species that may become a threatened or an endangered because of a combination of biological characteristics and identified threats
Surficial Aquifer	Upper surface of a zone of saturation, where the body of groundwater is not confined by an overlying impermeable zone. The top of the aquifer is commonly known as the water table.
Till	An unstratified, unconsolidated mass of boulders, pebbles, sand and mud deposited by the movement or melting of a glacier.
Total suspended solids	Quantitative water quality measurement of the suspended solids, or sediment, in the water column and is the direct measurement of the total solids present in a waterbody.
Turbidity	Measure of the lack of clarity or transparency of water caused by biotic and abiotic suspended or dissolved substances.



Water Control Structure (WCS) Gates Closed	State of the Project during periods of non-flood management. In this state, the outlet channels are only conveying a baseflow to maintain oxygen levels in the outlet channels.
Water Control Structure (WCS) Gates Closing	State of the Project post-flood. This state is triggered by lake levels in accordance with the Lake Manitoba and Lake St. Martin Outlet Channels Operating Guidelines.
Water Control Structure (WCS) Gates Open	State of the Project during periods of flood management. In this state, the outlet channels are conveying flows through the outlet channels to manage lake water levels.
Water Control Structure (WCS) Gates Opening	State of the Project initiating flood management. This state is triggered by lake levels in accordance with the Lake Manitoba and Lake St. Martin Outlet Channels Operating Guidelines.
Wetland	Land saturated with water long enough to promote formation of water altered soils, growth of water-tolerant vegetation, and various kinds of biological activity that is adapted to the wet environment and separated into five classes: fen, bog, marsh, swamp, and shallow open water wetlands (includes open water areas less than two metres deep with wetland characteristics).

1 Introduction

Manitoba Transportation and Infrastructure (the Proponent) is proposing the construction and operation of a new permanent flood control management system located within the Interlake Region of central Manitoba in response to the catastrophic floods of 2011 and 2014. The Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project) would consist of two new outlet channels, each approximately 24 kilometres long, which would be supplemental to the greater flood protection infrastructure throughout the Assiniboine River and Lake Manitoba drainage basins.

The outlet channels would provide additional capacity to move water from Lake Manitoba through Lake St. Martin and into Lake Winnipeg during flood events. The Lake Manitoba Outlet Channel (LMOC) would convey water northwards from Watchorn Bay on Lake Manitoba to Birch Bay on Lake St. Martin, and the Lake St. Martin Outlet Channel (LSMOC) would convey water northeastwards from Lake St. Martin to Sturgeon Bay on Lake Winnipeg.

Other Project components include channel inlets and outlets, two combined bridge and water control structures (WCSs), a 24-kilovolt electrical distribution line, road works, including the re-alignment and construction of highways and roads, three bridge structures, and eight in-channel drop structures. Associated works of the Project would include quarries, work camps, and staging areas. Construction would occur over approximately three to four years, followed by two years for vegetation establishment, during which time the channels would be commissioned.

The LMOC and LSMOC are designed to divert over 17 billion cubic metres of floodwater per year as needed. The Project would be operated according to the guidelines defined by the Proponent to maintain water levels in Lake Manitoba and Lake St. Martin within existing target ranges recommended by the 2003 Lake Manitoba Regulation Review Advisory Committee and the 2013 Lake Manitoba, Lake St. Martin Regulation Review Committee¹. There are no plans to expand or decommission the Project.

1.1 Draft Environmental Assessment Report

The draft Environmental Assessment Report (EA Report) summarizes the analysis conducted by the Impact Assessment Agency of Canada (the Agency), in accordance with the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), and presents the Agency's conclusions on whether the Project is likely to cause significant adverse environmental effects to areas of federal jurisdiction after taking into account the implementation of mitigation measures, monitoring, and follow-up programs. Following a public comment period on the draft EA Report, the Agency will finalize the EA Report and provide it to the

¹ The Proposed Lake Manitoba and Lake St. Martin Operational Guidelines are available in Manitoba Infrastructure. (2020). *Lake Manitoba and Lake St. Martin Outlet Channels Project Environmental Impact Statement*, Volume 1 Appendix 3D. Retrieved February 7, 2024, from <https://iaac-aeic.gc.ca/050/evaluations/document/134620>.



Minister of Environment and Climate Change (the Minister). The Minister will consider the final EA Report when issuing the Environmental Assessment Decision Statement to the Proponent of the Project under CEAA 2012.

On January 9, 2018, the Agency initiated a screening of a description of the Project from the Proponent, which included consultation with the public and Indigenous groups, to determine if a federal environmental assessment was required. On March 9, 2018, the Agency determined that an environmental assessment was required, and commenced the environmental assessment process. On May 15, 2018, following a consultation period on the draft Environmental Impact Statement Guidelines (EIS Guidelines), the Agency issued the final EIS Guidelines to the Proponent.

In March 2020, the Agency accepted the Proponent's Environmental Impact Statement (EIS) and EIS Summary, held a public comment period on the EIS Summary, and commenced the technical review of the EIS. On February 27, 2024, the Agency advised the Proponent that they have submitted the information and studies requested by the Agency that are necessary to conduct the environmental assessment of the Project, and to prepare the EA Report under CEAA 2012 within the required timeline. On April 8, the Agency commenced a public comment period on the draft EA Report and potential conditions.

1.2 Scope of the Environmental Assessment

1.2.1 Environmental Assessment

On August 28, 2019, the *Impact Assessment Act* came into force, and CEAA 2012 was repealed. In accordance with the transitional provisions of the *Impact Assessment Act*, the environmental assessment of this Project is being continued under CEAA 2012 as if that Act had not been repealed.

The Project is subject to CEAA 2012 as it would involve activities described in paragraph 6 of the *Physical Activities Schedule* to the *Regulations Designating Physical Activities*:

Item 6. The construction, operation, decommissioning and abandonment of a new structure for the diversion of 10,000,000 cubic metres per year or more of water from a natural water body into another natural water body.

The Project is also subject to Manitoba's *The Environment Act*. The Agency and Manitoba Environment and Climate coordinated the federal and provincial environmental assessment processes through acceptance of a single EIS written by the Proponent to satisfy both the provincial and federal requirements and through information sharing during the technical review of the EIS, where possible.



1.2.2 Factors Considered in the Environmental Assessment

The Agency issued EIS Guidelines, which specify the nature, scope, and extent of the information required to support the environmental assessment, and outline the environmental effects, the factors that must be considered, and valued components. Valued components are environmental and socio-economic features that may be affected by a project and that have been identified to be of concern by the Proponent, federal authorities, Indigenous groups, and/or the public. The EIS Guidelines for the Project are available on the Canadian Impact Assessment Registry².

The environmental assessment considered effects to valued components under federal jurisdiction, pursuant to section 5 of CEAA 2012, environmental components related to these valued components, and relevant to species at risk as per subsection 79(2) of the *Species at Risk Act* (SARA) and to species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The valued components considered by the Agency for the purposes of this report are presented in Table 1.

Table 1 Valued Components Selected by the Agency

Valued Component	Agency Rationale
Valued components identified pursuant to subsection 5(1) of CEAA 2012	
Fish and fish habitat	<p>Project-related activities may affect fish and fish habitat due to direct mortality, erosion and sedimentation, changes to water quality and quantity, and habitat loss or alteration.</p> <p>Fish and fish habitat are included due to the ecological importance of fish and fish habitat, the legislated protection of fish and fish habitat and species at risk, the cultural and socio-economic importance of fish and fishing, and the high likelihood of Project interactions.</p>
Migratory birds	<p>Project-related activities may affect migratory birds due to sensory disturbance, direct mortality, and vegetation clearing.</p> <p>Migratory birds are included due to their ecological importance, the legislated protection of migratory birds and species at risk, and the high likelihood of Project interactions.</p>
Federal lands	<p>Project-related changes to the environment may affect reserve lands of the Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, and Dauphin River First Nation due to potential changes to surface water; vegetation and wetlands; changes to land and resource use, physical and cultural heritage, and sites of significance; and health and socio-economic conditions.</p>

² Manitoba Infrastructure. (2018). *Lake Manitoba and Lake St Martin Outlet Channels Project. Guidelines for the Preparation of an Environmental Impact Statement*. Retrieved February 7, 2024, from <https://iaac-aeic.gc.ca/050/evaluations/document/132330>.

Valued Component	Agency Rationale
	Federal lands are included due to the legislated protection of federal lands, and the high likelihood of Project interactions.
Effect of changes to the environment on Indigenous peoples – current use of lands and resources for traditional purposes	<p>Project-related changes to the environment may affect the availability and quality of fish, plant, and wildlife species used by Indigenous peoples for hunting, trapping, fishing, and gathering.</p> <p>Project-related activities would disturb or reduce access to lands and resources used by Indigenous peoples for traditional purposes.</p> <p>Indigenous-related valued components are included due to the legislated protection of Indigenous peoples and their culture and traditional practices, and the high likelihood of Project interactions.</p>
Effects of changes to the environment on Indigenous peoples – physical and cultural heritage; and any structure, site or thing that is of historical, archaeological, paleontological or architectural sites of significance	<p>Project-related changes to the environment may directly or indirectly affect, disturb, or prevent access to sites, structures, or things of cultural importance to Indigenous peoples.</p> <p>Indigenous-related valued components are included due to the legislated protection of Indigenous peoples and their culture and traditional practices, and the high likelihood of Project interactions.</p>
Effects of changes to the environment on Indigenous peoples – health and socio-economic conditions	<p>Project-related changes to the environment may affect Indigenous peoples' health and socio-economic conditions through changes to surface water and groundwater quantity and quality, effects to the quality and quantity of country foods, effects to commercial fisheries, and effects to the ability of Indigenous peoples to access community services.</p> <p>Indigenous-related valued components are included due to the legislated protection of Indigenous peoples and their culture and traditional practices, and the high likelihood of Project interactions.</p>
Valued components identified due to their association with factors listed under subsection 5(1) of CEAA 2012	
Surface water	<p>Project-related activities may affect surface water due to potential changes to surface water quantity, quality, and flow.</p> <p>Surface water quantity and quality are included due to their ecological importance and interconnectedness with fish and fish habitat, migratory birds, Indigenous peoples, and federal lands. There is a high likelihood of Project interactions.</p>
Groundwater	<p>Project-related activities may affect groundwater due to potential changes to groundwater quantity (levels and flow paths), quality, and groundwater – surface water interactions.</p> <p>Groundwater quantity and quality are included due to their ecological importance and interconnectedness with fish and fish habitat, migratory birds, Indigenous peoples, and federal lands. There is a high likelihood of Project interactions.</p>

Valued Component	Agency Rationale
Effects identified pursuant to subsection 79(2) of SARA and species designated by COSEWIC	
Federally-listed species at risk and species of conservation concern	<p>Project-related activities, such as effects to terrestrial habitat and wetlands, effects to air quality, and changes to surface and groundwater quantity and quality may affect SARA-listed species and COSWEIC-listed species and their habitat.</p> <p>SARA requires consideration of listed species when conducting an environmental assessment under CEAA 2012. The Agency also considered species assessed by the COSEWIC as endangered, threatened, or of special concern.</p>

The Agency also considered the following factors pursuant to subsection 19(1) of CEAA 2012 in the environmental assessment:

- the environmental effects of the Project, including the environmental effects of malfunctions or accidents that may occur in connection with the Project and any cumulative environmental effects that are likely to result from the Project in combination with other physical activities that have been or will be carried out;
- the significance of the effects;
- comments from the public;
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project;
- the requirements of the follow-up program in respect of the Project;
- the purpose of the Project;
- alternative means of carrying out the Project that are technically and economically feasible and the environmental effects of any such alternative means;
- any change to the Project that may be caused by the environment; and
- the results of any relevant study conducted by a committee established by the Minister to study the effects of existing or future physical activities carried out in a region.

1.2.3 Methodology and Approach

The Proponent assessed the Project's effects using a structured approach that is consistent with accepted practices for conducting environmental assessments and with the Agency's *Operational Policy Statement: Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under CEAA 2012*³. The application of mitigation measures was considered by the Proponent in its

³ Canadian Environmental Assessment Agency. (2012). *Operational Policy Statement: Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under CEAA*



analysis and the predicted residual environmental effects were characterized based on the following assessment criteria: direction, magnitude, geographic extent, frequency, duration, timing, reversibility, and ecological/socio-economic context.

The Agency reviewed various sources of information in conducting its analysis, including:

- the EIS, EIS Summary, and EIS supplemental filings;
- Proponent responses to Agency information requests;
- advice from federal and provincial authorities, and the Technical Advisory Group;
- advice and comments from potentially affected Indigenous groups; and
- comments received from the public.

The Agency established a Technical Advisory Group (TAG) comprised of representatives of federal and provincial authorities, municipalities, Indigenous groups, and other invited entities⁴ with a mandate, expertise or knowledge relevant to the review of the Project, to provide the Agency with advice regarding the environmental assessment. The TAG members contributed expertise, local and Indigenous Knowledge, and worked directly with federal authorities to review the information, identify issues, review potential mitigation measures, and influence the design of monitoring and follow-up requirements.

Federal authorities with specialist information and expert knowledge relevant to the Project supported the Agency throughout the environmental assessment process. The Agency requested information from Fisheries and Oceans Canada, Transport Canada, Environment and Climate Change Canada, Health Canada, Natural Resources Canada, Infrastructure Canada, and Indigenous Services Canada. Their advice and expertise were incorporated into this draft EA Report.

The valued components selected by the Agency to support the assessment of potential environmental effects under CEAA 2012 and potential effects to SARA-listed species are outlined in Table 1. The Agency determined the significance of residual effects of the construction and operation phases of the Project on

2012. Retrieved February 7, 2024 from <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/determining-whether-designated-project-is-likely-cause-significant-adverse-environmental-effects-under-ceaa-2012.html>

⁴ TAG members include representatives from Berens River First Nation, Brokenhead Ojibway Nation, Dauphin River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Fox Lake Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal council for Lake Manitoba First Nation and Kinonjeoshtegon First Nation, Kinonjeoshtegon First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, O-Chi-Chak-Ko-Sipi First Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Skownan First Nation, Southern Chiefs Organization Inc. for Bloodvein First Nation and Black River First Nation, Tataskweyak Cree Nation, York Factory Cree Nation, Environment and Climate Change Canada, Fisheries and Oceans Canada, Health Canada, Impact Assessment Agency of Canada, Indigenous Services Canada, Infrastructure Canada, Natural Resources Canada, Transport Canada, Manitoba Environment and Climate Change, the Rural Municipality of Grahamdale, and Keewatinook Fishers of Lake Winnipeg.



areas of federal jurisdiction (Chapter 7 of this draft EA Report) by taking into account mitigation measures, monitoring, and follow-up programs. The Agency also considered the effects of accidents and malfunctions that may occur in connection with the Project (Chapter 8.1 of this draft EA Report), effects of the environment on the Project (Chapter 8.2 of this draft EA Report), and cumulative environmental effects (Chapter 8.3 of this draft EA Report).

The Agency's analysis, including where the Agency incorporated information received from Indigenous groups, the public, members of the TAG, and federal authorities, is provided throughout this draft EA Report. The definition of each assessment criterion and limits used to assign the level of effect for each rating criterion are provided in Appendix A of this EA Report. The Agency has modified duration criteria provided by the Proponent for some valued components, based on the duration of Project phases and their associated effects (Appendix A).



2 Project Overview

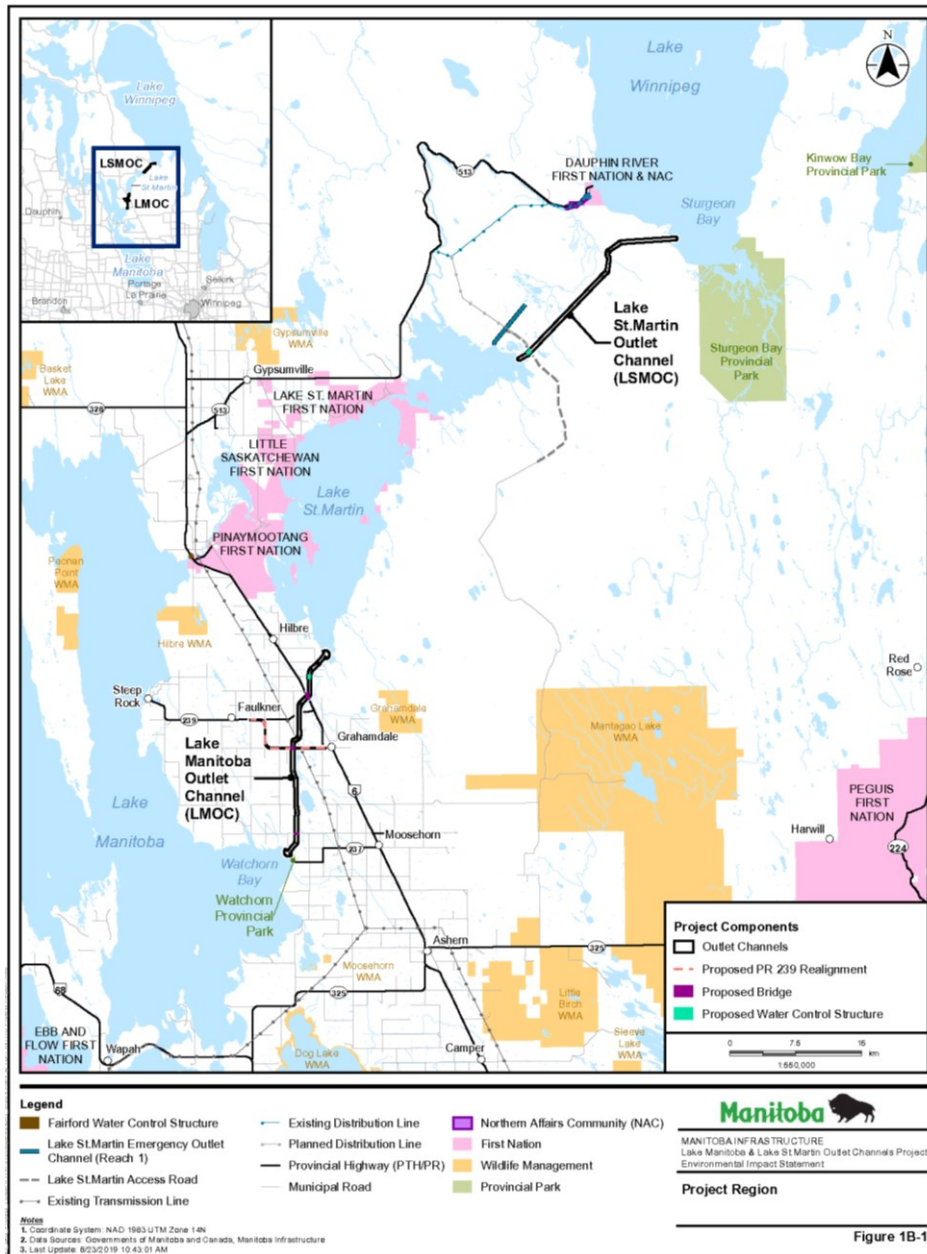
2.1 Project Location and Temporal and Spatial Boundaries

The Project would be located in the Interlake Region of Manitoba (Figure 1). The LMOC would primarily be located on private agricultural lands that would be purchased for the Project and is located approximately 9.3 kilometres from Pinaymootang First Nation reserve boundary and 10.3 kilometres from Moosehorn. The LSMOC would be located entirely on Provincial Crown land and would be located approximately 4.6 kilometres from Dauphin River First Nation and 12.0 kilometres from Lake St. Martin First Nation reserve boundaries. The LSMOC is designed as an alternative to the existing Emergency Outlet Channel (EOC) and would repurpose part of the EOC Reach 3. The Project Development Area would be approximately 2,099 hectares. Each outlet channel is approximately 24 kilometres long within a 400 metre right of way (ROW).

Spatial and temporal boundaries of an environmental assessment are established to define the area and timeframe within which a project may interact with the environment and cause environmental effects. The spatial and temporal boundaries vary among valued components depending on the nature of the potential project interaction with the environment.



Figure 1 Regional Location of the Lake Manitoba and Lake St. Martin Outlet Channels Project



Source: Lake Manitoba and Lake St. Martin Outlet Channels, Environmental Impact Statement, Volume 1 (March 5, 2020).

Figure Description: The LMOC starts in Watchorn Bay of Lake Manitoba and continues northward to end in Birch Bay in Lake St. Martin. The LSMOC starts in the eastern end of Lake St. Martin, goes northeastward to end in Sturgeon Bay of Lake Winnipeg, south of Willow Point.

2.1.1 Spatial Boundaries

The Proponent defined spatial boundaries as the geographic extent over which project-related activities and their potential environmental effects to valued components may occur. The Proponent defined three types of spatial boundaries for the environmental assessment: Project Development Area (PDA), Local Assessment Area (LAA), Regional Assessment Area (RAA).

Proponent's PDA: includes the immediate area within which project activities and components may occur, including the outlet channels (LMOC and LSMOC), WCSs, drop structures and bridges, inlet and outlet at both channels, and realignment of Provincial Road (PR) 239. The PDA is the anticipated area of direct physical disturbance associated with the construction and operation of the Project, and may include ancillary activities such as camps, quarries and laydown areas for which locations will be determined as part of the project contracting process.

Proponent's LAA: includes the area in which project-related environmental effects (i.e., direct or indirect) can be predicted or measured for assessment. The LAA is specific to each valued component and includes the geographic extent of effects on the given valued component in addition to the PDA.

Proponent's RAA: includes the area established for context in the determination of significance of project-specific effects and to assess cumulative effects. The RAA is valued component-specific and encompasses the PDA and LAA.

2.1.2 Temporal Boundaries

The Proponent defined temporal boundaries based on the timing and duration of project activities that could cause environmental effects. The purpose of the temporal boundaries is to identify when an effect may occur in relation to specific phases and activities of the Project. For all valued components, the Proponent defined the temporal boundary as six years for the construction phase and in perpetuity for the operation phase as the Project would not be decommissioned.

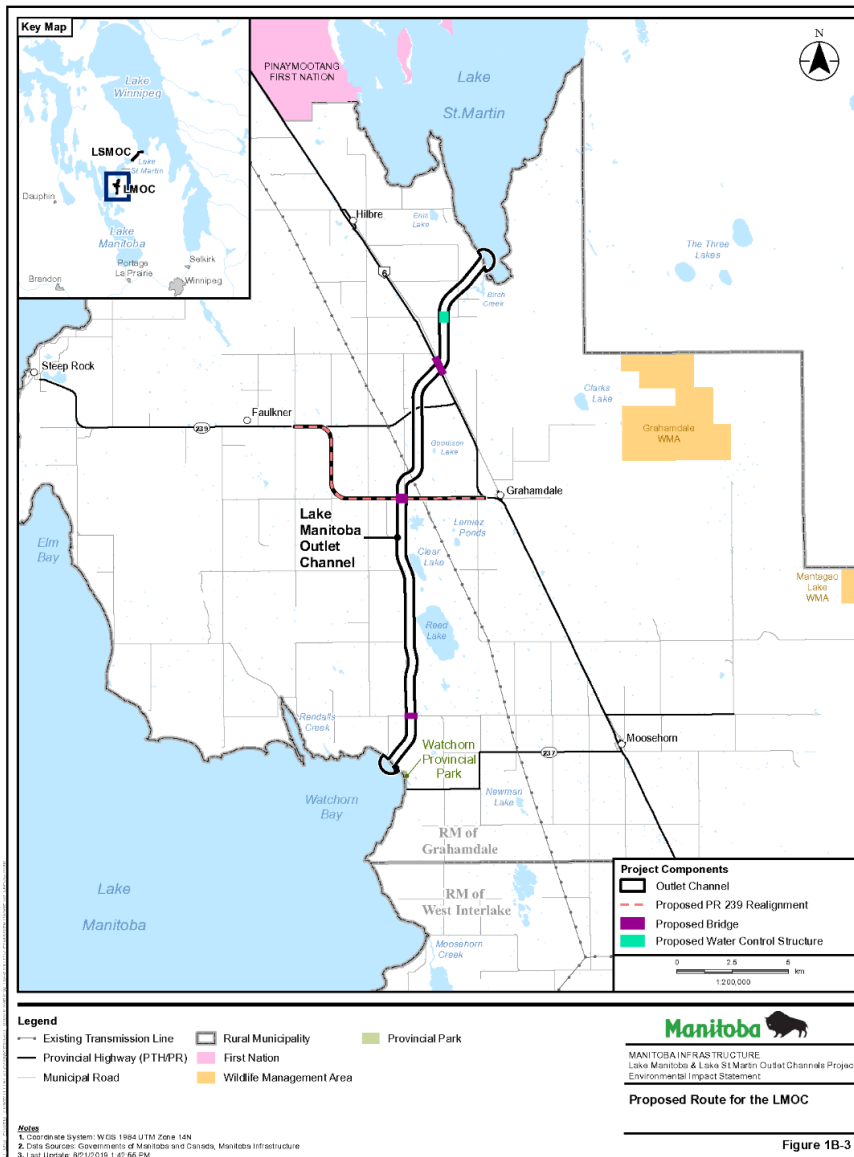
2.2 Project Components

The Project's components are depicted in Figures 2 and 3 and described below in Table 2⁵.

⁵ The Proponent developed two videos for the Project which can be accessed online. *The Lake Manitoba, Lake St. Martin Outlet Channels Project* (Manitoba Infrastructure, November 2019), a project conceptual animation, can be accessed here: <https://youtu.be/0Ky7-y0DC9w> (retrieved February 7, 2024). *The Lake Manitoba and Lake St. Martin Outlet Channels Operations Video* (Manitoba Infrastructure, December 2021) can be accessed here: <https://youtu.be/btwU3qaEzt0> (retrieved February 7, 2024).



Figure 2 Project Components of the Lake Manitoba Outlet Channel

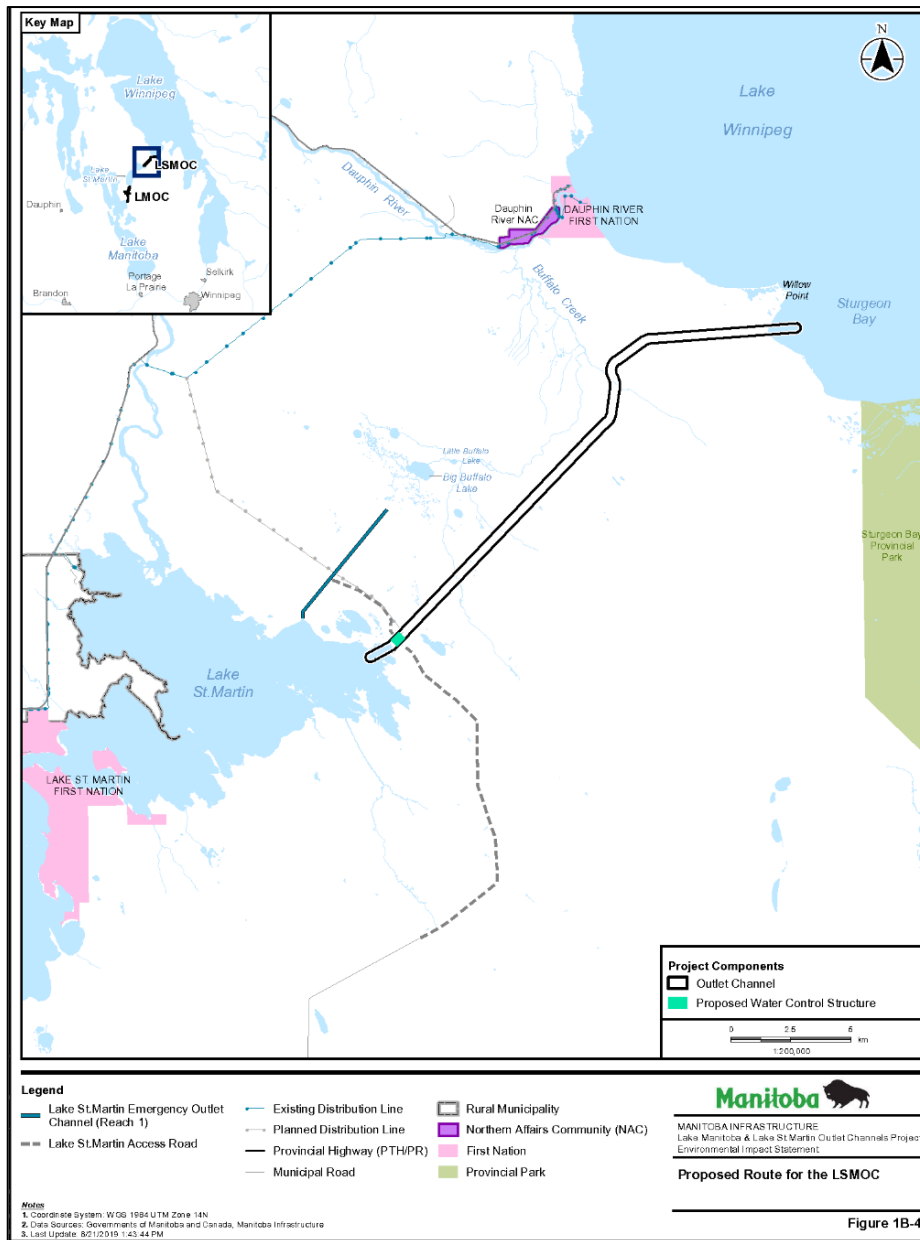


Source: Lake Manitoba and Lake St. Martin Outlet Channels, Environmental Impact Statement, Volume 1 (March 5, 2020).

Figure Description: The LMOC would run northwards from Watchorn Bay in Lake Manitoba to Birch Bay in Lake St. Martin and would consist of the following components: an outlet channel approximately 24 kilometres long, a channel inlet, a channel outlet, a WCS (combined with a road bridge), three additional road bridges, and realignment and/or new construction of PR 239 and affected municipal roads.



Figure 3 Project Components of the Lake St. Martin Outlet Channel



Source: Lake Manitoba and Lake St. Martin Outlet Channels, Environmental Impact Statement, Volume 1 (March 5, 2020).

Figure Description: The LSMOC would run northeast from the east end of Lake St. Martin to Sturgeon Bay east of Willow Point in Lake Winnipeg and would repurpose a portion of the existing Lake St. Martin EOC (Reach 3). The LSMOC would consist of the following components: an outlet channel, a channel inlet, a channel outlet, a combined bridge and WCS, and eight in-channel drop structures.



The Project would be located within a 400 metre ROW which includes the outlet channel, the outside drain, containment dykes, and permanent spoil piles from excavated material located on both sides of the channel and outside of any dyke. The LSMOC ROW would also include maintenance access roads constructed on top of both containment dykes along their entire length.

The Project is designed for a 1-in-300-year flood (i.e., a repeat 2011 flood), while capable of accommodating a 1-in-1,000-year flood without risk of failure of the major Project components such as the WCSs and containment dykes.

Table 2 Key Project Components of the Lake Manitoba and Lake St. Martin Outlet Channels

Component	Lake Manitoba Outlet Channel Description	Lake St. Martin Outlet Channel Description
<p>Outlet Channel</p>	<ul style="list-style-type: none"> • The LMOC would run north from Watchorn Bay on Lake Manitoba to Birch Bay on Lake St. Martin. • The LMOC would be approximately 24.1 kilometres long, 100 metres wide and within a cleared 400 metre-wide ROW. • The LMOC would be excavated to depths of up to 12 metres, base widths of up to 22 metres, and side slopes with a 5 to 1 horizontal to vertical distance profile. • The base of the outlet channel would be lower than the water level in the lakes, therefore water will be present in the channel on both sides of the WCS, whether the gates are open or closed. • Outside of flood events, when WCS gates are closed, the LMOC would: <ul style="list-style-type: none"> ◦ have a water depth up to a maximum of 8 metres; ◦ have a bankfull width of 91 metres; and ◦ convey baseflow. • During a 1-in-300-year flood, the LMOC would: <ul style="list-style-type: none"> ◦ have a water depth up to 6.5 metres; ◦ have a bankfull width up to 82 metres; and ◦ convey flows of 250 cubic metres per second. Flows would vary depending on the water levels in Lake Manitoba during flood operation. • Armouring consisting of crushed limestone would extend 30 centimetres above the maximum water levels that would be present in the LMOC when the WCS gates are closed. Areas on the side slopes above the armouring would be revegetated for additional erosion control. Riprap would be used in select locations with a high risk of erosion. • A groundwater depressurization system would be installed for construction and operation of the LMOC 	<ul style="list-style-type: none"> • The LSMOC would run northeast from the east end of Lake St. Martin to Sturgeon Bay in Lake Winnipeg. • The channel would be 23.8 kilometres long, 120 metres wide, and within a 400 metre-wide ROW. • The channel would have a modified trapezoidal shape with a bench located part way up the slope. The channel would be excavated to depths of up to 5.6 metres, base widths of up to 59 metres, and side slopes with a with a 5 to 1 horizontal to vertical distance profile. Permanent containment dykes three metres high would be installed on both sides of the LSMOC. • The LSMOC base would intersect the bedrock aquifer and receive marginal flows from groundwater contributions. • Outside of flood events, when WCS gates are closed, the LMOC would: <ul style="list-style-type: none"> ◦ have a depth up to 3.7 metres; ◦ have pools form upstream of the in-channel drop structures; ◦ have a top width of the pools up to 85 metres; and ◦ convey baseflow of 1.4 cubic metres per second. • During a 1-in-300-year flood, the LSMOC would: <ul style="list-style-type: none"> ◦ have a depth of 5.9 metres; ◦ have a bankfull width up to 135 metres; ◦ convey flows of 481 cubic metres per second. Flows would vary depending on the water elevation in Lake St. Martin during flood operation; and ◦ have a minimum freeboard on the containment dykes of 0.6 metres. • Armouring consisting of crushed limestone would line the LSMOC channel surfaces up to 30 centimetres above the maximum water levels that would be present in the channel when the WCS gates are closed. Areas on the

Component	Lake Manitoba Outlet Channel Description	Lake St. Martin Outlet Channel Description
	<p>including temporary and permanent depressurization wells, reverse drains, and sump pumps.</p> <ul style="list-style-type: none"> The LMOC would not be deemed navigable. 	<p>side slopes above the armouring would be revegetated. Riprap would be used in select locations to reduce erosion from wave action.</p> <ul style="list-style-type: none"> A groundwater depressurization system would be installed for construction and operation of the LSMOC including temporary and permanent depressurization wells, reverse drains, and sump pumps. The LSMOC would not be deemed navigable.
Inlet and Outlet	<ul style="list-style-type: none"> The LMOC inlet would have a base width of 17 metres at the shoreline flaring out to 270 metres at a distance of 132 metres into Watchorn Bay. The total length of the inlet would be 437 metres, of which 132 metres would extend into Lake Manitoba. The LMOC outlet would have a base width of 22 metres at the shoreline flaring out to 128 metres at a distance of 144 metres into Birch Bay. The total length of the outlet would be 272 metres, of which 144 metres would extend into Lake St. Martin. The inlet and outlet would be constructed in the wet, enclosed by a double turbidity curtain. The base and side slopes would consist of native till materials. Riprap would line a portion of the inlet and outlet side slopes from the outlet channel proper to the shoreline to account for wave action. No rock groins are planned for the LMOC inlet or outlet. 	<ul style="list-style-type: none"> The LSMOC inlet would be excavated from the lakebed to taper over approximately 1,100 metres from the shoreline to transition from the channel base to the existing lakebed elevation of Lake St. Martin. The base width would range from 110 metres at the shoreline to 550 metres. Construction would occur in the dry and require a cofferdam. The LSMOC outlet would be excavated from the lakebed to taper over approximately 200 metres or less from the shoreline, to transition from the channel base to the existing lakebed elevation of Lake Winnipeg. The base width would vary from 174 metres at the shoreline to 224 metres in Sturgeon Bay. Construction would occur in the dry and would require a cofferdam. The LSMOC outlet would use 100-metre-long rock-filled jetties to protect the channel outlet from erosion and to prevent excess sediment deposition.
Outside Drain	<ul style="list-style-type: none"> An outside drain on the west side of the LMOC would be used to manage surface water runoff and flows during construction and operation of the LMOC. The outside drain would be constructed prior to the outlet channel excavation. Local construction dewatering and groundwater depressurization works would also be conveyed in the outside drain during construction. Water in the outside drain north of the PR 239 bridge would discharge into Lake St. Martin and areas south of PR 239 bridge would discharge into Lake Manitoba. 	<ul style="list-style-type: none"> An outside drain on the east side of the LSMOC would be used to manage surface water runoff during construction and operation of the LSMOC. Water would drain northeastward and discharge into the LSMOC during operation of the Project, unless the flows exceed the capacity of the LSMOC, in which case the drain may be discharged directly into Lake Winnipeg. The drain base would have a width of up to 12 metres and be designed for a 1-in-10-year runoff event.

Component	Lake Manitoba Outlet Channel Description	Lake St. Martin Outlet Channel Description
	<ul style="list-style-type: none"> The drain would have a base width varying between 4 and 25 metres, and be designed for a 1-in-10-year runoff event. Permanent culvert crossings would be installed under Township Line 6 Road, Provincial Trunk Highway 6, and Iverson Road. Passive wetland treatment of runoff from cattle operations adjacent to the LMOC would occur prior to that drainage entering the outside drain. The outside drain would be vegetated to reduce erosion and would include the use of riprap in specific locations. 	<ul style="list-style-type: none"> Fourteen rockfill gradient control structures would be constructed in the drain to manage water velocities and limit stress on the drain.
Water Control Structure	<ul style="list-style-type: none"> The WCS would be a gated control structure to regulate water flow through the outlet channel. It would be constructed in the northern third of the proposed channel route, 21 kilometres downstream from the inlet (Figure 2). The WCS would control water through three, 5.4 metre-wide sluice bays, guides and sill beams for upstream stoplogs, vertical lift gates, and downstream stoplogs. Each lift gate would be equipped with valves to provide baseflow. The WCS would include a bridge to cross the channel where it intersects Iverson Road. An ancillary building would be constructed near the WCS to house a control console and electrical equipment which is required to raise and lower the gates, and heat the structure and gates to maintain winter operation capability. To provide the permanent electrical power needed, an existing electrical distribution line along Iverson Road would be upgraded and connected to a pad-mount transformer installed near the WCS ancillary building. A diesel generator would be installed as an emergency backup power source. The WCS would be founded into bedrock and may require blasting. 	<ul style="list-style-type: none"> The WCS would be a gated control structure to regulate water flow through the outlet channel. It would be constructed near the LSMOC inlet (Figure 3). The WCS would include four sluice bays (each six metres wide), guides and sill beams for upstream stoplogs, vertical lift gates, and downstream stoplogs. The inner bays would be designed for winter operation and ice conditions by having higher crest elevation. The outer bays would be equipped with valves in the lift gates to provide baseflow. A bridge structure would be designed as part of the WCS to allow channel crossing at the Lake St. Martin Access Road. Permanent electrical power to raise and lower the gates, as well as to heat the structure and gates to maintain operation capability through winter, would be supplied via installation of a 15-kilometre 24-kilovolt electrical distribution line to pad-mounted transformer at the WCS location. Helicopter pads that are 30 metres by 30 metres would be constructed at each kilometre of the electrical distribution line, for a total of 12 pads. A diesel fueled generator would be located at the WCS as a back-up power source. The WCS would be founded on bedrock.

Component	Lake Manitoba Outlet Channel Description	Lake St. Martin Outlet Channel Description
Road Bridges	<ul style="list-style-type: none"> • In addition to the bridge and WCS structure planned at Iverson Road, three bridges would be constructed to maintain existing access routes that will be intersected by the LMOC (Figure 2) at: <ul style="list-style-type: none"> ◦ Township Line Road; ◦ PR 239 realignment; and ◦ Provincial Trunk Highway 6. • Bridge structures would be built to accommodate and withstand water flows, ice flows, and safe passage of traffic volumes and vehicle types. 	<ul style="list-style-type: none"> • No road bridges, other than the WCS, are planned for LSMOC.
Road Realignments	<ul style="list-style-type: none"> • Realignment of PR 239 and sections of affected municipal roads would occur to accommodate the LMOC. 	<ul style="list-style-type: none"> • No road realignment is planned for LSMOC. • A temporary winter construction road located to the south of the LSMOC is intended for winter use for the duration of Project construction.
Drop Structures	<ul style="list-style-type: none"> • No drop structures are planned for the LMOC. 	<ul style="list-style-type: none"> • Eight in-channel drop structures would be constructed to manage flow velocities in the channel associated with elevation changes between Lake St. Martin and Lake Winnipeg. • The structures would be constructed of rockfill with a cutoff wall at the crest. A low flow notch would be included in the crests of the drop structures. The notches connect to low-flow chutes that run down the centre of the rock ramps. • The height of the drop structure weirs would be up to a maximum of 3.7 metres, and the crest widths would be up to 125 metres. The length of the rock ramps would typically be up to 250 metres. • The drop structures would prevent fish passage in an upstream direction in the LSMOC, and incorporate design features to facilitate adequate conditions for fish passage in a downstream direction and stranding over winter in the LSMOC.

2.3 Project Activities and Schedule

Key activities of the Project are phased under construction and operation, as described below. The Proponent stated that none of the permanent components of the Project would be decommissioned. The goal is to provide flood management for Lake Manitoba and Lake St. Martin in perpetuity.

2.3.1 Construction Phase: Site Preparation, Construction, and Commissioning

The construction phase is expected to occur over a six-year period, with site preparation and construction lasting up to four years followed by a two year period for vegetation establishment and commissioning of the channels. Commissioning would occur over two to three months outside of the fish spawning period.

Site preparation of the PDA and sites selected for temporary construction camps and staging areas would include transporting equipment, machinery, vehicles, construction materials and supplies; preparation of equipment marshalling areas, construction camps, and staging areas; establishing traffic management; and the relocation or removal of any infrastructure (e.g., fences, buildings) and waste piles. Clearing of vegetation and grubbing of the ROW would occur outside of breeding bird nesting periods and prior to excavating the outlet channels.

Construction would involve: earthmoving, stockpiling, leveling, excavation, blasting (if required), and revegetation; installation and subsequent removal of temporary works required to construct the main works, such as cofferdams and settling ponds; production and transportation of aggregate materials; temporary construction camps and staging areas; temporary access routes (via existing roads) and use of a temporary winter construction road for the LSMOC; measures to manage surface and groundwater; dust, erosion, and sediment control; building, installation, or placement of project infrastructure; waste storage and disposal; fuel storage and handling; and storage of explosives (if required). Works and activities that would be undertaken by contractors include: sourcing rock and borrow materials; electrical power supply to both WCSs; solid waste management; and wastewater management. Construction of the LMOC and LSMOC would occur in a series of segments. The outlet channels would be progressively filled with lake water, where each segment would be flooded once complete.

Commissioning of the Project would include controlled releases of flow through the entire outlet channels. The release of flows would be regulated by real-time sediment monitoring in downstream environments in the LAA to meet water quality thresholds as determined by the Sediment Management Plan⁶.

⁶ Manitoba Transportation and Infrastructure. (2022). *Lake Manitoba and Lake St. Martin Outlet Channels Project Supplemental Submission. Attachment 1: Updated Environmental Management Plans*. Retrieved February 7, 2024, from <https://iaac-aeic.gc.ca/050/documents/p80148/144328E.pdf>.

2.3.2 Operation Phase: Operation and Maintenance

The operation phase refers to the operation, maintenance and associated follow-up monitoring of the Project. This phase would start once the LMOC and LSMOC are commissioned and continue indefinitely.

During this phase, the Proponent would operate the LMOC and LSMOC by adjusting the gates on the respective WCSs in response to monitoring and flood forecasting according to the Operating Guidelines. There would be two modes of WCS gate operation: open gates to reduce lake levels on Lake Manitoba and Lake St. Martin by increasing outflow capacity of the lakes, and closed gates that only convey baseflows to maintain oxygen levels for fish. Average velocities in the LMOC when WCS are open range from 0.75 to 1 metre per second. Average velocities in the LSMOC range from 0.9 to 1.4 metres per second when WCS are open during open water seasons, 0.5 to 0.9 metres per second when WCS are open during under-ice conditions, and less than 0.1 metres per second for baseflow when WCS gates are closed.

The LMOC and LSMOC are planned to supplement and work in conjunction with existing flood protection infrastructure. Operation of the Project (i.e., opening of the WCS gates) would commence when the target ranges of Lake Manitoba and Lake St. Martin are exceeded, respectively, and would cease once water levels of Lake Manitoba and Lake St. Martin are reduced to levels specified in the operating guidelines for the Project. The outlet channels would be used primarily during the spring and summer to address open water flooding but would be designed to permit operation during winter months. Winter operation would be considered to reduce water levels in the lakes following a large flood the previous spring or summer, or to pre-emptively lower lake levels to prepare for a large flood the subsequent spring. WCS gates would not be opened under solid ice conditions (typically from December 1 to April 30) unless severe flooding is forecasted for the following spring.

Other operation and maintenance activities would include vegetation management; groundwater and surface water management; ice management; fuel and waste management; and routine inspection and maintenance requirements for project components.

3 Purpose of Project and Alternative Means

3.1 Purpose of the Project

The purpose of the Project is to reduce extreme flooding affecting communities surrounding Lake Manitoba and Lake St. Martin to supplement existing water management infrastructure.

3.2 Alternative Means of Carrying out the Project

CEAA 2012 requires that environmental assessments of designated projects take into account alternative means of carrying out the designated project that are technically and economically feasible, and the environmental effects of any such alternative means. The Agency's Operational Policy Statement: Addressing "Purpose of" and "Alternative Means" under CEAA 2012 sets out the general requirements and approach to address the alternative means of carrying out the designated project.⁷

The Proponent assessed alternative means of carrying out the following aspects of the Project:

- LMOC routing;
- LSMOC routing;
- WCSs;
- number of bridge crossings;
- realignment of PR 239;
- routing of electrical distribution lines; and
- quarry and borrow areas.

Input from Indigenous groups, including Indigenous Knowledge and project-specific traditional land use information, was considered by the Proponent in the alternative means assessment and with respect to project design and siting.

⁷Canadian Environmental Assessment Agency. (2012). *Operational Policy Statement: Addressing "Purpose of" and "Alternative Means" under the Canadian Environmental Assessment Act, 2012*. Retrieved February 7, 2024, from <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/addressing-purpose-alternative-means-under-canadian-environmental-assessment-act-2012.html>



3.2.1 Proponent's Alternative Means Assessment

Lake Manitoba Outlet Channel Routing

Initially, the Proponent considered six potential outlet channel route options from Lake Manitoba to Lake St. Martin (Figure 4) including:

- twinning of the Fairford River (Option A);
- diversion channel south of Pinaymootang First Nation (Option B);
- diversion channel slightly less far south of Pinaymootang First Nation (Option C);
- diversion channel following Birch Creek (Option D);
- bypass channel north of the Fairford River Water Control Structure (FRWCS) (Option E);
- an expansion of the Fairford River and the FRWCS (Option F); and,
- diversion channel south of Options B and C in a sparsely populated area (Option G).

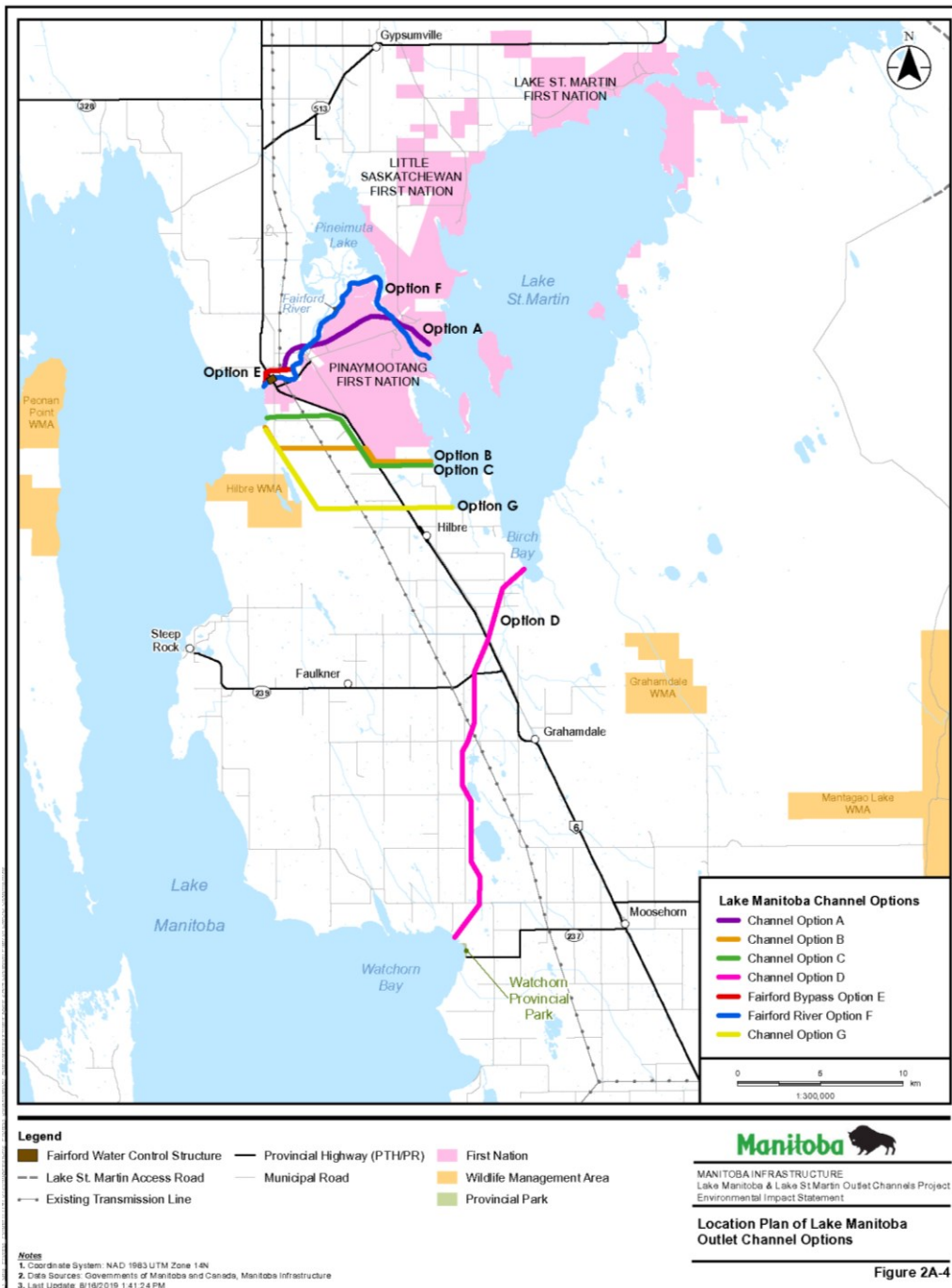
Options were evaluated in two stages. The first stage (Stage 1) considered outlet capacity, water levels, cost, and relative effects to valued components of Options A through F. Options C and D remained as potential options after Stage 1 analysis.

The second stage (Stage 2) considered engineering and environmental risks, including potential effects to groundwater and surface water, technical concerns and impacts, and technically and economically feasible mitigation measures. Stage 2 analysis for the LMOC route included an additional potential route, Option G, based on the input of landowners that would be potentially affected by Option D. Option G was eliminated from consideration due to identification of risks to aquifer water quality, higher excavation quantities, and costs. Option C rated poorly due to potential groundwater effects of the Project, as the Pinaymootang First Nation reserve lands are located immediately adjacent to the Option C route and the quantity and quality of well water supply utilized by Pinaymootang First Nation and other groundwater users would potentially be affected. A new water treatment facility would likely have been required to mitigate the effects of the Option C location, which increased the estimated cost of the option.

Based on the Stage 2 analysis and the high artesian pressure to prevent groundwater under direct influence, Option D was selected as the preferred route for the LMOC.



Figure 4 Alternative Routes for the Lake Manitoba Outlet Channel



Source: Lake Manitoba and Lake St. Martin Outlet Channels, Environmental Impact Statement, Volume 1 (March 5, 2020).

Figure Description: The six considered alternative routes for the LMO depicting Options A to G.



Lake St. Martin Outlet Channel Routing

The Proponent considered the feasibility of using all or part of the planned and partially constructed Lake St. Martin EOC. The EOC was partially constructed in 2011 as part of emergency response efforts to manage severe flooding. EOC Reach 1 directs water from the east end of Lake St. Martin during periods of elevated water level to a bog area southwest and adjacent to Big Buffalo Lake. Reach 2 was proposed to excavate Buffalo Creek to accommodate the diverted water received from Reach 1 to prevent flooding of the Big Buffalo Lake bog area; however, it was determined that the natural capacity of Buffalo Creek would be sufficient to convey peak flow to Dauphin River and Reach 2 was not constructed. Reach 3 was partially constructed to direct diverted water from Buffalo Creek to Lake Winnipeg to reduce the risk of flooding at the mouth of the Dauphin River. With consideration of the previously developed reaches of the EOC, the LSMOC route options were evaluated in two stages.

Stage 1 analysis weighed options based on the existing EOC reach locations and considered different outlet locations for the final segment of Reach 3. Two final outlet locations for Reach 3 were proposed; northeastward to Johnson Beach (Option JB), or east to Willow Point (Option WP). Cost, effects to the biophysical and social environments, and hydraulic capacity were considered. Due to concerns related to the social environment of building the channel outlet at Johnson Beach, Option WP was selected.

Stage 2 considered Option WP for Reach 3 and evaluated options for the location and conceptual design of Reach 2 and the potential expansion of Reach 1 into Big Buffalo Lake. However, due to the potential for peat bog material from areas surrounding Big Buffalo Lake to detach and plug Buffalo Creek during operation of an outlet channel system, other outlet channel route options from Lake St. Martin to Lake Winnipeg (Figure 5) were considered, including:

- the diversion channel concept approved in Stage 1, which included the original locations of Reach 1, Reach 2, and Reach 3 extending to Willow Point (Option 1);
- Option 1 with the addition of a 200 metre-wide channel along Buffalo Creek to address concerns that peat bog material could detach, enter, and plug Buffalo Creek (Option 2);
- a diversion channel that would use Reach 1, turn east to follow the south boundary of the Big Buffalo Lake bog area surrounding Big Buffalo Lake, and continue north to Reach 3 (Option 3); and
- a diversion channel with new construction from Lake St. Martin to Reach 3, beginning from an inlet approximately 3.8 kilometres east of the inlet for Reach 1 and continuing northeast to Reach 3 (Option 4).

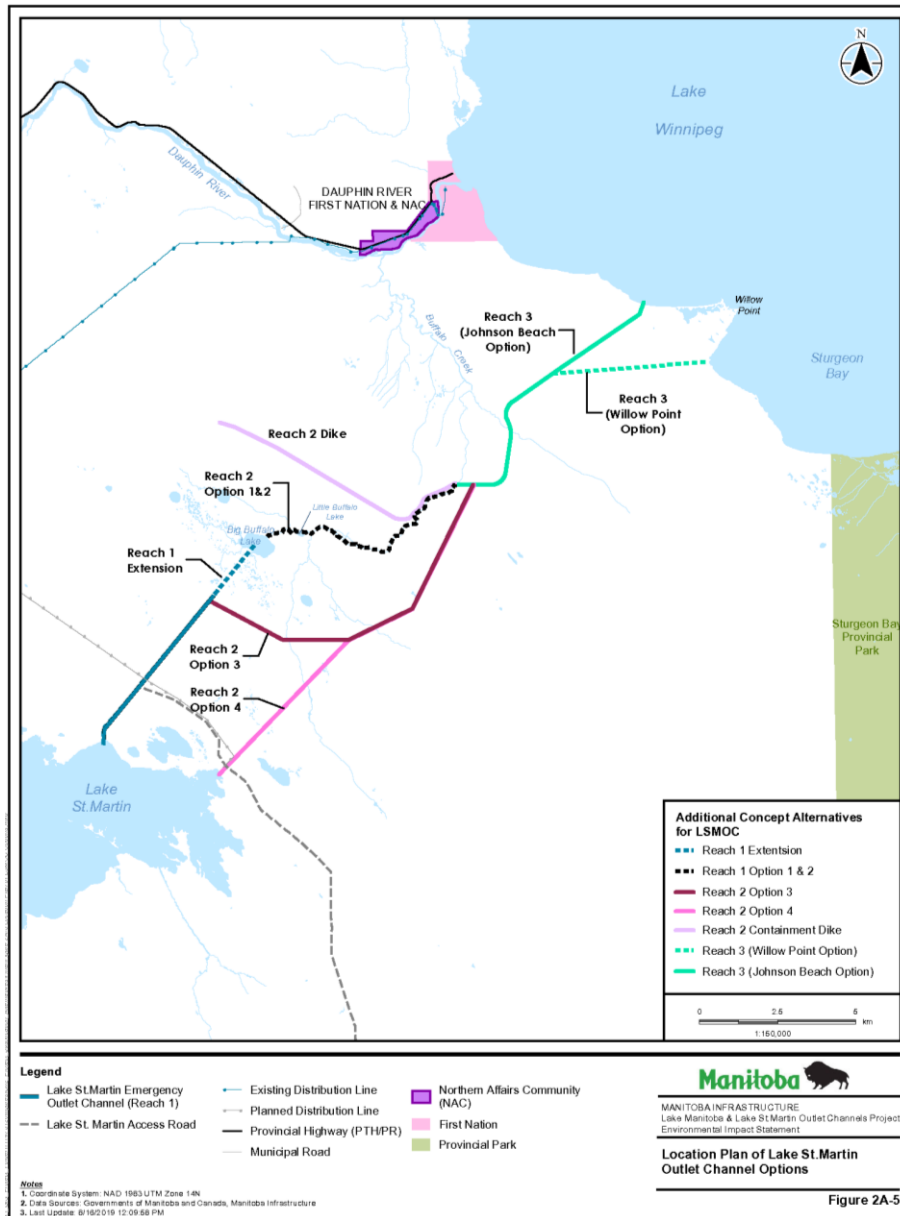
Stage 2 defined a total of 31 weighted sub-criteria⁸ that were used to analyze options. Considering the sub-criteria, Option 4 was selected as the preferred route for the LSMOC. Primary reasons for the proponent's

⁸ KGS Group. (2017). *Preliminary Design for Reach 2 of the Lake St. Martin Outlet Channel Report. Final – Rev 0. Project 16-0300-005*. Retrieved February 7, 2024, from <https://iaac-aeic.gc.ca/050/documents/p80148/134303E.pdf>



selection of Option 4 include avoiding water diversion into bog areas, and reduction of total outlet channel length and therefore overall excavation quantity.

Figure 5 Alternative Routes for the Lake St. Martin Outlet Channel



Source: Lake Manitoba and Lake St. Martin Outlet Channels, Environmental Impact Statement, Volume 1 (March 5, 2020)

Figure Description: The four alternative routes considered for the LSMOC depicting Options 1 to 4 and the EOC Reach 1, 2 and 3.

Water Control Structures

The Proponent assessed two types of structures (gated control structures and overflow weirs) for flow control within the LMOC and the LSMOC. The Proponent noted that overflow weirs have two design traits unfavourable to the Project: the operation of overflow weirs is uncontrolled and instigated by lake water levels, which may interfere with the function of the FRWCS between Lake Manitoba and Lake St. Martin; and overflow weirs would have insufficient discharge capacity for potential flood events at the proposed width of the outlet channels. Gated control structures allow for greater flexibility for operation in response to flood events and were therefore selected as the type of WCS for the Project.

Potential locations of the WCSs within each outlet channel were evaluated by the Proponent. The WCS for the LMOC was proposed to be located near the downstream end of the outlet to minimize the WCS size, reduce effects to groundwater and adjacent wetlands, and remove the requirement for a secondary drop or outlet structure. The WCS for the LSMOC was proposed to be located at the inlet on Lake St. Martin, to allow for the ability to limit outflow at times of low lake levels.

Bridge Crossings

The initial proposed route of the LMOC intersected five existing roads requiring bridge crossings. Once the Proponent considered traffic flow, safety issues, construction cost, and channel hydraulic efficiency (defined as the ease by which the channel can conduct water), the number of bridge crossings was reduced to four at: PR 239, Provincial Trunk Highway 6, Iverson Road, Carne Ridge Road, and Township Line Road.

The proposed route of the LSMOC intersects one existing road, the Lake St. Martin Access Road. At this location, a combined bridge and WCS would be required.

Realignment of Provincial Road 239

The Proponent assessed more than ten realignment designs for PR 239. To maintain the existing alignment of PR 239 would require construction of a relatively expensive bridge across the LMOC. To select the preferred option, the Proponent considered: cost, channel hydraulic efficiency, even distribution of crossing opportunities, traffic flow along Wooddale line (the north-south connector road west of the proposed LMOC), environmental effects, existing roads, existing infrastructure, traffic safety, and socio-economic effects. The selected option would utilize a route of existing roads (Jordan Road and Carne Ridge Road) and would include the proposed Carne Ridge Road bridge over the LMOC.

Electrical Distribution Line

The Project would require electrical power for construction activities and operation of the WCSs. The Proponent considered alternatives for power supply as well as potential routes for electrical distribution lines to the WCSs at each outlet channel. Options included portable diesel generators or grid electrical power. Grid electrical power for the WCSs was preferred by the Proponent. Construction may include activities that require temporary portable generator use.



The LMOC would be developed in an area with existing electrical distribution lines; the LMOC is expected to be sourced from the nearest viable distribution line.

There are no existing electrical distribution lines near the proposed location of the LSMOC. The nearest viable distribution line is located 15 kilometres northwest of the proposed LSMOC in the community of Dauphin River, and an existing winter road corridor is present between the proposed northern portion of the LSMOC and the distribution line in Dauphin River. The existing corridor is the preferred route for an electrical distribution line to the LSMOC WCS, as alternative alignments to access grid electrical power from south of the proposed LSMOC location would require a longer route.

Quarry and Borrow Areas

The Proponent considered using existing licensed and permitted quarry and borrow areas in the Project region, or new quarry and borrow sites for the Project. The Proponent would prioritize the use of existing quarry and borrow sites for aggregate and armouring required for Project construction to minimize effects of the Project. If the material required for the Project cannot be sourced by existing quarry and borrow sites, alternative locations would be assessed based on requirements outlined in the Proponent's Project Environmental Requirements, including required setback distances from sensitive habitats, required quarry permits and leases, and adherence to applicable legislation, licenses, authorizations, and permits. Riprap may be sourced from a different source to meet engineering specifications.

3.2.2 Views Expressed

A summary of comments provided to date by Indigenous groups, along with responses from the Proponent and the Agency are summarized in Appendix C of this draft EA Report.

Bloodvein First Nation, Berens River First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and Tataskweyak Cree Nation proposed alternative means of conducting the Project. The Interlake Reserves Tribal Council noted that they were not engaged in identifying preferred or alternative means of carrying out the Project and that a number of their member First Nations would prefer to see the LSMOC go around Lake St. Martin. While this may result in more clearing and a longer channel, from their perspective, this alternative would have fewer effects to commercial fisheries and members' livelihoods than the Project as proposed. Pinaymootang First Nation suggested that the outlet channels be designed to have curves and mimic natural river systems to reduce the transmission of contaminants downstream. Fisher River Cree Nation expressed an alternative approach would be to have wider, shallower outlet channels to avoid effects to the bedrock aquifer.

Little Saskatchewan First Nation noted a concern that the routing was weighted towards minimizing use of private property rather than the loss of crown lands for Indigenous peoples.

Fisher River Cree Nation, Lake St. Martin First Nation, Norway House Cree Nation, Peguis First Nation, and Pimicikamak Okimawin requested that the Proponent provide justification for the Project as proposed,



including costs and benefits for stakeholders and valued components. Lake St. Martin First Nation noted that there were social and environmental effects that were not considered. Berens River First Nation expressed concern that the Project would not be cost effective considering the mitigation measures required.

Berens River First Nation, Fisher River Cree Nation, Misipawistik Cree Nation, Peguis First Nation, and Sagkeeng Anicinabe First Nation expressed concerns regarding the analysis of alternative projects. They requested a thorough analysis of alternative projects by including in the analysis the benefits from use of water stored by the alternative projects for agriculture, recreational use, and the environment.

Berens River First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Misipawistik Cree Nation, Poplar River First Nation, Peguis First Nation, and Tataskweyak Cree Nation expressed concerns regarding the lack of engagement with Indigenous groups and integration of Indigenous perspectives regarding the selection and evaluation of alternative means for project activities and components.

Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and York Factory First Nation expressed concern that while the Project would reduce flooding, it would not eliminate flooding for impacted communities. The Interlake Reserves Tribal Council further noted that the cost of the Project is much higher than originally estimated, with a great cost to Aboriginal and treaty rights due to the destruction of cultural sites and changes to the landscape.

3.2.3 Agency Analysis and Conclusions

The Agency recognizes that concerns remain regarding the routing of the Project. The Agency is of the view that the Proponent considered the environmental, socio-economic, and technically feasible alternative routes for the Project. Additionally, the Agency is of the view that the Project is designed to manage the design flood volume; however, the Agency recognizes that outstanding concerns may remain regarding residual flooding on reserve lands. Further details regarding the effects to Indigenous peoples are available in Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), Chapter 7.5 (Indigenous Peoples – Health and Socio-Economic Conditions), and Chapter 9 (Impacts to Rights).

The Agency recognizes that concerns have been raised about the need for an assessment of alternatives to the Project that may achieve the same purpose as the Project. The Agency has provided an analysis on alternative means of carrying out the Project, as alternatives to the Project are not considered under CEEA 2012.

The Agency recognizes that uncertainty remains regarding the location of quarries and borrow pits. Further details regarding the effects of quarries and borrow pits are available in Chapter 6.2 (Groundwater), Chapter 6.3 (Terrestrial Landscape), Chapter 7.2 (Migratory Birds), Chapter 7.3 (Species at Risk), Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), and Chapter 8.3 (Cumulative Environmental Effects).



The Agency is of the view that the Proponent considered the cost-effectiveness, technical feasibility, reliability, potential environmental effects, and feedback from federal authorities, the public, and Indigenous groups on the identified alternative means of carrying out the Project.

The Agency understands that the Proponent committed to ongoing engagement with Indigenous groups throughout the life of the Project, and the establishment of an Environmental Advisory Committee (EAC) to facilitate ongoing engagement with Indigenous groups regarding the Project, its potential effects, and follow-up and monitoring programs. Further details regarding the EAC are available in Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance) of this draft EA Report. The Agency highlights the importance of ongoing engagement and consultation with Indigenous groups to ensure that potential effects are identified and addressed, and to ensure the consideration and incorporation of Indigenous Knowledge.

The Agency is satisfied that the Proponent has sufficiently assessed the technically and economically feasible alternative means of carrying out the Project and their environmental effects under CEAA 2012.

4 Consultation and Engagement Activities

4.1 Crown Consultation with Indigenous Peoples

The Crown has a duty to consult Indigenous peoples in Canada, and to accommodate where appropriate, when its proposed conduct might adversely impact Aboriginal or treaty rights protected in section 35 of the *Constitution Act, 1982*⁹ (section 35 rights). Consultation with Indigenous peoples is also undertaken more broadly to aid good governance, sound policy development, and decision-making. The Minister's significance decision pursuant to subsection 52(1) under CEAA 2012 is considered Crown conduct that could give rise to the common law duty to consult and, where appropriate, accommodate with respect to potential adverse impacts on section 35 rights.

For the purposes of the federal environmental assessment, the Agency served as Crown Consultation Coordinator to facilitate a whole-of-government approach to consultation. Indigenous groups that were invited to participate in consultation included those identified as having an interest in the Project by reason of the potential for the Project to adversely impact section 35 rights.

In order to fulfill the Crown consultation obligations, the Agency conducted Indigenous consultation in an integrated manner with the environmental assessment process. The Agency provided opportunities throughout the environmental assessment for dialogue with Indigenous groups about their concerns through phone calls, correspondence, in-person meetings and virtual meetings. The Agency provided regular updates to inform Indigenous groups of key developments and to solicit feedback on environmental assessment documents.

4.1.1 Consultation Led by the Agency

In addition to the federal government's broader obligations, CEAA 2012 requires consideration of the effects of changes to the environment on Indigenous peoples' health and socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes, and on structures, sites, or things of historical, archaeological, paleontological, or architectural significance.

⁹ Section 35 of the Constitution Act, 1982 states: (1) The existing Aboriginal and treaty rights of the Aboriginal peoples of Canada are hereby recognized and affirmed;
(2) In [the Constitution Act, 1982], "Aboriginal peoples of Canada" includes the Indian, Inuit and Métis peoples of Canada;
(3) For greater certainty, in subsection (1) "treaty rights" includes rights that now exist by way of land claims agreements or may be so acquired;
(4) Notwithstanding any other provision of [the Constitution Act, 1982], the Aboriginal and treaty rights referred to in subsection (1) are guaranteed equally to male and female persons.



Analysis of potential effects to Indigenous groups is presented in Chapters 7.4, 7.5 and 7.6. Assessments of potential impacts on potential or established Aboriginal and treaty rights are discussed in Chapter 9.0.

Indigenous groups that were invited to participate in consultations include those with an interest in the Project due to proximity, traditional land use, and the extent of potential adverse impacts on potential or established Aboriginal or treaty rights. Overall, the Agency identified 28 Indigenous groups for which the Project may impact their rights, including:

- **Treaty 1 First Nations:**
 - Brokenhead Ojibway Nation
 - Peguis First Nation
 - Sandy Bay Ojibway First Nation
- **Treaty 2 First Nations:**
 - Dauphin River First Nation
 - Ebb and Flow First Nation
 - Keeseekoowenin Ojibway First Nation
 - Lake Manitoba First Nation
 - Lake St. Martin First Nation
 - Little Saskatchewan First Nation
 - O-Chi-Chak-Ko-Sipi First Nation
 - Pinaymootang First Nation
 - Skownan First Nation
 - Black River First Nation
 - Bloodvein First Nation
 - Fisher River Cree Nation
 - Fox Lake Cree Nation
 - Hollow Water First Nation
 - Kinonjeoshtegon First Nation)
 - Misipawistik Cree Nation
 - Norway House Cree Nation
 - Pimicikamak Okimawin
 - Poplar River First Nation
 - Sagkeeng Anicinabe First Nation
 - Tataskweyak Cree Nation
 - York Factory First Nation
- **Treaty 5 First Nations:**
 - Berens River First Nation
- **Manitoba Métis Federation**

On April 4, 2022, the Agency was informed that the Dakota Tipi First Nation had expressed interest in consultation concerning the Lake Manitoba and Lake St. Martin Outlet Channels. The Agency invited the members of the Dakota Tipi First Nation to discuss the environmental assessment process for the Project to determine how the Project may interact with their interests and land uses to ensure that those interests were included in the assessment. Dakota Tipi First Nation is not a signatory to the numbered Treaties; however, its right to hunt, fish, and use of and gathering resources are recognized and affirmed by section 35 of *the Constitution Act, 1982*.

The following Indigenous groups are currently not participating in consultation with the Agency; however, the Agency still continues to notify Indigenous groups of all major milestones and opportunities to participate in the environmental assessment process. Indigenous groups not participating include:

- First Nations in Treaty 2 Territory/ Anishinaabe Agowidiiwinan
- Ebb and Flow First Nation



- Fox Lake Cree Nation
- Keeseekoowenin Ojibway First Nation
- O-Chi-Chak-Ko-Sipi First Nation
- Skownan First Nation

The Interlake Reserves Tribal Council consists of a partnership of seven Manitoba Interlake communities that are signatories to the numbered Treaties: Dauphin River First Nation; Kinonjeoshtegon First Nation; Lake Manitoba First Nation; Lake St. Martin First Nation; Little Saskatchewan First Nation; Peguis First Nation; and Pinaymootang First Nation. However, for this project, the Interlake Reserves Tribal Council represents Lake Manitoba First Nation, Kinonjeoshtegon First Nation and Dauphin River First Nation.

The Southern Chiefs' Organization represents 34 Anishinaabe and Dakota Nations in southern Manitoba. For this project, the Southern Chiefs' Organization represents Black River First Nation.

The Agency supported participation of Indigenous groups through its Participant Funding Program. Funds were made available to reimburse eligible expenses of all 28 participating Indigenous groups. Twenty-five identified Indigenous groups were allocated a total funding of 3,970,322.65 dollars through this Program.

The Agency provided Indigenous groups with opportunities to learn about the Project, discuss concerns about the Project's potential environmental effects and potential impacts to section 35 rights, and discuss possible mitigation and accommodation measures, as appropriate. This information contributed to the Crown's understanding of the Project's potential adverse impacts on section 35 rights, treaty rights and the effectiveness of measures proposed to avoid or minimize those impacts. The Agency integrated the Crown's consultation and engagement activities throughout the environmental assessment process and invited Indigenous groups to review and provide written comments during formal comment periods on the environmental assessment documents listed in Table 3. Indigenous groups were also provided an opportunity to review and provide comments on the draft EA Report and draft potential conditions.

**Table 3 Public and Indigenous Groups Comment Opportunities during the Environmental Assessment Process**

Subject of Consultation	Dates
Summary of the Project Description	January 23 – February 12, 2018
Draft EIS Guidelines	March 14 – April 15, 2018
EIS Summary and EIS	March 9 – February 27, 2024 ¹⁰
TAG Meetings	June 5 - 6, 2019 (in person) August 8 and 15, 2019 (virtual) June 2 – 3, 2020 (virtual) June 25 – 26, 2020 (virtual) August 30 – 31, 2022 (in person) October 24, 2022 (virtual) February 6 - 7, 2024 (in person)
Draft EA Report and draft Potential Conditions	To be determined

The Agency met with and considered comments from Indigenous groups during the review of the EIS and the EIS Summary when identifying and communicating information requirements to the Proponent. Indigenous groups were provided opportunities to review and comment on additional information provided by the Proponent.

The Agency met with individual Indigenous groups during the public comment period on the summary of the EIS. The Agency listened to and documented their views on how the Project may adversely impact the asserted or established Aboriginal or treaty rights and heard their suggestions for how these impacts could be avoided, mitigated, or accommodated.

The Agency organized and hosted TAG meetings consisting of Indigenous groups, the Federal Review Team, and public organizations to request and gather feedback related to information requests for the Proponent, and to co-draft key mitigation measures related to project effects ahead of completion of the draft EA Report.

The Agency also considered and integrated comments received from Indigenous groups on the draft EA Report and potential conditions. The Agency met with Indigenous groups to discuss the EA Report to support their on-going review.

Appendix C contains a summary of comments from Indigenous groups, along with the Proponent and Agency responses. A subset of comments is also discussed in the context of individual valued components throughout Chapters 6 and 7.

¹⁰ The comment period was extended from the usual 30 days, in light of challenges related to the COVID-19 pandemic, the number of information requests and at the request of the Proponent.



The Agency received concerns and incorporated input from all Indigenous groups engaged in the Project throughout the EA process.

4.2 Proponent's Indigenous Engagement Activities

The Proponent is engaged with 39 Indigenous groups and Manitoba Northern Affairs Communities in Manitoba, including all 28 Indigenous groups identified by the Agency for consultation, and has undertaken Crown-Indigenous consultation with the 31 Indigenous groups identified through the Proponent's initial assessment process. Engagement methods included phone calls, emails, written letters, and reports provided by the Proponent or requested from Indigenous groups. The Proponent stated that they would continue to provide information and to solicit feedback on the Project, mitigation, monitoring, and follow-up measures.

Pre-project engagement and consultation began with several First Nations and other Indigenous groups following the 2011 flood event and the identification that a new, permanent flood protection infrastructure was required. In 2015, the Proponent initiated phase one: Assessment and Planning of the consultation process for the Project, which included an initial assessment of First Nations, Métis communities and other Indigenous groups or groups that may be interested and/or affected by the Project. The Proponent identified 31 Indigenous groups, of which 28 are First Nation and Métis, where Aboriginal and treaty rights could potentially be affected by the Project.

Following issuance of the Project EIS Guidelines, additional Indigenous groups downstream on Lake Winnipeg and the Nelson River system were identified for engagement:

- Fox Lake Cree Nation
- Keeseekoowenin First Nation
- Pimicikamak Cree Nation
- Sandy Bay First Nation
- Skownan First Nation
- Tataskweyak Cree Nation
- Treaty 2 First Nations/Anishinaabe Agowidiwinan
- York Factory First Nation

Recognizing the challenges due to the COVID-19 pandemic, the Proponent made adjustments to the review process in limiting in-person meetings and presentations, and offering online tools to support Indigenous groups' review of the EIS and associated management plans. Hard copy packages were sent to all 39 Indigenous communities and groups on November 16, 30 and December 7, 2020, including printed and electronic copies of the 23 draft Environmental Management and Monitoring Plans. In addition, the draft plans were posted online on the Project's webpage. To assist with information sharing and to ensure that an alternative way to provide feedback was available, virtual open houses were developed through the Project's profile on the Manitoba engagement portal - EngageMB. The questionnaires were



included with the draft Environmental Management Plans, made available online, and were integrated into the virtual open house platform.

Due to the COVID-19 pandemic and in response to specific Indigenous group requests, the Proponent also made additional funding available to communities to assist with community review of the 23 Environmental Management Plan drafts.

Key concerns raised by Indigenous groups during Proponent engagement include:

- effects to access and navigation;
- lack of Indigenous engagement in the EIS development, such as updating baseline data, methodology, cumulative effects assessment, and significance determination;
- lack of meaningful Indigenous engagement by the Proponent in the development of methodology;
- effects to fish, habitat and fishing (e.g., lake sturgeon);
- lack of consideration of effects to Indigenous health and socio-economic conditions (e.g., methyl mercury and human health) in Project development;
- effects to sites and resources of heritage and cultural importance (e.g., including Indigenous Knowledge on heritage sites);
- the adequacy and anticipated effectiveness of the Proponent's proposed mitigation and follow-up and monitoring measures;
- lack of Indigenous knowledge incorporation on project design;
- changes to resource use (e.g., land use and fishing);
- effects to wildlife including terrestrial plants, birds and species at risk; and
- changes to water, including groundwater and surface waters such as wetlands.

4.3 Public Participation

4.3.1 Public Participation Led by the Agency

To date the Agency has provided multiple opportunities for the public to participate in the environmental assessment process, as outlined in Table 3 which includes this draft EA Report. Notices of the opportunities to participate were posted on the Canadian Impact Assessment Registry internet site and advertised through local media.

The Agency made funding available through its Participant Funding Program to support the public in reviewing and providing comments. Through this program, three public groups (Dauphin River Commercial Fishers Association, Keewatinook Fishers of Lake Winnipeg, and Trapline 18) received a total of 384,339.22 dollars for three public participants.



The Rural Municipality (RM) of Grahamdale is located within the Interlake Region in Manitoba. At the beginning of 2017, the Proponent began attending monthly RM of Grahamdale council meetings to provide updates about the proposed Project. The RM of Grahamdale has participated in the EA process by reviewing and offering written feedback to the Agency on the EIS, written feedback to information requests packages, and by attending the TAG meetings.

Keewatinook Fishers of Lake Winnipeg includes fishers from numerous Indigenous groups around Lake Manitoba, Lake St. Martin, and Lake Winnipeg. Keewatinook Fishers of Lake Winnipeg are rights-holders who continue to exercise their inherent and treaty rights on Lake Winnipeg, Lake St. Martin, and Lake Manitoba, including hunting, trapping, gathering, and fishing. Keewatinook Fishers of Lake Winnipeg have participated in the EA process by reviewing and offering written feedback to the Agency on the EIS, the draft EA Report and potential conditions, and by attending the TAG meetings.

Trapline 18 is a family trapline located within the Wabowden Trapline Zone/Resource Area in Manitoba. Trapline 18 members are rights-holders who continue to exercise their inherent rights of hunting, trapping, gathering, and fishing. Trapline 18 members have participated in the EA process by reviewing and offering written feedback to the Agency on the EIS, the draft EA Report, and potential conditions, and by attending the TAG meetings.

Dauphin River Commercial Fishers Association includes fishers from Indigenous groups around the Dauphin River and Lake Winnipeg. The Dauphin River Commercial Fishers Association has participated in the EA process by reviewing and offering written feedback to the Agency on the EIS and written feedback to information requests packages.

The Agency participated in four Proponent-hosted open houses; two in November 2017, and two in May 2018. The Agency also hosted three in-person TAG meetings with attendance from Indigenous groups, federal authorities, the RM of Grahamdale, and other public organizations. In response to the public notice during the comment period on the EIS Summary, submissions were received from members of the public, members of the TAG, Indigenous groups, municipalities, and federal authorities.

Key issues raised by the public include:

- inadequate federal environmental assessment timelines and process;
- ongoing and cumulative effects of previous flooding in the regional study area;
- effects of sediment deposition from the construction and operation of the channels;
- effects to recreational use of the lakes and areas adjacent to the Project;
- effects to wildlife habitat and migration;
- effects to fish and fish habitat;
- effects to water quality and quantity in groundwater wells close to the channel locations;
- effects to community, subsistence, and recreational fishing; and
- social and economic effects to the surrounding communities.



4.3.2 Public Participation Led by the Proponent

The Proponent carried out public engagement activities since 2011, including project notifications, meetings with local businesses, municipalities, and other stakeholders, open houses, direct communications with individuals (e.g., written communications), and other activities.

The Proponent hosted meetings and discussions with the RM of Grahamdale, other RMs, landowners, fishers, hunters, cottage owners, recreational users, and the general public. Between June 2017 and June 2019, an additional four public open houses with approximately 250 people in attendance, representing homeowners, farmers/ranchers, cottage owners, elected officials, business owners, and Indigenous community members. The Proponent also provided information and solicited public and stakeholder feedback through the website for the proposed Project, newspaper advertisements, letters, emails, questionnaires, one-on-one meetings, and Manitoba government news releases.

Key issues raised by the public include:

- effects to the current use of lands and resources for traditional purposes by Indigenous peoples;
- effects to fish and fish habitat;
- effects to surface water and groundwater; including water quality;
- effects of sediment deposition from the construction of the channels;
- effects to water quality and water quantity in groundwater wells close to channel locations;
- effects to wildlife and wildlife habitat
- effects to aquatic environments (including the introduction of invasive species)
- effects to community, subsistence, and recreational fishing;
- ongoing and cumulative effects of previous flooding in the area; and
- social and economic effects to the surrounding communities.

5 Existing Ecosystem

CEAA 2012 defines the environment as the components of the earth, including the land, water, and air, all organic and inorganic matter and living organisms, and the interacting natural systems that include these components. This chapter summarizes information on the existing ecosystem presented by the Proponent.

5.1 Biophysical Environment

The Project would be located in the Sturgeon Ecodistrict of the Mid-Boreal Lowland Ecoregion and Ashern and Gypsumville Ecodistricts of the Interlake Plain Ecoregion in central Manitoba. These areas are characterized by mixed forests, bog wetlands, and agricultural lands.

The LMOC traverses mainly relatively intact mineral wetlands and spruce-dominated peatlands, whereas the LSMOC contains a variety of habitat types. Habitat types present in the LAA and RAA, such as mixed forest and wetlands, provide suitable habitat for bird species listed under the *Migratory Birds Convention Act, 1994* and species at risk listed under SARA including critical habitat for the eastern whip-poor-will, red-headed woodpecker, piping plover, little brown myotis, northern myotis, northern leopard frog, and snapping turtle. The LAA contains suitable habitat for 192 migratory bird species, including potential breeding habitat for 164 species. Wetland habitat, specifically near Lake St. Martin, is designated as an Important Bird Area¹¹ that supports thousands of migratory bird nests. The Fairford River, Dauphin River, Lake Manitoba, Lake Winnipeg, Gypsum Lake, Clear Lake and Reed Lake are important open water habitats and shorelines in the RAA, which may provide habitat to many migratory bird species including colonial nesting waterbirds, and SARA-listed species such as piping plover and least bittern. The LMOC LAA includes marsh wetlands, and the LSMOC LAA includes bogs, fens, and swamps which have the potential to support species including the yellow rail, least bittern and horned grebe. Grassland habitat found along the LMOC supports bobolink and barn swallow, while deciduous patches or forest edges are potential habitat to support species at risk including red-headed woodpecker, golden-winged warbler, and eastern whip-poor-will. The RAA is home to wildlife species of concern that are of importance to the traditional and cultural practices of Indigenous groups, such as ungulates (i.e., moose, American elk, white-tailed deer), furbearers (i.e., American marten, bear, fisher, wolverine, least weasel, beaver, muskrat, red fox, coyote, gray wolf), upland birds (i.e., sharp-tailed grouse, partridge, ruffed grouse), waterfowl (i.e., ducks and geese), raptors (i.e., bald eagle), little brown myotis and northern myotis.

The Project would be located within the Lake Winnipeg watershed which extends west to the Canadian Rockies, east to Lake Superior, and south into Minnesota and South Dakota. This watershed is dominated

¹¹ Important Bird Area is a discrete site that supports specific groups of birds (e.g., threatened birds, large groups of birds and birds restricted by range or by habitat). They are identified using internationally defined criteria. Canada's Important Bird and Biodiversity Areas Program is a non-regulatory program that identifies areas that are important for birds and works with local communities, landowners, individuals and organizations to ensure that people and birds can co-exist in these areas.



by agricultural land use and includes many densely populated urban centers that contribute to the eutrophic (nutrient-rich) status of the lake. The only natural connection to Lake Winnipeg from Lake Manitoba is the Dauphin River via Lake St. Martin and the Fairford River, which accounts for three percent of the flow into Lake Winnipeg. The majority of the inflow to Lake Winnipeg comes from four main sub-watersheds: the Winnipeg River, Saskatchewan River, Red River, and Assiniboine River. Outflow from Lake Winnipeg occurs into the Nelson River at the northeastern side of the northern basin (See Figure 9).

Lake Manitoba has a drainage area of approximately 79,800 square kilometres, a surface area of approximately 4,500 square kilometres, and approximately 915 kilometres of shoreline. The Ramsar-designated Delta Marsh is located at the southern edge of Lake Manitoba, 22 kilometres north of Portage la Prairie. Lake St. Martin is comprised of two basins which are connected by a narrow passage of water referred to as the “Lake St. Martin Narrows”. Lake St. Martin has a total surface area of approximately 345 square kilometres, and approximately 260 kilometres of shoreline. The Fairford River is the only natural outlet for Lake Manitoba, spanning approximately 16 kilometres and conveying flows to Lake St. Martin. The Fairford River is regulated by the FRWCS, which enables higher and lower outflows from Lake Manitoba than under natural conditions. The Dauphin River is the only natural outlet from Lake St. Martin, spanning approximately 50 kilometres from its inlet on Lake St. Martin to its outlet into Sturgeon Bay on Lake Winnipeg. Winter ice forms in November on the Fairford River upstream and downstream of the FRWCS, along the Dauphin River, and on Lake St. Martin, with ice remaining until the following April or May.

The area along the LMOC ROW includes Birch Creek and Watchorn Creek systems while the LSMOC ROW includes the upper reaches of the Buffalo Creek System. Birch Creek flows from wetlands, ponds and small lakes located adjacent to the proposed LMOC route, north to Birch Bay in Lake St. Martin. The Birch Creek system includes Clark’s Lake, Goodison Lake, Clear Lake, Water Lake and Reed Lake. Watchorn Creek originates near Reed Lake and flows south to Watchorn Bay in Lake Manitoba. Systems in the Buffalo Creek Complex consist of Big Buffalo Lake, Little Buffalo Lake, Buffalo Creek and several small unnamed lakes, ponds and creeks adjacent to the proposed LSMOC route. The water quality in the LAA is generally characterized as moderately nutrient rich, low to moderately turbid, slightly alkaline, very hard, and well oxygenated.

The LAA is underlain with a carbonate bedrock aquifer (herein bedrock aquifer). Regional groundwater recharge occurs in the uplands of the Interlake where the till is thin or the bedrock outcrops to the surface and this configuration creates a divide where groundwater flows outwards between the Interlake—east towards Lake Winnipeg and west towards Lake Manitoba and Lake Winnipegosis. Groundwater can discharge (seep or spring) where the till is thin and likely discharges into bogs, streams, and lakes such as Lake Manitoba, Lake St. Martin and Lake Winnipeg. The bedrock aquifer groundwater quality in the LMOC area meets the Health Canada *Guidelines for Canadian Drinking Water Quality*¹² and Canadian Council of Ministers of the Environment (CCME) *Canadian Environmental Quality Guidelines* except for total

¹² Health Canada. (2022). *Guidelines for Canadian Drinking Water Quality – Summary Tables*. Retrieved February 7, 2024 from <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html>

dissolved solids, manganese, and fluoride. The bedrock aquifer groundwater quality near the LSMOC generally meets Health Canada *Guidelines for Canadian Drinking Water Quality*, CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life*, and *Manitoba Water Quality Standards, Objectives, and Guidelines* (MWQSOG) criteria except for *Escherichia coli* (E. coli), total coliforms, manganese, fluoride, iron, arsenic and uranium. Hardness as calcium carbonate and total dissolved solids also exceeded the aesthetic objectives (i.e., whether consumers would consider the water drinkable) for Health Canada *Guidelines for Canadian Drinking Water Quality*.

Fish and fish habitat in the LAA includes Lake Manitoba and the north basin of Lake Winnipeg. The Proponent described Lake Manitoba as extremely productive with fish habitat being characteristically shallow, turbid, and ideal for open-water fish species. Surrounding marsh wetlands and tributaries provide spawning and nursery areas for fish. Habitat in the north basin of Lake Winnipeg is in deep clear water and has abundant benthic invertebrates ideal for lake whitefish. An abundance of zooplankton supports large populations of smaller-bodied fish that in turn support large populations of piscivorous fish such as walleye and northern pike.

The LAA is comprised of more than 800 square kilometres of aquatic habitat, including a variety of lakes and their tributaries, lake bays, ponds, rivers, creeks, and wetlands. Moving through the LAA from northwest to southeast, the Proponent described fish habitat as including Watchorn Bay on Lake Manitoba, with shallow depths, a relatively uniform gently sloping bottom and wave action, and Watchorn Creek flowing into the south side of the Bay at Watchorn Provincial Park. Long Lake and Reed Lake are shallow with abundant vegetation. The Fairford River flows between Lake Manitoba and Pineimuta Lake, which then connects to Lake St. Martin. The FRWCS and associated Denil fishway are located on the upper reaches of the Fairford River. Lake St. Martin has a south basin and a north basin connected by the Lake St. Martin Narrows. The lake is mesotrophic with a large surface area to volume ratio. Birch Bay, the southernmost embayment of Lake St. Martin, is the location of the proposed outlet of the LMOC. Birch Creek drains a series of shallow, intermittent lakes and enters Birch Bay. Bear Creek is a small tributary to Lake St. Martin that enters the northeast basin, south of the proposed LSMOC. Dauphin River is the natural outflow from Lake St. Martin and flows into the north basin of Lake Winnipeg at Sturgeon Bay. Buffalo Creek is a tributary to the Dauphin River and drains Big Buffalo Lake, Little Buffalo Lake, and several unnamed ponds and intermittent creeks. Big Buffalo Lake has inflows from surrounding wetlands and groundwater sources. Sturgeon Bay on the southwest side of the north basin of Lake Winnipeg is shallow, and often highly turbid due to wind-driven sediment re-suspension.

The Proponent indicated that as many as 54 species of fish have the potential to occur within the RAA. Of these species, about 47 are known to occur within the RAA, and 38 have been captured within the LAA during studies related to the EOC or the Project. Abundant large-bodied species in the RAA include common carp, goldeye, mooneye, white sucker, shorthead redhorse, northern pike, cisco, lake whitefish, yellow perch, walleye, sauger, freshwater drum, longnose sucker, silver redhorse, burbot, and white bass. Abundant small-bodied species include northern pearl dace, golden shiner, emerald shiner, blacknose shiner, spottail shiner, fathead minnow, trout-perch, brook stickleback, ninespine stickleback, mottled sculpin, johnny darter, log perch, central mudminnow, longnose dace, rainbow smelt, and slimy sculpin.

The Proponent identified 15 aquatic invasive species (AIS) with direct routes of dispersal to potentially colonize the LAA and RAA. These include eight species of plants (curly leaf pondweed, Eurasian water milfoil, salt cedar, yellow flag iris, flowering rush, Himalayan balsam, invasive phragmites, and purple loosestrife), three species of invertebrates (spiny water flea, zebra mussel, rusty crayfish), and five species of fish (common carp, rainbow smelt, mosquito fish, Prussian carp, and round goby).

The Proponent identified five aquatic species at risk that have the potential to occur within the LAA or RAA and have been identified by COSEWIC, or are currently listed on one of the three schedules of SARA. Those listed on Schedule 1 of SARA are mapleleaf mussel, bigmouth buffalo, and silver chub (Appendix B Species at Risk). The Southern Hudson Bay-James Bay population of lake sturgeon is listed as special concern under SARA Schedule 1, however other Manitoba populations are not listed on Schedule 1. The Proponent indicated that mapleleaf muscle and lake sturgeon were historically found within the LAA, but that there were no recent records of mapleleaf muscle in the LAA. Natural occurrences of lake sturgeon were noted as rare and transient in Lake Winnipeg, with no documented presence in the Dauphin River or Lake St. Martin.

The topography of Manitoba is such that the province is susceptible to flooding. This has resulted in water management practices dating back to the 1880's and currently there are over 4,750 kilometres of drains owned by the Province of Manitoba. The Proponent owns 13,000 through-dike culverts and 3,350 culvert crossings as part of the agricultural drainage network. The 1960s and 1970s saw the development of larger water control infrastructure including the Red River Floodway, the Shellmouth Dam and Reservoir, FRWCS and the Portage Diversion (See Figure 15). Additional flood control improvements, such as dams along the Souris River, the Assiniboine River Dykes, and a number of local flood protection infrastructure, contribute to the larger infrastructure network that helps to protect Manitobans during flood events. Management and operation of this infrastructure is coordinated to reduce peak water elevations and reduce unwanted flooding across the province.

5.2 Human Environment

The Project would be located within Treaty 2 territory, a traditional meeting grounds for many First Nations and Métis people. Indigenous peoples have engaged in traditional activities and have had a relationship with the land in the RAA for thousands of years. Since the late 1800s, land privatization, creation of transportation networks, pipeline ROWs and utility corridors, tourism and recreation activities, and commercial and residential development have contributed to the modification of land use in the RAA.

The LMOC would be located within the RM of Grahamdale and would generally be situated north of the community of Ashern and south of Pinaymootang First Nation. The LMOC is primarily located on private agricultural lands that will be purchased for the Project. Most agricultural activities are related to cattle production, with some areas used for pastures and forage crops where the land is suitable for these practices. Some sites intersected by the Project are provincial Crown land. The nearest privately held residence is approximately half a kilometre from the centreline of the LMOC, and there are approximately 66 residences within three kilometres of the Project PDA.



The LSMOC is located entirely on provincial Crown land; this area is considered semi-remote as there is limited road access, with the nearest permanent residence located approximately six kilometres away. The LAA is situated between a number of Indigenous communities and is considered an important traditional and current land use resource. The LSMOC is located between the northeastern most extent of Lake St. Martin and Sturgeon Bay on Lake Winnipeg.

Three First Nation reserves are located in the LAA: Pinaymootang First Nation, Little Saskatchewan First Nation, and Lake St. Martin First Nation. Several other First Nation reserves are located within the RAA, including Lake Manitoba First Nation and Dauphin River First Nation. The closest First Nation reserve to the LMOC is Pinaymootang First Nation (Fairford 50) on the west side of Lake St. Martin, approximately eight kilometres to the northwest. The closest First Nation reserve to the LSMOC is Dauphin River First Nation (Dauphin River 48A), approximately four kilometres west of the LSMOC on Sturgeon Bay (Lake Winnipeg). The closest First Nation reserve to the proposed distribution line is Lake St. Martin First Nation (Narrows 49A) at approximately 11 kilometres west of the LSMOC on Lake St. Martin. Finally, the closest First Nation reserve to the PR 239 realignment is Pinaymootang First Nation (Fairford 50), approximately 14 kilometres to the northwest, on Lake St. Martin.

Through the Proponent's Indigenous engagement program, Lake St. Martin First Nation and Peguis First Nation, Black River First Nation, Fisher River Cree, Fox Lake Cree Nation noted the importance of access to and available usage of traditional hunting territory. Dauphin River First Nation, Peguis First Nation, Kinonjeoshtegon First Nation, and Pinaymootang First Nation reported the use of important trails and access routes, including snowmobile routes, to access fishing, hunting, and gathering. Tataskweyak Cree Nation indicated their concerns regarding impacts to the cultural landscape and heritage resources including potential damage to sacred and burial sites. Kinonjeoshtegon First Nation, Little Saskatchewan First Nation, Dauphin River First Nation, Lake Manitoba First Nation, Pinaymootang First Nation, and Peguis First Nation identified site-specific traditional land use within the RAA. Manitoba Métis Federation citizens noted that they are restricted to practicing traditional activities on unoccupied Crown land, including in the PDA, and so projects that result in any change of access for Métis people are concerning.

The public also uses waterways potentially affected by the Project. For example, travel routes are important to communities in the RAA for recreation and tourist activities such as recreational boating, windsurfing, and swimming. During the winter, the frozen lakes provide access for snowmobiles and other vehicles. Agricultural land use is limited to the LMOC portion of the LAA and the southern and western shorelines of the Lake St. Martin shoreline portion of the LAA. Commercial, subsistence and recreational fishing is prevalent in the LAA and is important for the local economy.

6 Predicted Changes to the Environment

6.1 Surface Water

The Project could cause residual effects to surface water through changes to:

- regional flow and water levels;
- regional and/or local fluvial and shoreline geomorphology;
- local drainage areas and local drainage patterns;
- surface water quality; and
- regional and local ice processes.

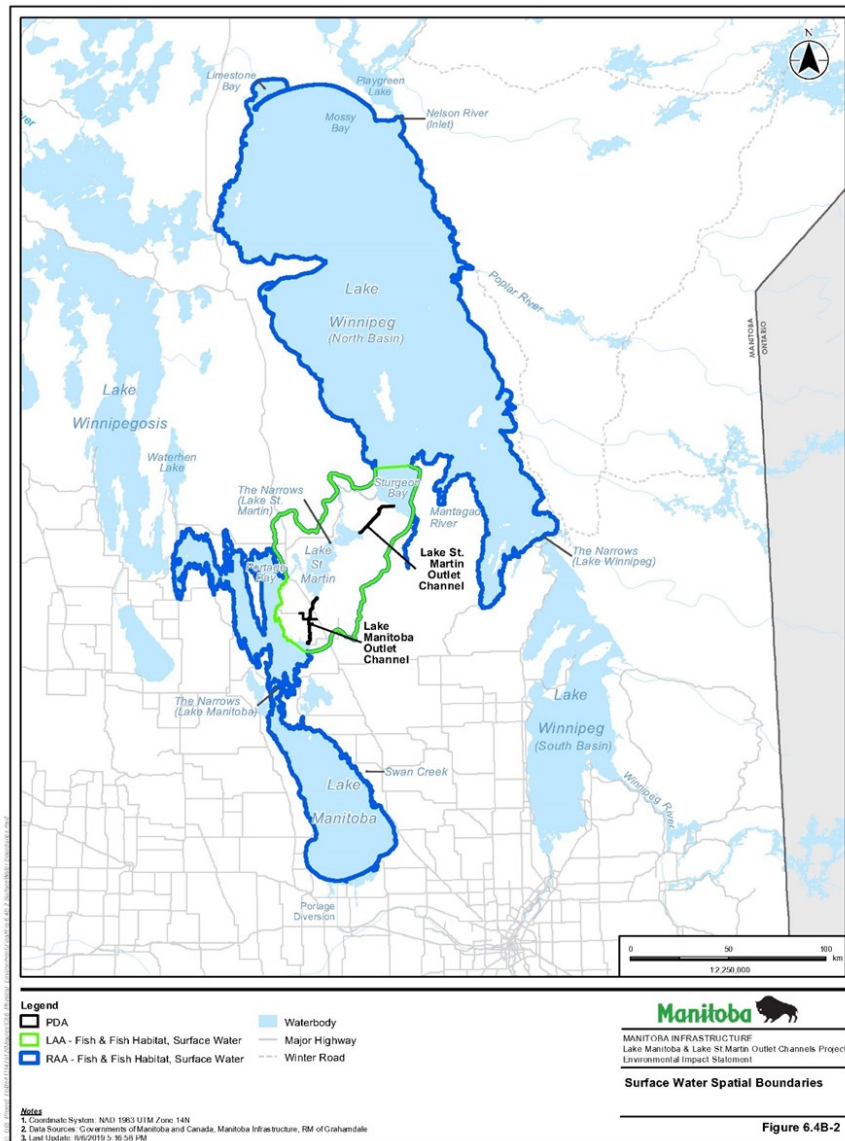
The Agency summarized the Proponent's assessment of project-related changes to surface water quantity and quality. This summary supports the predicted changes to groundwater (Chapter 6.2), and the analysis of effects to fish and fish habitat (Chapter 7.1), Indigenous peoples' current use of lands and resources for traditional purposes, physical and cultural heritage, and sites of significance (Chapter 7.4), and Indigenous peoples' health and socio-economic conditions (Chapter 7.5). Accidental project-related effects relating to surface water are also discussed further in Accidents and Malfunctions (Chapter 8.1)

The Agency is of the view that the Proponent has adequately considered potential effects of the Project on surface water and that the Proponent's proposed mitigation measures, monitoring and follow-up programs are appropriate to address potential project effects to surface water. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring and follow-up measures, and the views expressed by federal authorities, Indigenous groups and members of the TAG.

6.1.1 Proponent's Assessment of Environmental Effects



Figure 6 Surface Water Spatial Boundaries



Source: Lake Manitoba and Lake St. Martin Outlet Channels, Environmental Impact Statement, Volume 6 (March 5, 2020).

Figure Description: The PDA included the LMOC and LSMOC; the WCSs, drop structures, and bridges; inlets and outlets at both outlet channels; and the realignment of PR 239. The LAA included the PDA; the Lake St. Martin watershed; the Lake Manitoba shoreline from the Fairford River inlet in Portage Bay south and east to Watchorn Bay; and a portion of the Lake Winnipeg watershed in Sturgeon Bay. The RAA included the PDA and LAA; the north and



south basins of Lake Manitoba; the north basin of Lake Winnipeg from the Lake Winnipeg Narrows to Limestone Bay; and the Nelson River inlet (outlet of Lake Winnipeg to Playgreen Lake).

Predicted Effects

Regional Flow and Water Levels

Project operation will change regional flow and water levels in the RAA as the outlet channels are designed to manage the outflows from Lake Manitoba and Lake St. Martin. The outlet channels would reduce peak flood levels, reduce duration of flooding, and minimize the risk of inundation of low-lying areas in the LAA around Lake Manitoba and Lake St. Martin and more broadly in the RAA. The Proponent noted that the operation of the outlet channels during flood conditions would increase the outflow capacity of Lake Manitoba and Lake St. Martin. High flows in the Fairford and Dauphin Rivers are estimated to be reduced. The relative contribution of the Dauphin River to Lake Winnipeg would decrease. Due to the anticipated increases in conveyance capacity¹³, the Proponent predicted that the outlet channels would decrease flood risk in the LAA around Lake Manitoba, Lake St. Martin, Fairford River, Dauphin River, and Lake Pineimuta. The Proponent noted a maximum five centimetre rise of Lake Winnipeg and four centimetre rise at Cross Lake and characterized downstream effects as negligible. The Proponent predicted that during low flow conditions lake levels and river flows would decrease but would be maintained within the range of natural variability. Opening of the WCS gates would result in higher water velocities and reduced water levels through the Lake St. Martin Narrows. The Proponent concluded that changes to regional flows and water levels would be adverse or neutral in direction, long-term, negligible to low in magnitude, local and regular in frequency and irreversible as opening of the WCS gates are expected to occur approximately every three years. The Proponent noted that operation of the Project would occur based on high lake water levels and does not expect operation in dry periods.

Regional and Local Fluvial and Shoreline Geomorphology

Construction and operation of the Project may affect regional and local fluvial and shoreline geomorphology¹⁴ in the LAA. Operation of the outlet channels may change fluvial geomorphology in the Fairford River or Dauphin River systems in the LAA. Construction of the inlets and outlets for the Project would require excavation of the lake bottom and may change local shoreline geomorphology within the LAA in Watchorn Bay, Birch Bay, the north basin on Lake St. Martin, and Sturgeon Bay.

The Proponent noted that local changes in shoreline geomorphology due to the Project could interact with existing wind, wave and ice action to alter sediment transport and beach forming processes in these areas. During high flow conditions, the LMOC and LSMOC would reduce the amount of shoreline area inundated

¹³ Conveyance capacity is the maximum volume of water that can be conveyed from one water body to the next in a given amount of time.

¹⁴ Fluvial geomorphology refers to the physical shapes of rivers, their water and sediment transport processes, and the landforms they create. Shoreline geomorphology refers to physical characteristics of the shoreline influenced by winds, waves, currents, and changes to water levels.



and could alleviate the extent of shoreline exposed to wind, wave and ice action in localized shorelines that would otherwise occur without the Project. LMOC and LSMOC discharge into Birch Bay and Sturgeon Bay, respectively, may affect the scouring and movement of lakebed sediments or other substrates when WCS gates are open. The Proponent concluded that the Project is not expected to affect the current geomorphological stability of the LSMOC inlet. Based on model predictions, rock-filled jetties at the LSMOC outlet would be required to limit changes to shoreline geomorphology and prevent deposition of sediment in the LSMOC outlet.

Local Drainage Areas and Local Drainage Patterns

Construction and operation of the Project would change local drainage areas and local drainage patterns¹⁵. The LMOC outside drain would provide a more direct route for surface water runoff from cattle feedlot operations. The LMOC would also intersect the Birch Creek and Watchorn Creek drainage basins in the LAA, decreasing the total drainage area in the basins by approximately 27.4 percent and four percent respectively, along the west side of the outlet channel. Construction and operation of the LMOC would result in a low to moderate magnitude reduction in flow in the Birch Creek system and a negligible change in flow in the Watchorn Creek system. Changes in hydrology to Goodison Lake are not expected, as water flows from the southeast.

Construction of the LSMOC would intersect the Buffalo Creek watershed decreasing the total drainage area by 51.5 percent from the south and east of the outlet channel in the LAA. Construction and operation of the LSMOC would likely result in a reduction in flows in the LAA to the Buffalo Creek complex.

Effects to wetlands due to changes in drainage areas and patterns are discussed in Chapter 6.3 Terrestrial Landscape.

Surface Water Quality

During the Project construction phase, the Project may affect surface water quality through the introduction of sediment to waterbodies, discharge of groundwater to surface water, and accidental spills and leaks (refer to Chapter 8.1 Accidents and Malfunctions).

Potential sources of changes to surface water quality included surface water, groundwater, and processed water¹⁶ from dewatering of construction areas, accidental spills and releases of deleterious substances, leachate from rock stockpiles and structures containing rock, control, and treatment of sewage water from construction camps, and blasting if required. Project operation is not expected to affect nutrient concentrations in the waterbodies with average total nitrogen concentration; and total nitrogen to total phosphorus ratios lower than threshold conditions for blue-green algae blooms. The Proponent noted that operation of the Project may provide a more direct route for runoff from cattle operations in the LAA to

¹⁵ Drainage area refers to the land base that drains to the same location whereas the drainage patterns refer to the path by which water takes to reach that location.

¹⁶ Processed water consists of any water considered to be a direct product of construction activities.



downstream waterbodies during runoff events. This runoff may affect water quality parameters including total suspended solids, nutrients, bacterial (coliforms) concentrations, oxygen demand¹⁷, dissolved oxygen, and pH. Following implementation of mitigation measures and treatment of runoff of cattle operations, residual effects to water quality resulting from nutrient concentrations from agricultural fertilizers and cattle operations runoff may be improved compared to baseline conditions but may still affect water quality during flood conditions.

The Proponent stated that during construction, the discharge of groundwater from active aquifer depressurization to surface water environments would have a low to negligible effect on surface water quality. Localized changes in temperature were expected at lake bottoms due to changes in groundwater discharge (see Chapter 6.2 for more information). However, this change would be localized and would not affect the overall temperature of the lake. Changes to surface water flow from Project-related groundwater discharge were expected to be negligible.

Operation of the Project is not expected to affect surface water temperatures beyond the range of existing variability or affect thermal stratification and turnover in lakes within the LAA and RAA as the Project does not provide a source of thermal energy and Project-related changes in water velocities and volumes would have a negligible effect. Project operation may affect surface water quality with residual effects considered to be local, adverse, and negligible to low in magnitude, following implementation of mitigation measures.

Regional and Local Sediment and Debris Transport

The Proponent indicated that the construction and operation of the Project may change regional and local sediment and debris transport. Construction activities, including land-based (e.g., clearing, excavation, and vehicle and equipment movements), and water-based (e.g., in-water excavation, slope contouring for the inlet and outlet areas, cofferdam installation and removal, and installation of riprap in the outlet channels) may contribute to a temporary increase in suspended sediments in the waterways in the LAA. Effects of Project construction are considered to be adverse, short-term in duration, negligible to low magnitude, reversible in the short-term, and infrequent.

¹⁷ Oxygen demand is the amount of oxygen used by bacteria when decomposing organic material in water.

**Table 4 Construction-Related Sediment in the Lake Manitoba and Lake St. Martin Outlet Channels**

	LMOC	LSMOC
Total Construction-Related Sediment Available for Mobilization During Commissioning	16,125 metric tonnes (33 percent related to dust introduced on armouring materials)	12,227 metric tonnes (44 percent related to dust introduced on armouring materials)
Estimated Sediment Mobilized During Commissioning	4,100 to 7,700 metric tonnes	7,600 metric tonnes
Sediment Available for Mobilization in Outlet Channels After Commissioning	12,025 to 9,025 metric tonnes	4,627 metric tonnes
Sediment Plume ¹⁸ Extent During Commissioning	3 kilometres from LMOC outlet	8 kilometres from LSMOC outlet
Sediment Deposition Area After Commissioning	Up to 2.3 square kilometres in Birch Bay	Localized areas within the LSMOC outlet excavation
Sediment Deposition Thickness	Range from 2 to 100 millimetres, with the potential for localized areas up to 150 millimetres	Range from 2 to 10 millimetres

The Proponent noted that it would not be feasible to remove all sediments after installation of the armouring and provided estimates of sediment available for mobilization during commissioning (Table 4). The Proponent characterized that the commissioning of the outlet channels would contribute to an adverse, short-term, and moderate magnitude increase in sediment mobilization during construction including dust from armouring materials and construction activities. To manage the sediment plume during commissioning, the Proponent would gradually open the LMOC and LSMOC WCS gates while using real-time turbidity monitoring to maintain total suspended solids concentrations within CCME guidelines. For the LMOC, the sediment plume would extend into Birch Bay and would not be substantially affected by wind direction. For the LSMOC, the Proponent predicted that the sediment plume would extend into Sturgeon Bay, with potential sediment accumulation in nearby beaches, and that the sediment plume is highly affected by the wind speed, wind direction and wave action. Modelling demonstrated that south and southeast winds result in a sediment plume which wraps around Willow Point, while north, northeast, northwest and west winds result in a sediment plume that extends along the southeast shoreline of Sturgeon Bay. Following commissioning, residual sediments in the outlet channels may be mobilized during subsequent WCS gate openings in decreasing amounts until all the construction-related sediment has been mobilized. The Proponent concluded that these could be managed with controlled WCS gate opening sequence and monitoring to meet water quality thresholds. Construction-related sediment would be transported downstream in the LAA and RAA over the long-term due to natural processes.

¹⁸ A sediment plume is water having a total suspended solids concentration above 5 milligrams per liter increase over background, as defined by Proponent for this Project.



The Proponent stated that the Project would not be a source of sediment during operations. All surfaces of the LMOC and LSMOC would be covered via revegetation and limestone rock armouring underlain with geotextile to alleviate erosion and sediment release from till substrates within the channels during operation. The Proponent predicted that the Project would not generate sources of sediment-bound nutrients during operation, beyond commissioning.

Operation of the Project would likely alter sediment and debris transport within the LAA (i.e., where naturally occurring sediments may be transported due to the Project), however the Project is not expected to contribute to changes in sediment or erosion processes beyond the RAA. The Proponent estimated that, due to the overall increase in flows through the LMOC, the Project would increase the amount of sediment transported to Lake St. Martin to be minor (a potential increase of 10,000 tonnes or four percent) in the context of overall LAA load. However, the Proponent expected that the outlet channels would promote movement of water and suspended sediments in Lake St. Martin, thereby reducing sediment deposition area by 50 percent during operation. The Proponent expected that no sediment load beyond pre-project conditions would likely be added from Lake St. Martin, and that the suspended sediment would be transported to Lake Winnipeg via the Dauphin River or LSMOC during operation of the Project.

Operation of the Project may increase velocities in the Lake St. Martin Narrows, contributing to increased mobilization and re-deposition of gravels between the constrictions of the Lake St. Martin Narrows, while sands may redeposit in the Lake St. Martin north basin, before reaching the Dauphin River inlet. The Proponent modeled that sediment movement in the Lake St. Martin Narrows post-commissioning would reach equilibrium and the net gain or loss in sediment would be negligible. The Proponent noted that the impact of wind in sediment movement (erosion and deposition) is temporary and is dependent on the presence of the wind effect.

Regional and Local Ice Processes

Changes to regional flows and changes in local drainage patterns due to the Project may affect ice processes in the waterways. Reduced flows and lake levels due to the Project would likely reduce the risk of ice jamming and flooding in the Fairford and Dauphin Rivers. Changes in ice processes would be negligible in the LAA in the Buffalo Creek complex and Watchorn Creek system, and low to negligible in the Birch Creek system. Changes to ice formation processes in the inlets and outlets areas of the LMOC and LSMOC would be likely due to changes in flows and shoreline geomorphology. The Proponent noted the risk of frazil ice¹⁹ creating ice dam blockages in the outlets, which may reduce the hydraulic capacity of the outlet channels and lead to overland flooding. Mitigations for frazil ice accumulation and ice dam blockages are described in Chapter 8.2 Effects of the Environment. Reduced flows in the outlets channels during winter months would promote stable ice formation in the outlet channels to limit the risk of frazil ice formation. Potential changes to ice processes in waterways are predicted to be low to negligible.

¹⁹ Frazil ice: small discs of ice ranging in size from less than 0.1 millimetres to a few millimetres, formed in turbulent water.



6.1.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada recommended mitigation measures to address potential nutrient-related effects to the aquatic environment should nitrogen-based explosives be used, including following best practices for use and management of explosives and developing ammonia management plans.

Environment and Climate Change Canada highlighted that the frequency of the Project WCS gates opening for flood mitigation is likely to be higher than reported in the EIS due to the non-stationarity of flood frequency and the potential effects of climate change (i.e., floods of a given magnitude are more frequent than they once were and may become more common in the future). The increasing trend in the frequency and magnitude of floods may be due to climate change, land use changes, and water management practices. Environment and Climate Change Canada expressed concern that information provided by the Proponent indicated a potential for erosion within the Lake St. Martin Narrows and the outlet of the LSMOC, and that this was important for effects that are not well-understood such as introduction of new sediment loads. Due to the observed increases in flood magnitude and frequency, long-term monitoring should be included in the Environmental Management Plans for effects that may be exacerbated or accelerated by more frequent use of the outlet channels.

Environment and Climate Change Canada was of the view that uncertainty in the hydraulic behaviour of the Lake St. Martin Narrows and the inlet of the Dauphin River should be addressed through the addition of monitoring data to update the model. Environment and Climate Change Canada noted that the inclusion of the constricting effect of the Lake St. Martin Narrows to the hydraulic model showed that the south basin of Lake St. Martin would gain less flood protection benefit than described in the EIS, the Dauphin River would need to be protected from abrupt drops in flow, and that winter operation of the Project may require limits to protect ice cover. Environment and Climate Change Canada emphasized that the winter flow in the Dauphin River is currently managed to reduce the risk of a hanging wall ice dam and associated flooding at the river mouth. The hydraulic behaviour of the Lake St. Martin Narrows should be adjusted with water level data from the first operational use of the Project, however, more data on the substrate of the Lake St. Martin Narrows and the Dauphin River inlet would help to address uncertainty.

Environment and Climate Change Canada highlighted that the Project would transport naturally occurring sediment from one lake to the next and contribute to deposition of sediment in areas that would not occur without the Project. Sediment may also be present in the outlet channel beds when they are first used. Since the LMOC would remain wetted in between WCS gate openings, sediment may accumulate there. Environment and Climate Change Canada noted that the accumulation of sediment between WCS gate openings has not been quantified by the Proponent nor have potential mitigations been presented. Therefore, there remains uncertainty in potential effects to fish and fish habitat from suspension of sediments during each WCS gate opening. Environment and Climate Change Canada recommended extending the proposed gradual gate opening sequence and water quality monitoring to long-term operations of the Project. Environment and Climate Change Canada was of the view that the Proponent justified the use of two-dimensional models by showing a lack of thermal stratification in the relatively

shallow receiving waters (Birch Bay and Sturgeon Bay). Environment and Climate Change Canada noted that the Proponent did not evaluate sediment transport from upstream areas (i.e., Lake Manitoba) to previously sheltered bays; the Proponent stated that the sediment load of upstream waters naturally pass through Lake St. Martin to Lake Winnipeg. Nevertheless, the Proponent showed that sediment concentration did not correlate well with flood events, and suggested that wind and wave action may be a major driver of sediment distribution/redistribution based on satellite images. The modeling of commissioning scenarios (refer to Chapter 2 Project Overview for additional information on commissioning) supported the conclusion that wind conditions are a very important factor. Given the range of variables involved, Environment and Climate Change Canada emphasized that the sediment transport through the outlet channels could lead to many depositional thicknesses, extents, and locations. Environment and Climate Change Canada was of the view that the existing modeling scenarios give an adequate envelope to determine monitoring locations and gather baseline substrate information. Environment and Climate Change Canada recommended the monitoring of sediment load and substrate sediments; after commissioning of the Project and after each conveyance of flows through the Project when WCS gates are open. Acknowledging the large uncertainty of sediment deposition following commission and subsequent opening of the WCS gates, and based on concerns expressed by Indigenous groups, Environment and Climate Change Canada requested the Proponent consult with them prior to finalizing the Environmental Management Plans.

Environment and Climate Change Canada noted that the proposed outside drains would partially cut off the watersheds for Birch Creek and Buffalo Creek. This may cause drying in the creeks and wetlands downstream of the channels and pooling upstream of the channels. Environment and Climate Change Canada was of the view that the conclusion that drying in these areas will occur is well supported but that the exact effect to wetlands and extent of these changes is not possible to predict. As such, the water levels maintaining the wetlands downstream of the channels in Birch Creek and Buffalo Creek (Big Buffalo Lake) are expected to drop. Environment and Climate Change Canada recommended that the Proponent update the Surface Water Management Plan to include monitoring for Big Buffalo Lake water levels and Birch Creek and Buffalo Creek streamflow to provide additional data that can address the uncertainty surrounding changes to water levels; additional monitoring to inform the volumes necessary should a rewatering system be considered; and continuously monitor flows in the outside drainage channel of the LSMOC during construction and for two years post construction to understand the surface water flows that will no longer reach the Buffalo Creek complex upon completion of the LSMOC.

Indigenous Groups

Berens River First Nation, Bloodvein First Nation, Brokenhead Ojibway Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay First Nation, Tataskweyak Cree Nation, and York Factory First Nation-expressed concerns regarding surface water quality including concerns that the Project's design would expedite the transmission of contaminants to downstream environments and that increased nutrient loading including from agriculture and cattle feedlot runoff would result in changes to surface water quality with effects to drinking water quality, health, and cultural and recreational uses.



Berens River First Nation, Bloodvein First Nation, Dauphin River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak First Nation, and York Factory First Nation expressed concerns regarding potential Project effects to watersheds, water levels, flow rates including downstream effects to Lake Winnipeg, Playgreen Lake, Split Lake, Cross Lake, and the Nelson River, and hydraulic modelling, and project design. Norway House Cree Nation, Pimicikamak Okimawin, Tataskweyak First Nation, and York Factory First Nation highlighted that while downstream effects have been characterized by the Proponent as negligible, the predicted changes to downstream environments would be significant for the local communities. Peguis First Nation and the Interlake Reserves Tribal Council expressed concerns regarding the modelling in Lake St. Martin and the importance of considering the constricting effect of the Lake St. Martin Narrows to adequately understand project effects. Dauphin River First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concern that climate change has not been adequately considered in the modelling. Berens River First Nation, Fisher River Cree Nation, Peguis First Nation, Poplar River First Nation, and Sandy Bay First Nation expressed concerns regarding the potential for elevated water levels on Lake Winnipeg and the effects of wind events on water levels.

Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Peguis First Nation, Pinaymootang First Nation, and Poplar River First Nation expressed concerns regarding unpredictable ice formation and breakup, thinner lake ice covers, ice jamming and development of frazil ice.

Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and Tataskweyak Cree Nation expressed concerns related to increased erosion, introduced sediment, and debris transport due to the Project. Concerns were related to sediment modelling, accuracy of the predicted effects and channel design to surface water quality. Peguis First Nation and Misipawistik Cree Nation requested three-dimensional sediment modelling and simulated mixing dynamics for both stratified and unstratified receiving environments. The Interlake Reserves Tribal Council noted the need for additional mitigation measures related to sediment input from armouring rock. Hollow Water First Nation and Lake St. Martin First Nation requested washing the armouring rock prior to installation to prevent sediment settling in the outlet channel. The Manitoba Métis Federation noted concerns with the Proponent's approach to use armouring rock, citing an underestimation of additional sediment into receiving waters and subsequent effects. The Manitoba Métis Federation expressed concern regarding the potential for residual project-related sediment or naturally occurring sediment accumulated in the outlet channels in between uses may



be mobilized during operation. The Manitoba Métis Federation requested the Proponent implement the WCS controlled gate opening procedure post-commissioning during operation. Peguis First Nation further noted they were concerned that the increased velocities of flows at the Lake St. Martin Narrows may result in erosion and sediment dispersal greater than what was predicted.

Berens River First Nation, Black River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, and York Factory First Nation expressed concerns related to baseline data, assessments and models related to surface water, sediment loads and flood risks. They expressed concerns related to the proposed mitigation measures, and details of the Environmental Management Plans, including a lack of traditional knowledge consideration. They requested the Proponent involve Indigenous groups in operation guidelines development, and monitoring and follow-up activities.

Public Groups

Trapline 18 and the RM of Grahamdale provided comments and views on the potential effects of the Project to surface water quantity and quality, including concerns regarding sediment and debris transport and emphasized the need for robust monitoring. The RM of Grahamdale requested that the limestone armouring rock be washed prior to installation to reduce sediment load into the receiving waterbodies. The RM of Grahamdale requested that sediment monitoring periods are extended to ensure flood years would be captured over the long-term and noted the importance of maintaining total suspended solids thresholds during operations for extreme flood events.

The RM of Grahamdale expressed concerns regarding surface water impacts to Birch Creek watershed and Buffalo Creek watershed and emphasized the impacts of the reductions of flows on the wetlands, creeks, and ecosystem.

The RM of Grahamdale also expressed concerns that wind events were not considered in lake level predictions.

The RM of Grahamdale expressed concerns regarding winter operation of the channels and the potential for ice jamming and frazil ice in the outlet channels. They noted concerns that operation of the LSMOC would be restricted under ice conditions and requested monitoring dissolved oxygen conditions under ice conditions in the outlet channels.

The RM of Grahamdale expressed concerns regarding the increase conveyance of flows from Lake Manitoba, which has higher concentrations of both nitrogen and phosphorus, into Lake St. Martin. They noted concerns that this may lead to more frequent and severe algal blooms.

The RM of Grahamdale emphasized the need to consider the constricting effects of the Lake St. Martin Narrows in the hydraulic monitoring. They noted a concern regarding the calibration of the model given that the baseline data does not include gauges for the Lake St. Martin north basin. They requested duration



curve for the north basin and that the future LMOC discharge and north basin lake levels be published on a real time basis.

6.1.3 Agency Analysis and Conclusion

Analysis of the Effects

The Agency is of the view that the Proponent has adequately characterized potential project effects to surface water quality and quantity. The Agency acknowledges that the Project will cause residual effects to surface water quality during all phases and will modify the hydrology of surface waterbodies in the PDAs and LAA.

The Agency agrees with the Proponent's use of modeling to assess potential Project effects to hydraulic conditions in the LAA and RAA. However, the Agency notes that uncertainty remains regarding the extent to which the Project may contribute to fluctuations in flows, water levels or temporary flooding, and recommends that the Proponent develop a plan to conduct regular monitoring of surface water quantity to verify the results of the environmental assessment. The Agency understands that gradual WCS gate opening and closing is required to ensure that operation of the Project does not result in sudden drops in water flows to the Dauphin River or potential fish stranding in the outlet channels (Chapter 7.1). The Agency acknowledges that Indigenous groups raised specific concerns with regards to locations of importance to their communities and has included additional monitoring locations including Fisher Bay, Berens Inlet, Cross Lake, and Split Lake in the follow-up and monitoring program to verify EA predictions. The Agency agrees with Environment and Climate Change Canada and is of the view that additional data collection to validate the hydrological model, including at the Lake St. Martin Narrows, is necessary to validate EA predictions and inform the need for additional contingency measures. The Agency agrees with Environment and Climate Change Canada and Indigenous groups that long-term monitoring is needed to address the uncertainty related to the frequency of the Project WCS gates opening and effects of climate change.

The Agency understands that the Project may affect fluvial geomorphology and shoreline geomorphology in the LAA. The Agency acknowledges that there are shoreline erosion concerns related to fish and fish habitat that are addressed in Chapter 7.1 Fish and Fish Habitat, and related to physical and cultural heritage that are addressed in Chapter 7.4 Indigenous Peoples - Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance. The Agency highlights the importance of follow-up and monitoring to verify effectiveness of the proposed mitigation, and the application of adaptive management measures over the lifetime of the Project.

The Agency recognizes that the Project could result in adverse effects to local drainage areas and drainage patterns. The Agency acknowledges that the Proponent has committed to the use of the outside drains (see Table 2 Key Components of the Lake Manitoba and Lake St. Martin Outlet Channels) upgradient of the outlet channels to limit effects in the LAA. The Proponent discussed re-watering mitigation measures for the areas downgradient of the outlet channels, but these were deemed infeasible, and the effects remain unmitigated. Therefore, the Agency is of the opinion that the Project would result in residual adverse effects to fish and fish habitat (Chapter 7.1), migratory birds (Chapter 7.2), species at risk

(Chapter 7.3) and current use of lands and resources for traditional purposes and physical and cultural heritage, and sites of significance (Chapter 7.4) due to changes in drainage areas and drainage patterns. The Agency agrees with Environment and Climate Change Canada's recommendation that the Proponent implement additional monitoring to inform the volumes necessary should a rewatering system be considered; and continuously monitor flows in the outside drainage channel of the LSMOC during construction and for two years post construction to understand the surface water flows that will no longer reach the Big Buffalo Lake complex upon completion of the LSMOC. The Agency further discusses changes to surface water flows due to changes in groundwater discharge and additional mitigation measures in Chapter 6.2.

The Agency agrees with the Proponent that the Project would have minimal effects to surface water quality regarding nutrient concentrations. However, the Agency notes that uncertainty remains regarding the extent to which the Project may contribute to changes in nutrient concentrations due to agricultural fertilizers and cattle operation runoff. The Agency acknowledges that the Proponent has committed to implement passive treatment (i.e., collection basin and point-source wetland treatment areas) for each point source of cattle operation near the LMOC to treat nutrient-laden runoff. The Agency highlights the importance of follow-up and monitoring to verify effectiveness of the proposed mitigation, and the application of adaptive management measures to prevent exceedances to surface water quality thresholds. Further, the Agency notes that uncertainty remains regarding groundwater discharge into the outlet channels (Chapter 6.2). Additional groundwater discharge may alter surface water quality, and concerns were raised regarding dissolved oxygen levels under ice conditions for fish. The Agency understands that the Proponent is committed to monitoring surface water quality and recommends that the Proponent adhere to CCME guidelines of 6 mg/L in cold water for under ice conditions. Lastly, the Agency notes that uncertainty remains regarding the use of explosives and blasting. The Agency understands that the Proponent is committed to adhering to all relevant provincial and federal legislation and using best management practices to limit effects of explosives and blasting to surface water quality and fish health (see Chapter 7.1 for more information).

The Agency recognizes that sediment introductions to Lake Manitoba, Lake St. Martin and Lake Winnipeg will commence during construction, and elevated and measurable total suspended solids levels are expected to occur during operations. The Agency acknowledges that the Proponent has committed to armouring of the LMOC and LSMOC to reduce the potential for erosion and sedimentation, however the use of unwashed limestone armouring rock would magnify the effects of the initial sediment and total suspended solid flush during commissioning. The Agency understands that project-related dust sediment from armouring materials and construction activities will be mobilized at commissioning, totaling approximately 16,000 metric tonnes from the LMOC into Birch Bay, and 12,000 metric tonnes from the LSMOC into Sturgeon Bay resulting in sediment plumes and deposition within the receiving environments. The Agency agrees with Environment and Climate Change Canada that two-dimensional sediment modeling of the sediment plume is adequate to assess Project effects. The Agency acknowledges that sediment pulses are expected to decrease with each successive use of the Project, however, does not agree that the scale and volume of sediment introduction posed during commissioning are acceptable and unavoidable. The Agency is of the view that technically and economically feasible measures are available to collect and remove sediment and reduce adverse effects to surface water quality, fish and fish habitat, current use, and health and socio-economic conditions. The Agency therefore requires additional mitigation



measures to be implemented to achieve the collection and removal of sediment prior to commissioning, using a method that results in the minimum residual fine sediment being retained in-channel that would be mobilized into receiving waterbodies during commissioning. Further, the Agency understands that the LMOC and LSMOC outlets would deposit natural sediments in locations where they would not have previously occurred. The Agency acknowledges that there are concerns regarding sediment and debris transport modelling, with particular requests for monitoring locations of importance to Indigenous communities as they relate to current use and commercial fisheries (see Chapter 7.4 and 7.5). The Agency agrees with Environment and Climate Change Canada and the Manitoba Métis Federation that the controlled gate sequencing should be implemented during operations to control sediment concentrations in receiving water bodies and to avoid sudden drops in water levels in nearby rivers. The Agency recognizes that this may result in scenarios where both flood mitigation efficiency and potential sediment loading may need to be balanced. The Agency recommends the development of a decision-making matrix prior to Project operation in consultation with relevant authorities and Indigenous groups to address this concern. The Agency agrees with Environment and Climate Change Canada and Peguis First Nation that uncertainty remains regarding the extent of potential erosion in the Lake St. Martin Narrows due to higher velocities during water management activities. The Agency is of the view that additional monitoring, including substrate and sediment modelling, is required to validate EA predictions and inform the need for additional mitigation measures. The Agency recommends additional monitoring locations to address specific areas of concern in addition to key mitigations listed in this chapter and in Chapter 7.1 Fish and Fish Habitat.

The Agency recognizes that the Project may result in changes to ice processes in the LAA including ice formation processes, potential for ice jamming frazil ice formation, and hanging ice dams. The Agency highlights the importance of monitoring to verify EA predictions and inform the need for additional mitigation measures. For further information, please see Chapter 8.2 Effects of the Environment on the Project. The Agency addresses concerns related to current use and ice formation (such as ice fishing) in Chapter 7.4.

The Agency highlights the importance of engagement with Indigenous groups regarding the development and implementation of mitigation measures, monitoring, and follow-up programs with respect to surface water quality and quantity, including the establishment of water quality benchmarks and adaptive management triggers, to ensure that Indigenous land and resource use practices and Indigenous Knowledge are adequately considered.

The Agency is of the view that potential project effects to surface water quality and quantity would be adequately addressed, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent and the key mitigation measures described below.

Key Mitigation Measures and Monitoring to Avoid Significant Adverse Effects and Follow Up Program Requirements

The Agency considers the mitigation measures, monitoring, and follow-up programs to be necessary to ensure that there are no significant adverse environmental effects to fish and fish habitat, migratory birds, species at risk, and Indigenous peoples, as a result of project effects to surface water quality and quantity.



The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups.

Key Mitigation Measures

- Quarry site selection shall consider the proximity of sensitive sites including waterbodies and setbacks are to be a minimum of 100 metres from a water course or waterbody.
- The Proponent will implement a gradual WCS gate sequence whenever WCS gates are opened and closed to prevent sudden drops in water levels in the Dauphin River.
- During all project phases and quarrying activities, the Proponent will manage surface water quality taking into account water quality guidelines to prevent project-related exceedances of the baseline conditions in waterbodies frequented by fish within the PDA, LAA, and RAA, including for total suspended solids, nutrients, bacterial (coliforms) concentrations, hydrocarbons, metals, oxygen demand, dissolved oxygen, pH, and other relevant parameters. In Birch Bay and Sturgeon Bay, the Proponent will comply with CCME guidelines during WCS gate opening sequences. Mitigation measures will be developed in consultation with Indigenous groups, Fisheries and Oceans Canada, Environment and Climate Change Canada, and other relevant federal and provincial authorities.
- During construction, the Proponent will armour the base and lower side slopes of the outlet channels.
- The Proponent will use riprap protection on the outlet channel bottom and side slopes upstream and downstream of the WCS, along the outlet channel bank, the shoreline near outlet channel inlets and outlets, at each bridge, and on the outside drain inlets and outlets to reduce erosion.
- The Proponent will keep removal of riparian vegetation to a minimum and clear within 30 metres of a waterbody by methods that do not involve heavy machinery. Vegetative root masses found within the waterbody banks shall remain undisturbed. No more than one third of the total woody vegetation in the ROW will be removed within 30 metres of the ordinary high-water mark of a waterbody.
- Stockpiles and windrows of any material shall be kept a minimum of 100 metres from any waterbody's ordinary high-water mark. Temporary spoil piles shall be positioned and maintained to prevent direct or indirect sediment releases into a waterbody.
 - During construction, the Proponent will armour the base and lower side slopes of the outlet channels.
 - The Proponent will use riprap protection on the outlet channel bottom and side slopes upstream and downstream of the WCS, along the outlet channel bank, the shoreline near outlet channel inlets and outlets, at each bridge, and on the outside drain inlets and outlets to reduce erosion.
 - The Proponent will keep removal of riparian vegetation to a minimum and clear within 30 metres of a waterbody by methods that do not involve heavy machinery. Vegetative root masses found within the waterbody banks shall remain undisturbed. No more than one third of the total woody vegetation in the ROW will be removed within 30 metres of the ordinary high-water mark of a waterbody.

- Stockpiles and windrows of any material shall be kept a minimum of 100 metres from any waterbody's ordinary high-water mark. Temporary spoil piles shall be positioned and maintained to prevent direct or indirect sediment releases into a waterbody.
- During construction, the Proponent will employ erosion and sediment control measures to mitigate adverse effects to surface water quality and the aquatic environment as it relates to fish and fish habitat and current use related to the transport of sediment.
- The Proponent will collect and remove construction-related sediment in the outlet channels prior to commissioning using available technically and economically feasible methodologies. The Proponent will provide an updated estimate of sediment present and collected in the outlet channels to the Agency once construction is completed, and confirm removal methodology to achieve a minimum residual fine sediment volume retained in the channel prior to commissioning.
- The Proponent will use a controlled gate opening sequence informed by real-time total suspended solids monitoring during commissioning and during each subsequent opening of the WCS gates as detailed in the Follow-up Program. Total suspended solids concentrations will not exceed a 25 mg/L increase from background concentrations for more than a 24-hour period in accordance with the CCME guidelines. The Proponent will adjust WCS gates and thereby flows in the near-field receiving environment in response to real-time total suspended solids monitoring in the LMOC and LSMOC outlets. Should the Proponent monitoring approach the 25 mg/L increase from background concentrations threshold, the Proponent shall proactively take measures to avoid exceedance of the threshold.
- Develop a decision-making matrix in consultation with Fisheries and Oceans Canada, Environment and Climate Change Canada, other relevant authorities, and Indigenous groups integrated into the operation guidelines for gate opening sequence post-commissioning to balance sediment turbidity and other relevant parameters, protect flows in the Dauphin River, and flood mitigation requirements.
- For any cattle operations occurring near the LMOC as defined in IAAC-R2-01 a. and b., the Proponent will treat any potential runoff to meet *Canadian Water Quality Guidelines for the Protection of Aquatic Life* and MWQSOG prior to it entering the outside drain.
- The Proponent will ensure that sources of construction rock (quarries) are tested and screened to confirm that construction rock has low potential for acid rock drainage and metal leaching. If the rock is determined to be acid rock generating or to leach metals, the rock source shall not be used.

Follow-up and Monitoring

- Prior to construction, a follow-up program will be developed, in consultation with Indigenous groups, Environment and Climate Change Canada, and other relevant authorities, which will provide a framework for monitoring potential changes in surface water quantity during construction and operation of the Project; to verify the effectiveness of mitigation measures; and to inform the need for contingency measures to be implemented to mitigate effects to surface water quantity. This follow-up program will include:

- A description of monitoring locations including Watchorn Bay, Fairford River, Lake Pineimuta, LMOC, Birch Creek including nearby waterbodies such as Reed Lake, Clear Lake, Water Lake, and Goodison Lake, Lake St. Martin, Lake St. Martin Narrows, Lake St. Martin north basin, Dauphin River, Big Buffalo Lake, Buffalo Creek (including artesian spring sites), LSMOC, Sturgeon Bay, Berens Island, Berens River inlet, Pigeon Bay, Sandy Bar, Black Island, Hecla Island (Icelandic River), Goldeye Creek, Fisher Bay, McBeth Point, Reindeer Island, Cross Lake, Split Lake, and monitoring locations for water quantity informed by potentially affected Indigenous groups.
- A description of monitoring locations, parameters, frequency, and duration for water levels as it relates to flooding on reserve lands. Provisions will extend at a minimum to Indigenous groups with reserve lands on and around the Fairford River, Lake St. Martin, and Dauphin River.
- Adjustments to the hydraulic model, in particular the hydraulic behavior of the Lake St. Martin Narrows, with water level data from the first conveyance of flows post-commissioning, north-basin water level gauge with real-time capability, and substrate and bathymetric surveys to refine elevation and roughness estimates for key features such as the Dauphin River inlet and the Lake St. Martin Narrows. Bathymetric and substrate surveys are to be repeated when the reported flow in the Dauphin River (WSC 05LM006) consistently diverges more than 5 percent from the flow calculated from the rating curves used in the hydraulic model. Deviation from the rating curve might indicate a change in the geometry of the outlet or its roughness (i.e., substrate type), which in turn could indicate a change in fish habitat.
- Monitoring frequency developed in consultation with Environment and Climate Change Canada, relevant authorities, and Indigenous groups including at a minimum of two years post-commissioning and provisions to capture effects after a minimum number of outlet channel operations and a range of magnitudes of floods including any new record floods. Monitoring frequency should capture seasonal variability in the LMOC, Birch Creek and nearby waterbodies such as Reed Lake, Clear Lake, Water Lake, and Goodison Lake, and LSMOC.
- A description of monitoring parameters, frequency, and duration for changes to ice and ice processes.
- Contingency measures that will be developed in consultation with relevant authorities and implemented, if results of monitoring demonstrate unanticipated effects attributable to the Project.
- Prior to construction, a follow-up program will be developed, in consultation with Indigenous groups, Environment and Climate Change Canada, and other relevant authorities, which will provide a framework for monitoring potential changes in surface water quality during construction and operation; to verify the effectiveness of mitigation measures; and to inform the need for contingency measures to be implemented to protect surface water quality. This follow-up program will include:
 - Monitoring locations for Watchorn Bay, Birch Creek, Birch Bay, LMOC, Lake St. Martin Narrows, Lake St. Martin north basin, Big Buffalo Lake, Buffalo Creek, LSMOC Sturgeon Bay near LSMOC outlet, at the mouth of Sturgeon Bay, along the east shore of Sturgeon Bay north to McBeth Point and Reindeer Island, Fairford River, Dauphin River, near field, mid field, and far field monitoring locations to capture the extent of the sediment plume in Birch Bay and Sturgeon

Bay taking into account different wind scenarios, and monitoring locations for water quality informed by potentially affected Indigenous groups.

- Monitoring of the parameters outlined in Table 2 of the draft Surface Water Management Plan Rev 2.0 (June 2022) including, at a minimum, the following: field parameters, general chemistry, substrates, sediment, microbiological parameters, total and dissolved nutrients, carbon parameters, petroleum hydrocarbons, total and dissolved metals (including mercury), and pesticides as listed in Table IAAC-R2-01-9, taking into consideration the pesticides detected in the results from the baseline surface water dataset from 1973-2021.
- Provisions for groundwater sampling prior to discharge of groundwater to a waterbody. The Proponent will sample such water for appropriate parameters (e.g., dissolved oxygen, temperature, conductivity, nitrogen, phosphorus, potassium, and pH) which may be altered by groundwater discharge and will ensure such discharge is in compliance with water quality criteria, discharge requirements and applicable regulations/legislation.
- A description of analytical parameters, monitoring locations and frequency for surface water quality at discharge locations near cattle feedlot point sources that connect to the existing municipal drainage network, the LMOC outside drain and discharge into Watchorn Bay. If monitoring indicates that project-related discharges are resulting in exceedances of the *Canadian Water Quality Guidelines for the Protection of Aquatic Life* and MWQSOG limits, additional mitigation measures will be developed and implemented, in consultation with Indigenous groups, Health Canada, and other relevant federal and provincial authorities.
- Monitoring at a minimum of the parameters outlined in Appendix 2B of the Sediment Management Plan Rev. 2.0 (June 2022) during commissioning and Section 3.3.4 of the draft Aquatic Effects Monitoring Plan Rev 2.0 (June 2022) during every WCS gate opening. Provisions may be included for reduced monitoring frequency should monitoring demonstrate consistent results granted that monitoring capture effects after a minimum number of WCS gate openings and a range of magnitudes of floods including any new record floods, as determined in consultation with Environment and Climate Change Canada, relevant authorities, and Indigenous groups. Monitoring should not be reduced if effects are greater than predicted or results demonstrate a trend of increasing effects.
- Contingency measures that will be developed in consultation with relevant authorities and implemented, if results of monitoring demonstrate unanticipated effects attributable to the Project, taking into account the CCME or the MWQSOG limits and baseline concentrations identified by the Proponent.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to hydrology and surface water quality can be found in the following chapters of this draft EA Report: Groundwater (Chapter 6.2), Fish and Fish Habitat (Chapter 7.1), Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance (Chapter 7.4), Indigenous Peoples – Health and Socio-economic Conditions (Chapter 7.5), and Accidents and Malfunctions (Chapter 8.1).



6.2 Groundwater and Hydrogeology

The Project may cause residual effects to groundwater and hydrogeology through changes in:

- groundwater quantity, levels and flow paths; and,
- groundwater quality.

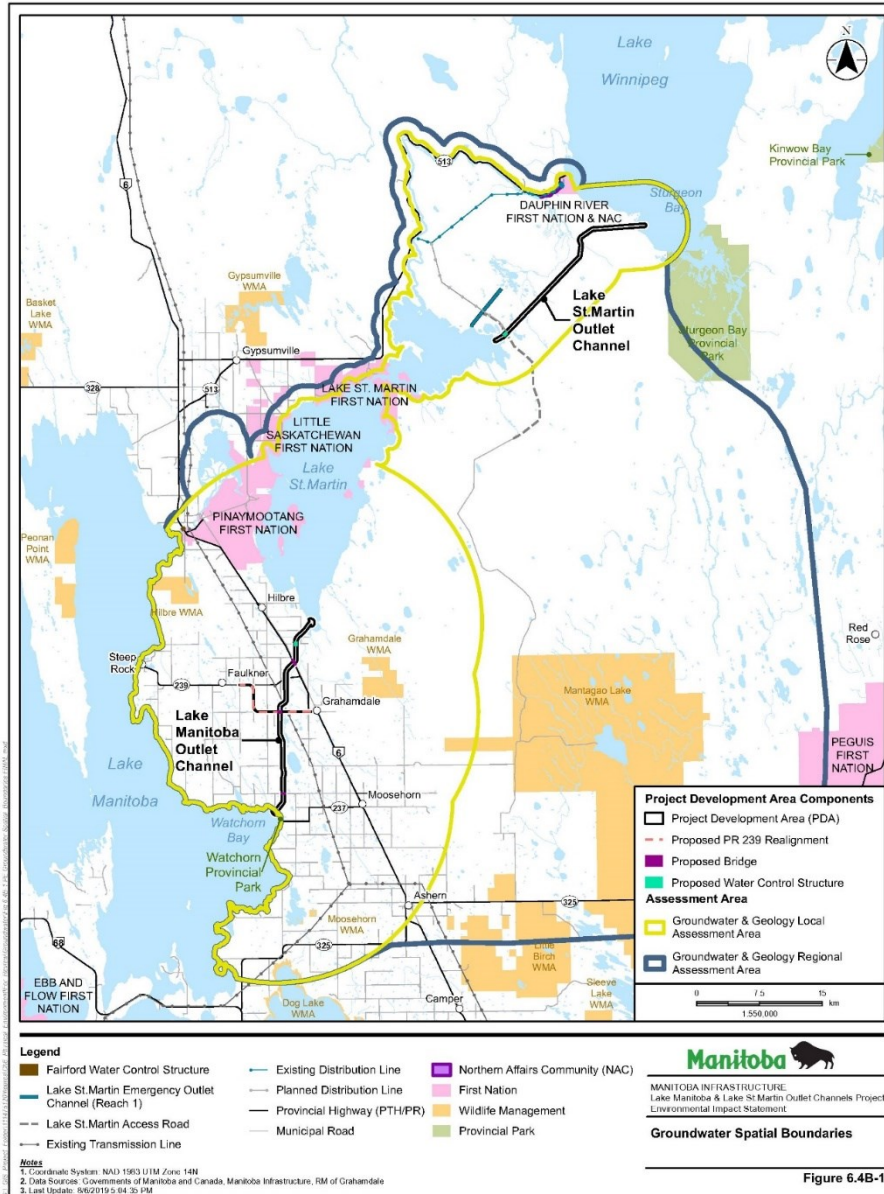
The Agency summarized the Proponent's assessment on the changes to groundwater and hydrogeology. This summary supports the analysis of effects to surface water and hydrology (Chapter 6.1), terrestrial landscape (Chapter 6.3), fish and fish habitat (Chapter 7.1), migratory birds (Chapter 7.2), species at risk (Chapter 7.3), Indigenous peoples' current use of lands and resources for traditional purposes (Chapter 7.4.1), Indigenous peoples' physical and cultural heritage and sites of significance (Chapter 7.4.2), and Indigenous peoples' health and socio-economic conditions (Chapter 7.5), included in this draft EA Report.

The Agency is of the view that the Proponent adequately considered potential effects of the Project on groundwater quantity and quality and that the Proponent's proposed mitigation measures, monitoring, and follow-up programs are appropriate to address potential project effects to groundwater. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal authorities, Indigenous groups, the public, and members of the TAG.

6.2.1 Proponent's Assessment of Environmental Effects



Figure 7 Groundwater Spatial Boundaries



Source: Lake Manitoba and Lake St. Martin Outlet Channels, Environmental Impact Statement, Volume 6 (March 5, 2020).

Figure Description: The PDA included the LMOC and LSMOC; the WCSs, drop structures, and bridges; inlets and outlets at both outlet channels; and the realignment of PR 239. The LAA included the surficial aquifer and the bedrock aquifer; the PDA; a 500 metres buffer around Fairford River, Lake St. Martin and Dauphine River; the Lake Manitoba



shoreline; a 20 kilometre buffer around the LMOC; a 5 kilometre buffer around the LSMOC. The RAA included the area that provides water (recharge areas) to the regional confined carbonate aquifer; a two kilometre buffer of the Fairford River, Lake Pineimuta, Lake St. Martin and Dauphin River; the Lake Manitoba shoreline; a 20 kilometre buffer around the LMOC; a 5 kilometre buffer around the LSMOC; and a manually delineated area based on topography and knowledge of regional geology, extending up to 60 kilometres east of the LMOC and containing the main upland recharge area that supplies the regional confined carbonate aquifer.

Predicted Effects

Changes in groundwater quantity, levels and flow paths

Potential effects to groundwater quantity, levels and flow paths from the Project may result from groundwater depressurization activities, groundwater seepage into excavations, and the potential for basal heave²⁰. In the construction phase, Project interactions with groundwater would likely occur during construction of utilities, infrastructure, and other facilities; quarry development; and through dewatering and realignment of existing water works. During the operation phase of the Project, groundwater drawdown would occur due to permanent long-term passive depressurization.

The Proponent anticipates that the Project would create new discharge pathways but did not anticipate any changes to the sustainability of the bedrock aquifer within the RAA. Groundwater from the bedrock aquifer in the LAA that would normally discharge into Lake Manitoba, Lake St. Martin and Lake Winnipeg would be intercepted by the LMOC and LSMOC and flow into the lakes via the outlet channels (Table 5). The Proponent stated that the Project would not affect groundwater recharge of the bedrock aquifer.

²⁰ Basal heave, also known as a “blowout”, occurs when groundwater under high pressure compromises the overlying till allowing for uncontrolled discharge to the surface. Basal heave may occur during construction or operation of the Project where the weight above the bedrock aquifer is insufficient to counter the groundwater pressure. The thickness of the till unit and the weight of the water in the outlet channels, once constructed, are therefore an important consideration.

**Table 5 Changes to Bedrock Aquifer Groundwater Discharge Rates in the Local Assessment Area in Lake Manitoba, Lake St. Martin, Lake Winnipeg, and Outlet Channels Due to Operation of the Project**

Discharge Location	Baseline Groundwater Discharge (cubic metres per day)	Operational Groundwater Discharge (cubic metres per day)	Change in Discharge (cubic metres per day)	Percentage of Change from Baseline in the LAA (percent)*
Lake Manitoba	2,709	1,749	- 960	- 35
Lake St. Martin	5,689	4,669	- 1,020	- 18
Lake Winnipeg	5,041	2,871	- 2,170	- 43
LMOC	-	1,980	+ 1,980	100
LSMOC	-	2,170	+ 2,170	100
Total Discharge	13,439	13,439	-	0

LMOC

The LAA includes two aquifer systems: the bedrock aquifer and the surficial aquifer. The two are separated by a low permeability till unit. The thickness of the till unit may dictate the ability of water to flow between the bedrock aquifer and the surface environment.

The LMOC would be located in the Birch Creek valley (LAA) where the bedrock aquifer and surficial aquifer are separated by 5 to 18 metres of low permeability till unit. Groundwater in the bedrock aquifer is under high artesian pressure²¹ in the area, and the surficial aquifer is above the till unit.

Construction activities of the LMOC would begin following active depressurization, which would lower groundwater pressure to create safe construction conditions within the PDA, including the LMOC inlet and outlet. This would be achieved by installing temporary depressurization wells and pumping groundwater out of the bedrock aquifer into the outside drain or into densely vegetated areas. The construction of the WCS would occur on the bedrock and may require bedrock grouting²². Active depressurization could result in changes to the bedrock aquifer groundwater quantity, levels and discharge to surface water features. The Proponent characterized the residual effects during construction as adverse, short-term, moderate in

²¹ Artesian pressure refers to groundwater under high enough pressure that when tapped by a well the groundwater within the well would rise above the top of the aquifer. If the groundwater pressure is high enough, groundwater may flow to the surface without the use of a pump. This is known as a flowing artesian well. Many livestock wells in the vicinity of the LMOC are flowing artesian wells.

²² Bedrock grouting is the process of injecting material into the bedrock aquifer fractures to reduce the groundwater flow to the surface and to strengthen the rock mass.



magnitude, infrequent, reversible, and occurring within the LAA with effects beyond seasonal variation occurring within five kilometres of the LMOC.

Operation of the LMOC would result in changes to groundwater quantity, levels and flows due to passive depressurization activities and operation of the WCS. Permanent long-term passive depressurization would occur at the WCS and may be achieved by installing permanent passive relief wells or reverse drains²³. A trench in the centre of the LMOC to capture sediments during construction would also function as a reverse drain for long-term passive depressurization. All passive depressurization methods would discharge groundwater directly into the outlet channel. The Proponent anticipated effects to groundwater pressure to occur within 200 metres of the channel (i.e., within the PDA) as a result of the passive depressurization, and that the opening of the WCS gates may affect groundwater pressure due to the change in water levels in the outlet channel. The Proponent expected the groundwater pressure to stabilize post-construction at a higher pressure than during construction, but lower than groundwater levels prior to the Project and that the seasonal variation in groundwater levels to be similar to baseline conditions. Long-term operation of the LMOC would reduce direct groundwater discharge to Lake Manitoba by 35 percent and Lake St. Martin by 18 percent (Table 5). The construction and operation of the LMOC would cease groundwater discharge at a site in the LAA which contributes 6 to 13 percent of flow from Reed Lake to Clear Lake and less than one percent of flow to the Birch Creek system. The Proponent characterized the residual effects during operation as adverse, long-term, low in magnitude, continuous, irreversible, and occurring in the PDA.

The construction and operation of the LMOC may decrease the surficial aquifer by one metre in depth within the PDA. Effects to wetlands due to changes in the surficial aquifer are discussed in Chapter 6.3 Terrestrial Landscapes.

LSMOC

The LSMOC would be located between Lake St. Martin and Lake Winnipeg in a wetland area with complex hydrology that receives significant contributions from groundwater flows. The bedrock aquifer in the LSMOC area is saturated and is overlain with 2 to 22 metres of low permeability till, above which the surficial aquifer is a saturated peat layer. The groundwater pressure is above ground in some locations and there is generally artesian pressure. Seasonal fluctuations of groundwater pressure in the area fluctuate between one metre to two metres. The LSMOC would integrate part of the current EOC Reach 3, which includes a stretch where the bedrock aquifer is exposed and currently discharges groundwater into the outlet channel (See Figure 5).

The bedrock aquifer groundwater quantity, levels and flows may be affected by depressurization activities around the WCS and drop structures, groundwater seepage into the outlet channel and outside drain, and potential compromising of the till during the construction of the LSMOC. Construction of project components that may create new groundwater – surface water interactions include the excavation of the

²³ A reverse drain is a groundwater pressure relief system that allows the upward movement of groundwater to the surface due to high groundwater pressure. The bedrock aquifer is covered with granular material which acts as a filter for water moving between the bedrock at the base of the outlet channel.



outlet channel (particularly widening of EOC Reach 3), the construction of the inlet and outlet, and potential daylighting²⁴ of the bedrock near the most upstream drop structure.

Active depressurization of the bedrock aquifer during construction would draw down the groundwater pressure by 12 metres and 9 metres for the construction for the WCS and the drop structures respectively. The groundwater pumped from the bedrock aquifer would be discharged into the outside drain. The Proponent anticipated that areas nearest to the WCS and drop structures would experience drawdowns beyond seasonal variability (i.e., beyond one to two metres) during construction. At approximately four kilometres away from the WCS and drop structures, these drawdowns would be one metre and within natural seasonal fluctuations.

During operation of the LSMOC, long-term passive depressurization of the bedrock aquifer would alter groundwater quantity, levels and flows and groundwater discharge to wetlands, springs, and lakes in the LAA. The Proponent would install permanent passive wells at the WCS for long-term passive depressurization. The Proponent would also install reverse drains for long-term passive depressurization where there is a direct connection between the bedrock aquifer and the surface. Groundwater discharge into the LSMOC may affect surface water quality such as dissolved oxygen as discussed further in Chapter 6.1 Surface Water and Chapter 7.1 Fish and Fish Habitat. The areas around the WCS and the drop structures may have drawdown effects up to one to two kilometres away. The groundwater flow would be reduced between 30 to 50 percent in the area between the LSMOC and Big Buffalo Lake, representing a total reduction of up to 12.5 percent of inputs to the Buffalo Creek system. Operation of the LSMOC would reduce direct groundwater discharge to Lake Winnipeg by 43 percent (Table 5).

The construction and operation of the LSMOC could result in changes to the surficial aquifer quantity, levels and flows due to increased drainage and altered flow paths. The construction and operation of the LSMOC may cause changes to subsurface water flow paths, blocking flows to wetlands and reducing wetland function (see Chapter 6.3 for more information). The operation of the LSMOC would alter the surficial aquifer due to altered drainage patterns as described in Chapter 6.1.

Residual effects to groundwater and surface water interactions due to construction of the Project were characterized as adverse, long-term, moderate in magnitude, continuous, irreversible, and occurring within the LAA. The ecological and socio-economic context were characterized as disturbed and the timing has a high sensitivity because the effects occur during a critical life stage (e.g., fish spawning or bird nesting periods).

Quarry Development

Quarry excavations may affect groundwater quantity in the RAA. The specific locations of quarry operation have yet to be determined. Quarry operations may require dewatering surrounding the operation resulting in changes to groundwater levels and flows during construction of the Project. However, the Proponent noted that large diameter riprap would likely be sourced from granite quarries outside the LAA and that

²⁴ Daylighting is when the bedrock aquifer is exposed to the surface.



limestone quarries may be sourced within the RAA with preference given to existing permitted or licensed sources.

Changes in local groundwater quality

Potential effects to groundwater quality that may result from construction and operation of the Project include groundwater contamination related to construction and maintenance activities (e.g., fuel spills or hazardous material spills due to improper handling, use, storage or transportation discussed in Chapter 8.1), surface water entering the groundwater resource (known as groundwater under direct influence which can compromise groundwater quality by introducing contaminants and pathogens to the bedrock aquifer), and changes in flow patterns. Passive depressurization wells and reverse drains would have a sand gravel layer as a mitigation to filter any surface water that may enter the bedrock aquifer. Groundwater issued from depressurization activities during construction and operation of the Project may alter surface water quality in the receiving environment (Chapter 6.1).

LMOC

Changes in groundwater quality in the bedrock aquifer could result from surface water inputs into groundwater due to the construction or operation of the Project. During construction of the LMOC, the Proponent stated that groundwater levels would be maintained above the bedrock aquifer so that it remains fully saturated. The groundwater pressure maintained above the bedrock aquifer would prevent surface water from infiltrating into the aquifer.

The Proponent identified that the greatest risk to groundwater quality would be aquifer recharge at the base of the outlet channel during operations. However, the likelihood of contamination would be low and that the bedrock aquifer would remain in a discharge state keeping upward pressure of groundwater into the channel. The Proponent asserted that there would be no contamination of groundwater due to the runoff from cattle feedlot operations near the LMOC during construction or operation of the Project.

Surface water could enter a groundwater source via local wells and thus introduce contaminants. The Proponent would conduct a local LMOC well inventory prior to construction and committed to decommission inactive wells to reduce this potential pathway within the LAA. The Proponent stated that the purpose of the Project is to reduce overland flooding and that the Project would reduce the potential for surface water to enter groundwater wells.

LSMOC

The LSMOC may affect groundwater quality during commissioning and operation due to direct connections between the surface environment and the bedrock aquifer. The weight of the water in the outlet channel was designed to maintain the balance in groundwater pressure and to limit the transfer of water between the aquifer and the surface. During operation, when the water level in the outlet channel would be higher in elevation than the groundwater pressure (e.g., when water first enters the outlet channel), small quantities of surface water would repeatedly infiltrate the aquifer for a short duration. This would occur about once every three years on average (i.e., when WCS gates are opened), and the surface infiltration would persist for approximately six to eight hours at the initiation of operation of the LSMOC. The Proponent anticipated

that the affected groundwater would discharge in down gradient spring sites and ultimately in Lake Winnipeg. The Proponent assessed that there would be no effects to domestic wells because the nearest domestic wells in the LAA are five kilometres up-gradient of the LSMOC. Wells on the north side of Dauphin River would not be affected by the Project given that the river is a groundwater divide.

Increase in groundwater discharge into the LSMOC may alter surface water chemistry. Groundwater discharge could create low dissolved oxygen conditions which may negatively affect fish (see Chapter 6.1 and Chapter 7.1 for more information). Groundwater discharge in the LSMOC could increase iron concentrations, but the Proponent expected these would remain within the *Canadian Environmental Quality Guidelines* thresholds for the protection of aquatic life if baseflow is maintained in the LSMOC.

6.2.2 Views Expressed

Federal Authorities

Natural Resources Canada noted that dewatering associated with quarry development has the potential to result in the lowering of groundwater levels. This lowering may in turn impact drinking water quantity, or the quantity of groundwater that discharges to surface water features, impacting surface water, fish and fish habitat. Natural Resources Canada highlighted that proximity of new quarries to the outlet channels may result in quarry-related drawdown being cumulative with the Project groundwater drawdown and would need to be assessed as such to determine impacts. Concurrent groundwater dewatering of a quarry site within the PDA and the construction and operation of the Project may result in groundwater drawdowns in excess of that forecasted by the EA.

Natural Resources Canada noted that the groundwater depressurization for the LMOC would generally not be expected to change the hydrogeological condition of the groundwater source, given that groundwater elevations within the bedrock aquifer would remain above the bottom of the confining till unit. This condition would maintain upward gradients and would limit infiltration from the surface. However, Natural Resources Canada highlighted that to the west of the LMOC a downward vertical gradient would be established that would permit infiltration downwards through the till, a condition that was seasonal prior to the Project would be permanent due to the Project. Under these conditions, the potential for surface infiltration to reach the groundwater wells would be a function of the thickness and competence of the overlying till.

Natural Resources Canada expressed that uncertainty remains in the assessment of impacts to the surface water features perched above the thick till unit along the Birch Creek drainage system related to the dewatering of the LMOC. Natural Resources Canada recommended that monitoring of the till unit along the Birch Creek drainage system include vertical gradients within the till to assess the potential for leaking through the till. Natural Resources Canada emphasized that trigger mechanisms to re-evaluate the modelling assessment should be developed that are based on the observed gradient development within the till unit.

Natural Resources Canada noted concerns regarding the LSMOC modelling, uncertainty related to the quantity of groundwater discharging to the north of the LSMOC, and the overall effect of the outlet channel on this system. To address this uncertainty, Natural Resources Canada recommended drawdown

monitoring, using the proposed monitoring well network, and flow monitoring at groundwater upwelling sites along Buffalo Creek, and downstream of Big Buffalo Lake. Natural Resources Canada highlighted that the objective of this monitoring program would be to assess groundwater flow impacts and that mitigation measures need to address both measurable groundwater drawdown and changes to surface water flows related to groundwater discharge.

Indigenous Groups

Multiple Indigenous groups provided comments and views on the potential effects of the Project to groundwater and related effects to fish and fish habitat, current use, and health and socio-economic conditions. Feedback and concerns from Indigenous groups related to groundwater include:

- Berens River First Nation, Bloodvein First Nation, Dauphin River First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and Tataskweyak Cree Nation expressed concerns regarding groundwater modelling, including the geologic and hydrogeologic data and calculations used to assess baseline conditions, the predicted Project effects to regional groundwater flows and groundwater recharge rates, and long-term aquifer sustainability considering climate change and loss of water during construction and operation of the Project.
- Dauphin River First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concern regarding the implications of an extended drought on the water balance calculations. Lake St. Martin First Nation and Peguis First Nation requested three-dimensional modelling for the bedrock aquifer with Lake St. Martin First Nation additionally emphasizing that the modelling would provide site specific aquifer impacts on Lake St. Martin First Nation reserve (including domestic wells) and traditional use lands under various operating and climatic scenarios.
- Bloodvein First Nation, Dauphin River First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the potential change in the rate of groundwater discharge to surface water and its effects to wetlands, springs and waterbodies due to the Project. These included concerns in the accuracy of predicted effects and the potential for compounded effects caused by seasonal or annual water variability or drought. The Interlake Reserves Tribal Council expressed concerns on the effects of changes to wetland areas and creeks along Buffalo Creek and downstream of the EOC, including Big Buffalo Lake, due to the construction of the LSMOC has not been adequately characterized and highlighted that monitoring is only being considered for a short period during and post construction.

- Berens River First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns related to potential effects to groundwater quality including effects to potable water of existing water wells, effects to groundwater from exploratory borehole drilling, and potential for groundwater under direct influence. Lake St. Martin First Nation conveyed that losing artesian pressure from the domestic wells could be subject to a condition of Groundwater Under Direct Influence of Surface Water as specified in *The Drinking Water Safety Act*. They requested monitoring groundwater quality with respect to domestic wells would occur over the life of the Project. Pinaymootang First Nation emphasized the importance of groundwater effects to Indigenous communities as the bedrock aquifer is the main supply of drinking water for communities in the Interlake and beyond. Pinaymootang First Nation highlighted that they are not confident groundwater mitigation measures would address their concerns about groundwater or drinking water. Berens River First Nation emphasized that the mitigation measures needed if groundwater contamination were to occur would be expensive and therefore does not support the cost benefit analysis of the Project as proposed.
- Berens River First Nation, Dauphin River First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns related to effects of groundwater depressurization during construction and operation of the Project on groundwater levels, impacts to well users, the availability of the groundwater intercepted by the Project to be used in the future, and the construction risk related to high groundwater pressures (i.e., the potential for "blow-outs").

A summary of comments provided to date by Indigenous groups along with Proponent and Agency responses, are summarized in Appendix C. Additional mitigations related to Indigenous peoples' health and socio-economic conditions can be found in Chapter 7.5 of this report.

Public Groups

Members of the public expressed concerns related to changes to groundwater and hydrogeology as a result of the Project. Feedback and concerns related to groundwater include:

- Trapline 18 expressed concerns regarding the characterization of regional groundwater scoping and assessment of long-term effects to the aquifer.
- Keewatinook Fishers of Lake Winnipeg expressed a concern regarding the groundwater modelling, particularly that the porosity of the bedrock aquifer has not been adequately accounted for in the analysis. They further expressed that the groundwater drawdown required for construction may be greater than predicted in the EA report due to conditions when groundwater information was collected.
- The RM of Grahamdale requested long-term monitoring of groundwater including installation of wells along the LMOC, monitoring of groundwater at a minimum of three openings of the WCS gates post-

commissioning, and for two years after a major flood event during which the outlet channels would be conveying flows for a significant period of time.

- The RM of Grahamdale emphasized concerns regarding the effects of groundwater depressurization on Birch Creek and the surface water features along the LMOC.
- The RM of Grahamdale expressed concern regarding proposed passive depressurization systems. They highlighted that passive wells cannot be stopped or regulated, potential corrosion of the well casing would require maintenance, and concerns regarding sediment infiltration. The RM of Grahamdale further noted concern that reverse drains are permanent design features that cannot be adjusted should extended drought occur.
- The RM of Grahamdale expressed concerns regarding long-term aquifer sustainability, including concerns regarding pristine groundwater discharged during construction and operation depressurization activities and concerns of groundwater under direct influence degrading groundwater quality.

6.2.3 Agency Analysis and Conclusion

The Agency is of the view that the Proponent adequately characterized potential project effects to groundwater quantity and quality. The Agency acknowledges that the Project may result in changes to groundwater quantity and quality during construction and operation of the Project, which may affect surface water, vegetation and wetlands, and by extension wildlife, migratory birds, fish and fish habitat, current and traditional land use, and Indigenous peoples' health within the LAA. The Agency acknowledges that, while effects to current groundwater users are an important consideration in determining the severity of effects to groundwater quantity and quality, additional valued components may also be affected by changes to groundwater quantity and quality. Potential interactions of project-related changes to groundwater quantity and quality with other valued components are presented in Chapter 6.1 (Surface Water), Chapter 6.3 (Terrestrial Landscape), Chapter 7.1 (Fish and Fish Habitat), Chapter 7.2 (Migratory Birds), Chapter 7.3 (Species at Risk), Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions), and Chapter 8.1 (Accidents and Malfunctions) of this EA Report.

The Agency acknowledges that the Project may adversely affect groundwater quantity, levels and flow paths and that effects would persist throughout construction and operation of the Project. The Agency agrees with the Proponent that the Project would not affect long-term aquifer sustainability, but that the Project would change the discharge location from lakes, wetlands, and springs to the outlet channels. The Agency recognizes that there are concerns from Indigenous groups and the public with regards to the long-term sustainability of the bedrock aquifer. The Agency highlights the importance of follow-up and monitoring to verify the results of the environmental assessment, including model predictions; verify the effectiveness of mitigation measures; and inform the need for contingency measures.

The Agency agrees with Natural Resources Canada, Indigenous groups, and the RM of Grahamdale that uncertainty remains regarding the effects to surface water features along Birch Creek. The Agency recognizes that a spring site east of Reed Lake would cease due to the construction and operation of the Project with a small effect on the flow to Birch Creek. Further, the Agency understands that the



effectiveness of the overlying till unit to adequately mitigate effects of depressurization needs to be confirmed with monitoring. The Agency recognizes that concerns were raised by Indigenous groups regarding uncertainty and lack of confidence in the groundwater modelling. The Agency agrees with Natural Resources Canada that trigger mechanisms to re-evaluate the modelling assessment need to be developed prior to construction to address this concern. The Agency notes that changes to surface water features due to altered groundwater flow may result in effects to fish and fish habitat (Chapter 7.1).

The Agency understands that there is a risk of basal heave, particularly during construction of the Project and that uncertainty remains regarding the depressurization locations and methods. However, the Proponent has committed to manage the risk of basal heave through construction sequencing and promoting interconnections in a concentrated, central channel area, should they occur. Additional groundwater discharge from basal heave or a compromised till unit to the outlet channels may alter surface water quality and exacerbate low dissolved oxygen conditions which may negatively affect fish in the outlet channels, particularly in the LSMOC (discussed in Chapter 6.1 and Chapter 7.1).

The Agency recognizes that there are concerns regarding the use of reverse drains and passive depressurization wells. The Agency agrees with the RM of Grahamdale that the passive depressurization wells within the outlet channels would require maintenance and that challenges to access and maintain these wells need to be further refined by the Proponent (see Chapter 8.1). The Agency recognizes that concerns remain regarding the use of reverse drains, particularly during drought. The Agency highlights the importance of follow-up and monitoring to verify the results of the environmental assessment, including model predictions; verify the effectiveness of mitigation measures; and inform the need for contingency measures.

The Agency understands that the Proponent has proposed to use bedrock grouting on the aquifer to build project components directly on the bedrock (e.g., WCS or drop structures). The Agency recommends further characterization of the bedrock aquifer be conducted prior to selection of the proposed methodology. The Agency notes that changes to the competency of the bedrock aquifer may result in changes to fish and fish habitat (Chapter 7.1). The Agency recommends data validation and considering alternative construction methods.

The Agency acknowledges that groundwater discharge to artesian springs may be reduced or cease due to the construction and operation of the Project. The Agency agrees with the Proponent that additional three-dimensional modelling would not provide additional certainty to the LSMOC modelling. However, the Agency agrees with Natural Resources Canada that uncertainty remains regarding the quantity of groundwater discharging to the north of the LSMOC, and the overall effect of the LSMOC on the water balance within this region including Buffalo Creek, wetlands and groundwater seeps. The Agency is of the view that uncertainty remains on changes to groundwater due to the LSMOC, and therefore effects to fish and fish habitat (Chapter 7.1), migratory birds (Chapter 7.2), species at risk (Chapter 7.3), and current use of lands (Chapter 7.4). The Agency recommends that the Proponent implement additional monitoring for both groundwater drawdown and flow monitoring and additional mitigation measures informed by consultation and input from Indigenous groups to mitigate effects to the Big Buffalo Lake and the Buffalo Creek complex. The Agency highlights the importance of follow-up and monitoring to verify the results of



the environmental assessment, including model predictions; verify the effectiveness of mitigation measures; and inform the need for contingency measures.

The Agency understands that uncertainty remains regarding the location of quarry activities. The Agency agrees with Natural Resources Canada that new quarries requiring groundwater depressurization may result in cumulative groundwater drawdown with the Project. Groundwater drawdown beyond EA predictions may result in changes to fish and fish habitat (Chapter 7.1). The Agency is of the view that new quarries requiring groundwater depressurization shall not be developed where overlap exists between groundwater depressurization drawdown of the Project and new quarry sites.

The Agency agrees with Natural Resources Canada and the Proponent that the upward gradient in the LMOC LAA would generally limit groundwater under direct influence. The Agency agrees with Natural Resources Canada that, in areas where the baseline groundwater elevation is near the base of the till unit and may experience downward gradients seasonally, Project depressurization activities may result in a permanent downward gradient condition. The Agency recognizes the level of concern regarding groundwater quantity and quality in the LAA surrounding the LMOC and the importance of groundwater as a source of drinking water for Indigenous groups including Pinaymootang First Nation and Lake St. Martin First Nation. The Agency notes the likelihood of changes to groundwater quality as it relates to Indigenous peoples' health is low given the general upward gradient, the direction of groundwater flows, and the distance between drinking water wells on reserves and the Project. The Agency acknowledges that the Project may result in changes to groundwater quality caused by groundwater under direct influence where the bedrock aquifer is exposed in the LSMOC at the existing connection in EOC Reach 3. The Agency also understands the Proponent has proposed mitigations for sites of potential groundwater – surface water connection, including reverse drains, passive depressurization wells, sites with compromised till unit, and basal heave sites to mitigate the risk to groundwater quality. The Agency is of the view that, in addition to mitigation measures proposed by the Proponent, the Proponent shall maintain groundwater quality of the bedrock aquifer within baseline conditions and at a minimum maintain groundwater levels above the top of the bedrock aquifer in the LMOC and LSMOC to avoid changes to groundwater quality as it relates to Indigenous People's health. If groundwater levels are below the top of the bedrock aquifer in baseline conditions, the Proponent shall maintain groundwater levels within baseline conditions. The section of exposed bedrock in the EOC Reach 3 would be managed in a way to prevent changes to groundwater quality as it relates to Indigenous peoples' health. The Agency also recommends open, clear, and timely communication with local communities (refer to Chapter 7.5 for more details). The Agency highlights the importance of follow-up and monitoring to verify the results of the environmental assessment, including model predictions; verify the effectiveness of mitigation measures; and inform the need for contingency measures.

The Agency is of the view that potential effects of the Project to groundwater quantity and quality would be adequately addressed, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent and the key mitigation measures described below.

Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to ensure that there are no significant adverse environmental effects to fish and fish habitat, migratory birds, and Indigenous peoples, as a result of changes to groundwater quantity and quality. The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups.

Mitigation Measures

Changes in groundwater quantity, levels and flow paths

- Install an active and passive depressurization system in the PDA to reduce the groundwater pressure during construction and operation to manage the risk of basal heave.
 - Develop a depressurization system, including depressurization wells, sump pumps, reverse drains, and other equivalent technology, in consultation with relevant federal authorities prior to construction.
 - Maintain groundwater levels above the top of the bedrock aquifer at a minimum. If groundwater levels are below the top of the bedrock aquifer in baseline conditions, the Proponent shall maintain groundwater levels within baseline conditions. The section of exposed bedrock in the EOC Reach 3 integrated into the LSMOC would be managed in a way to prevent changes to groundwater quality as it relates to Indigenous peoples' health.
- Select the best methodology for building project components on the bedrock aquifer in consultation with relevant authorities.
- No new quarries shall be used or developed below the water table where depressurization drawdown overlaps with the depressurization zone of the LMOC and LSMOC.

Changes in groundwater quality

- The Proponent will add a filter material to any site of direct or potential connection between the bedrock aquifer and surface water environments to avoid impacts to groundwater quality.
- Maintain bedrock aquifer groundwater quality within baseline conditions. The section of exposed bedrock in the EOC Reach 3 integrated into the LSMOC would be managed in a way to prevent changes to groundwater quality as it relates to Indigenous peoples' health.

Follow-up and monitoring

- Prior to construction, a follow-up program will be developed, in consultation with Indigenous groups and relevant federal and provincial authorities to provide a framework for monitoring potential changes in groundwater quantity and quality during construction and operation and verifying the effectiveness of mitigation measures implemented to protect groundwater resources as it relates to fish and fish habitat, the current use of lands and resources for traditional purposes, and Indigenous peoples' health. The groundwater monitoring results will also be used to verify the results of the environmental assessment, including model predictions, and inform the need for additional mitigation

measures. The groundwater follow-up program will be implemented during all project phases and will include:

- Re-evaluate the conceptual and analytical modelling assessment and monitoring plan if results of monitoring exceed triggers established in consultation with relevant authorities and Indigenous groups.
- Monitoring for incidents of basal heave and apply appropriate contingency measures in consultation with relevant authorities.
- A description of monitoring parameters for groundwater quantity including, at a minimum, piezometric head and groundwater elevations.
- Monitoring locations for the LMOC including an array of wells around the WCS, well pairs²⁵ near the surface water features along the LMOC, locations at the recharge area, and northeast of LMOC. Monitoring locations should be selected to allow for adequate response time to detect effects and for the implementation of mitigation measures should they be required.
- Monitoring locations for LSMOC including the WCS, and locations necessary to monitor and mitigate potential effects to Big Buffalo Lake Complex, and artesian springs along Big Buffalo Creek and Lake Winnipeg. The monitoring wells would be installed at four depths (i.e., bedrock aquifer, deep till, shallow till and upper peat layer) and allow for adequate response time to allow for detection of effects and implementation of mitigation measures.
- A description of monitoring parameters, locations, frequency, and duration for groundwater quantity and quality as it relates to drinking water and Indigenous peoples' health. These will include at a minimum:
 - Monitoring of water levels and parameters as outlined in Table 2 of the draft GWMP Rev 2.0 (June 2022) including field parameters, potable water parameters (e.g., conductivity, hardness, pH, turbidity), total and dissolved metals, sediment, petroleum hydrocarbons, and microbiological parameters (*Escherichia coli* [*E. coli*], total and fecal coliforms).
 - Monitoring locations near Pinaymootang First Nation, Dauphin River First Nation, and near EOC Reach 3.
- Contingency measures that will be developed in consultation with relevant authorities and implemented, if results of monitoring demonstrate unanticipated effects attributable to the Project or any exceedances of the baseline conditions.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to groundwater quality and quantity can be found in the following chapters of this EA Report: surface water and hydrology (Chapter 6.1), terrestrial landscape (Chapter 6.3), fish and fish habitat (Chapter 7.1), migratory birds (Chapter 7.2), species at risk (Chapter 7.3), Indigenous peoples' current use of lands and

²⁵ Well pairs have wells installed at different depths. For example, one well in the bedrock aquifer, one in the till and a third in the surficial peat unit if required.



resources for traditional purposes (Chapter 7.4.1), Indigenous peoples' physical and cultural heritage (Chapter 7.4.2), and Indigenous peoples' health and socio-economic conditions (Chapter 7.5).

6.3 Terrestrial Landscape

The Agency summarized the Proponent's assessment of changes to the terrestrial landscape, including vegetation and wetlands, with input from federal authorities and Indigenous groups.

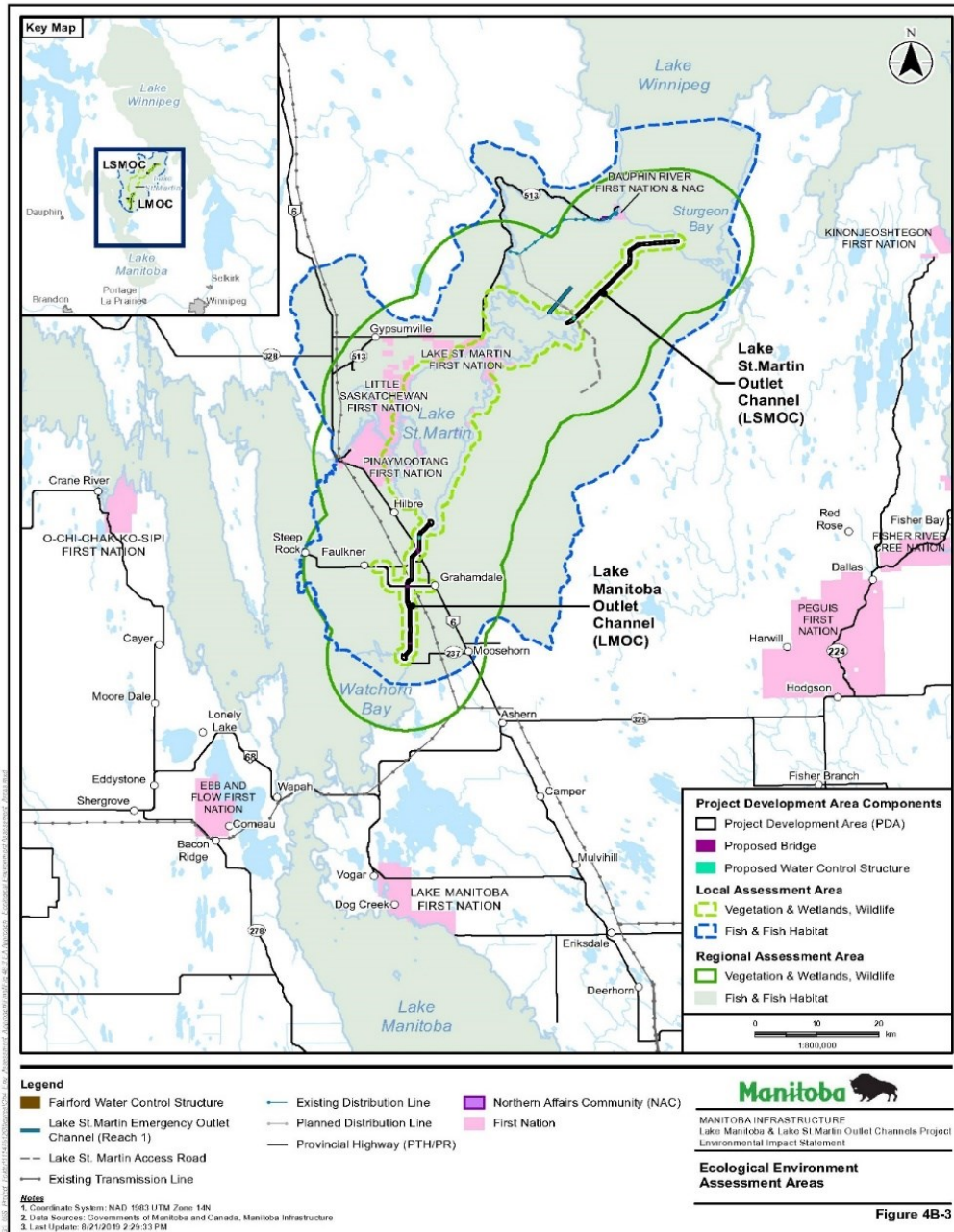
The Agency is of the view that the Proponent adequately considered potential effects of the Project on the terrestrial landscape and that the Proponent's proposed mitigation measures, monitoring, and follow-up programs are appropriate to address potential project effects to the terrestrial landscape. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and views expressed by federal authorities, Indigenous groups, the public and members of the TAG.

6.3.1 Proponent's Assessment of Environmental Effects

The Proponent used Figure 8 (shown below) as LAA and RAA to assess vegetation, wetlands and wildlife. The LMOC traverses relatively intact wetlands, agriculture-hayland/pasture areas and upland forest areas as shown in Figure 8, whereas the LSMOC traverses a variety of wetland habitat types and upland forest areas, as noted below in Table 6.



Figure 8 Local and Regional Assessment Area for Vegetation, Wetlands and Wildlife



Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Environmental Impact Statement, Volume 1 Chapter 4 (March 2020)



Figure Description: The LAA for vegetation, wetlands and wildlife includes the PDA and a one-kilometre buffer around the PDA and Lake St. Martin shoreline. The RAA includes the PDA and LAA and a 12 kilometres buffer either side of the PDA.

Table 6 Estimated Loss of Upland and Wetland Wildlife Habitat in the Project Development Area, Local Assessment Area and Regional Assessment Area

Land Cover Class	Area of habitat in the PDA (hectares)	Area of habitat in the LAA (hectares)	Area of habitat in the RAA (hectares)	Direct Loss (percent of habitat in PDA)	Direct Loss (percent of habitat in LAA)	Direct Loss LMOC (hectares)	Direct Loss LSMOC (hectares)
Upland Forest	267.5	6,303.5	61,472.2	100	4.2	174.0	93.5
Grassland	7.7	2,531.1	54,303.3	100	0.3	1.1	6.7
Shrubland	30.2	74.4	146.7	100	40.6	2.5	27.7
Wetland	1,012.6	15,152.6	131,479.0	100	6.7	295.1	717.6
Agriculture - Hayland / Pasture	404.4	3,283.6	9,307.3	100	12.3	404.4	0
Total ²⁶	1,722.4	27,345.2	256,708.5	100	6.3	877.1	845.5

Changes in Plant Species, Community and Landscape Diversity

The Proponent indicated that four vascular plant species at risk, federally listed under SARA and COSEWIC have the potential to occur in the RAA (rough agalinis, Gattinger's agalinis, small white lady's-slipper and western prairie fringed orchid), however, none of these species were documented during field studies. A total of 120 plants were identified by the Proponent as having significant importance to Indigenous groups within the PDA, LAA and RAA, with 80 plants identified in upland habitats and 23 plants identified in wetland habitats. Forty-five of these species were observed in the PDA, including Species of Conservation Concern²⁷ (SOCC) sweet grass and dwarf blueberry. Of the plant species of interest, 23 produce berries known to be harvested by Indigenous groups.

²⁶ Totals may not be exact due to direct loss of land cover does not include areas in the PDA that may be left undisturbed, or areas reseeded to grassland.

²⁷ Species of Conservation Concern means a species that may become a threatened or an endangered because of a combination of biological characteristics and identified threats.



Project effects to terrestrial vegetation and habitat are anticipated to include the loss of native upland and wetland plant communities and agricultural land (Table 6); the direct loss of habitat; fragmentation²⁸ of native plant communities; and the loss of plant species of cultural importance to Indigenous groups.

It is anticipated that effects to habitat would occur from the direct removal of vegetation and excavation of soils during site preparation and construction of Project components. Vegetation clearing activities are anticipated to fragment contiguous habitats along the distribution line and LSMOC PDA, indirectly causing edge effects²⁹ (extending up to 125 metres from newly created edges, with effects extending furthest in areas of taller and denser trees). The Proponent anticipated minimal edge effects (i.e., changes in microclimate, vegetation structure, community structure and behavioral responses of wildlife) along the LMOC as existing habitat in the LMOC PDA is already highly fragmented by anthropogenic disturbance. These edge effects are expected to persist beyond the construction phase, as Project linear features would be permanent.

The Project is anticipated to cause changes to vegetation, community, and landscape diversity, including through the direct loss of plant SOCC and species of interest to Indigenous groups, and concurrent effects to soils. The regional abundance of SOCC is largely unknown, and it is difficult to determine the magnitude of effects from the Project on plant species diversity. The Proponent identified four plant SOCC in the PDAs that would be lost due to construction; however, it is predicted that suitable habitat for these species overall remains in the RAA. Because vegetation in the LSMOC LAA is relatively undisturbed, the Proponent predicted that there would be increased adverse effects to SOCC along this channel compared to the LMOC. The Proponent indicated that effects to vegetation from construction activities could be reduced over time through revegetation with native plant species. However, clearing the LMOC and LSMOC ROWs would change forested and shrubland areas into grassland communities, and once revegetated, species composition and landscape diversity would be altered.

During operation, effects to vegetation communities and species diversity could occur as edge effects from the fragmentation of native vegetation communities would shift species composition to favour light-tolerant plants. Plant species that are adapted to shade are expected to decrease in abundance, potentially reducing overall species diversity and composition. Altered surface and potential groundwater flows may result in increased periodic flooding upgradient of the channels and drier conditions downgradient.

Changes to native plant diversity from construction and operation activities would also result from the introduction of invasive species and dust deposition from channel excavation, road/camp construction, transportation, blasting, and aggregate removal from quarries. Use of herbicides to control invasive vegetation would also result in direct loss of vegetation and may change plant species composition and distribution. Measurable effects to vegetation diversity from transportation movement in the LAAs overall are not expected however, effects are expected along PR 239 as road salts and other chemicals from

²⁸ Habitat fragmentation is a process by which large and contiguous habitats are divided into smaller, isolated patches of habitat

²⁹ Edge effects: described as an abrupt transition between two different adjoining ecological communities with respect to the numbers and types of organisms in the marginal habitat.



vehicle use could enter adjacent wetlands, potentially affecting water quality and therefore plant species composition. The Proponent predicted that with the implementation of mitigation measures, the magnitude of effects to native plant communities overall would be low and changes to landscape and community diversity were not expected.

The Proponent predicted that following the implementation of mitigation measures, residual project effects to community diversity, species diversity and wetland functions within the LAA would be adverse, low to moderate in magnitude, long-term in duration, continuous, irreversible.

Changes to Wildlife Habitat

The Proponent identified wildlife species of concern based on the potential for these species and their habitat to support the traditional and cultural practices of Indigenous groups (see Chapter 5.1 Biophysical Environment, Chapter 7.3 Species at Risk and Chapter 7.2 Migratory Birds). Project construction and operation would cause direct wildlife habitat loss or alteration and reduced habitat effectiveness due to removal of vegetation, changes to plant community composition, and sensory disturbance. This could affect a species' ability to carry out basic life requirements such as breeding and overwintering and could result in altered daily and seasonal wildlife movements. The Proponent noted that approximately 267.5 hectares of potential large mammal and furbearer denning, or burrow habitat will be affected during winter clearing (September 1 – March 31) within the PDAs. As the LMOC and LSMOC ROWs would be cleared and revegetated with grassland species, the Project could indirectly result in a loss of suitable wildlife habitat; however, the Proponent indicated that the amount of wildlife habitat directly and indirectly affected would be relatively small (a total of 6.3 percent direct loss of habitat in the LAAs) compared to the availability of wildlife habitat remaining in the RAA.

The Proponent noted that for both LSMOC and LMOC, high flows during operation of the channels are anticipated to impede wildlife movement by deterring wildlife (including ungulates, semi-aquatic furbearers and amphibians) from entering the channels, and elevating mortality risk for furbearers and ungulates due to potential drowning and reduced escape cover.³⁰ The Proponent noted there were a limited number of mitigation measures that could apply to reduce Project effects to wildlife movement, particularly when WCS are open, however, the Proponent has committed to several wildlife crossing locations, including primarily at inlets, outlets, bridge crossing locations, WCSs and at the LSMOC between the first drop structure and Lake Winnipeg. Spoil pile breaks would be located to create wildlife cover by breaking up sightlines (spoil pile breaks would be at lower elevations and less visible to predators). The Proponent identified potential crossing locations and spoil pile breaks, but specific locations have not been confirmed.

Construction of temporary construction areas and associated activities (i.e., camps, staging areas, temporary access roads and quarries) would result in loss of wildlife habitat and temporary sensory disturbance, impacting wildlife resource use. The Proponent stated habitat loss would be small as temporary workspaces and construction camps would be on previously disturbed areas or areas having low potential to support sensitive wildlife habitat. Wildlife habitat avoidance could occur through Project

³⁰ Escape cover is vegetation that by reason of strategic location or natural formation assists the escape of animals from their predators.

related sensory disturbances such as increased noise, light, and vibration levels. The Proponent expected the effects to wildlife habitat avoidance to be short term (approximately three to five years during construction) and infrequent during the operation phase on effects from vegetation clearing along the LMOC, LSMOC, distribution line, temporary activities and PR 239 realignment.

Changes in Wetland Area and Functions

The Proponent indicated that vegetation clearing during construction was anticipated to result in the direct loss of wetlands within the PDAs. Indirect effects to wetlands may also occur from dewatering and water management activities during construction and operation that would alter surface or groundwater flow patterns and water levels, as noted in Chapter 6.1 Surface Water and Chapter 6.2 Groundwater. This could result in the loss of or changes to wetland plant communities and functions (e.g., nutrient cycling, decomposition and carbon accumulation rates, water filtration and storage, wildlife habitat, and socio-economic functions such as hunting, trapping, and harvesting) through changes to water levels and nutrient and mineral inputs. Dewatering in fens would result in decomposition of peat and lowering of the peat profile, reducing carbon sequestration functions.

Table 7 Estimated Loss of Wetland Types in the Project Development Area, Local Assessment Area and Regional Assessment Area

Wetland Types	Area of wetland in the PDA (hectares)	Area of wetland in the LAA (hectares)	Direct Loss (percent of wetland in PDA)	Direct Loss (percent of wetland in LAA)	Direct Loss LMOC (hectares)	Direct Loss LSMOC (hectares)
Bog	5.2	28.4	100	18.3	0	5.2
Graminoid Fen	196.7	1,186	100	16.6	0	196.7
Marsh	280.2	1,658.9	100	16.9	272.2	7.9
Other Fens	279.8	1,621.1	100	17.3	0	279.8
Shallow Open Water	40.1	518.4	100	7.7	22.8	17.3
Swamp	210.7	1,171.5	100	12.3	0	210.7
Other Wetlands	-	8,421.6	-	-	-	-
Total	1,012.6	15,152.6	100	6.7	295.0	717.6

During construction, wetland function would be affected during vegetation clearing and water management, and during operation and maintenance, wetland function would be affected by the alteration of natural drainage as described in section 6.1.1 Altered surface water and groundwater inputs and drainage patterns could affect wetland abundance, vegetation cover, and vegetation structure, as plant communities down-



gradient were expected to shift towards species better suited for drier landscapes while plant communities upgradient were expected to favour species better suited for wetter landscapes. The Proponent indicated that the drying of wetlands may affect wetland functions, as noted above.

The Proponent has estimated that effects to wetland function could extend to a maximum distance perpendicular to the channel of 500 metres upgradient and 1,000 metres downgradient of the LMOC, and 1,000 metres upgradient and 600 metres downgradient of the LSMOC. The Proponent indicated that the effects could be observed along the entire length of the channels (Table 7). The Proponent indicated that the loss of wetlands along the LMOC and the PR-239 realignment would be largely minimized through wetland offsetting and compensation as per Manitoba’s *The Water Rights Act*. However, the wetland compensation required under *The Water Rights Act* would only require compensation for 0.1 hectares of the 768.5 hectares of wetlands removed for the construction of the LSMOC.

Table 8 Wetland Cover Classes in the Project Development Area, Local Assessment Area and Regional Assessment Area

Wetland Cover Class ³¹	Area of habitat in the PDA (hectares)	Area of habitat in the LAA (hectares)	Direct Loss (percent of habitat in PDA)	Direct Loss (percent of habitat in LAA)	Direct Loss LMOC (hectares)	Direct Loss LSMOC (hectares)
II	72.6 ³²	313.8	100	23.1	72.6	0
III	199.1	1,012.4	100	19.6	199.0	0.1
IV	39.1	623.4	100	6.2	38.6	0
V	0.8	19.7	100	0	0	0
Other Wetlands	810.6	5,469.2	100	14.8	42.1	768.5
Total	1,122.2	7,438.5	100	15.1	352.3	768.6

The Project could alter plant species composition in wetland areas along shorelines and islands of Lake St. Martin due to changes in water depth and flood frequency from increased management of water levels on Lake Manitoba and Lake St. Martin. Based on the Proponent’s observations in the Delta Marsh from the management of water levels on Lake Manitoba, the wetlands and riparian areas surrounding Lake St. Martin may experience similar shifts in vegetative species composition including cattail expansion and

³¹ The Stewart and Kantrud Wetland Classification System in Stewart, R.E., and H.A. Kantrud. (1971). *Classification of Natural Ponds and Lakes in the Glaciated Prairie Region*. Retrieved February 7, 2024, from <https://pubs.usgs.gov/rp/092/report.pdf>

³² Discrepancy was noted in Total areas of Class II wetlands (73.4 hectares) provided by the Proponent in the Information Request Round 3.



reduction in native grasses. The abundance and distribution of wetland areas near the shore of Lake St. Martin could be changed by alterations in water levels. Changes to lake levels in Lake Manitoba are expected to be small (2.4 centimetres or less) and therefore effects to the Delta Marsh are not expected.

Residual effects to vegetation during construction would be primarily adverse, long-term in duration, moderate magnitude, continuous, and irreversible, and would result in the alteration and permanent loss of wildlife habitat and wetland function. Some effects to wildlife habitat effectiveness are expected to improve as edge effects from habitat fragmentation naturally attenuate. The Project would reduce the abundance and spatial distribution of plant species of interest to Indigenous groups. Overall, no wetland classes or land cover classes are anticipated to be lost in the RAA as a result of the Project.

6.3.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada expressed concerns regarding the uncertainty of configuration options of the spoil pile breaks for wildlife passage across the outlet channels and uncertainty regarding how mitigation measures that would be implemented, along with the effectiveness of those mitigations. Environment and Climate Change Canada recommends that the Project Environmental Requirements be updated to include the implementation of mitigation measures to address habitat fragmentation, including modifications to spoil pile design to facilitate wildlife passage across the outlet channels.

Environment and Climate Change Canada expressed concerns regarding the described autonomous recording unit malfunctions and resulting loss of baseline data collection, Environment and Climate Change Canada recommends that baseline data collection is completed prior to Project construction to ensure that sufficient year-to-year comparisons can be made as per the commitments described in the Proponent's Wetland Monitoring Plan and to ensure that adaptive management is triggered.

Indigenous Groups

Plant Species, Community and Landscape Diversity

Fisher River Cree Nation expressed concerns regarding the potential contamination of waterbodies and adjacent wetlands from use of phosphorus, glyphosate, and other fertilizers and herbicides to control weeds or vegetation when re-establishing vegetation along the outlet channels after construction.

Fisher River Cree Nation, the Interlake Reserves Tribal Council, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation, highlighted concerns regarding the Proponents selection of the temporal period for the monitoring of revegetation (three years) despite the Proponent estimating revegetation to take one to ten years.

Peguis First Nation, Fisher River Cree Nation, Lake St. Martin First Nation, the Manitoba Métis Federation and Poplar River First Nation noted concerns with the Proponent's revegetation plan. These groups



requested greater emphasis on the revegetation and monitoring of all wildlife habitat, including habitat of wildlife that is traditionally depended on for livelihood and sustenance.

Wildlife Habitat

Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Sandy Bay Ojibway First Nation, and Sagkeeng Anicinabe First Nation remain concerned with clearing work planned between late January and late March that may destroy active dens or burrows or disrupt nesting birds or other wildlife. They are concerned that the Proponent has not provided enough information about den sweeps that will be completed prior to construction activities. Indigenous groups requested that the Proponent ensure that active dens are identified and have relevant setback distances applied, with additional measures taken to prevent or minimize mortality of culturally important large mammals and furbearers that den or burrow and are vulnerable to vegetation clearing and ground disturbance activities.

Hollow Water First Nation, Lake St. Martin First Nation, Misipawistik Cree Nation, and the Manitoba Métis Federation raised concerns about wildlife setbacks, known sensitive wildlife habitat and critical lifecycle periods for all wildlife (species at risk, migratory birds, non-migratory birds, and culturally important species).

The Interlake Reserves Tribal Council, Misipawistik Cree Nation, Norway House Cree Nation, Poplar River First Nation, Sandy Bay Ojibway First Nation, and Sagkeeng Anicinabe First Nation expressed concerns about potential changes in habitat that are species-specific and effective mitigation measures during all phases and seasons of the Project. There remain concerns that species-specific surveys, quantities, and methodologies along with residual effects from the Project have not been addressed for many wildlife species, as well as the effects of decreasing wildlife populations on traditional use of lands by Indigenous groups.

Dakota Tipi First Nations, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Misipawistik Cree Nation, Norway House Cree Nation, Pimicikamak Okimawin, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding baseline information collection and methods for data analysis to create effective implementation of mitigation and wetland offsetting measures for habitat fragmentation (edge effects), habitat enhancements, armoring of the channel, quarry development, and compensation plans.

Hollow Water First Nation, the Interlake Reserves Tribal Council, the Manitoba Métis Federation, Peguis First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns about the effects of construction activities and habitat fragmentation (including new or existing access roads and distribution line) on future wildlife populations. They requested the implementation of vegetated breaks, land bridges, and other forms of wildlife habitat within the channels and the ROWs for the sustainability of wildlife and wildlife habitat in the area.

Wetlands

Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, the Manitoba Métis Federation, Norway House Cree Nation, Sandy Bay Ojibway First Nation, and Sagkeeng Anicinabe



First Nation do not agree with the Proponent's assessment regarding the lack of compensation of Class II wetland habitat (specifically for species at risk habitat), and highlighted concerns over the total amount of Class III, IV, and V wetlands identified.

Black River First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Little Saskatchewan First Nation, Norway House Cree, Poplar River First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, and Lake St. Martin First Nation requested the Proponent include more details regarding proposed wetland compensation and offsetting, how habitat function will be considered, and steps taken to developing enhancement and restoration plans. Ephemeral and temporary wetlands should be fully compensated on treaty and traditional First Nation lands. Dauphin River First Nation, Fisher River Cree Nation, Lake St. Martin First Nation, Peguis First Nation, the Manitoba Métis Federation, and Tataskweyak Cree Nation noted concerns about effects to wetlands and wetland-dependent species of cultural importance.

A summary of the comments provided by Indigenous groups, along with Proponent and/or Agency responses, is provided in Appendix C of this draft EA Report.

6.3.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent adequately characterized potential project effects to the terrestrial landscape. The Agency recognizes that the Project would result in the loss of terrestrial habitat, including the permanent loss or alteration of wetlands and wetland functions, and that these changes to terrestrial habitat and wetlands may affect migratory birds, species at risk, and species of importance to Indigenous groups. The Agency understands that effects to terrestrial vegetation and wetlands would be partially mitigated through revegetation and wetland offsetting (the Proponent has made offsetting commitments for the loss of 239 hectares of mineral wetlands and 769 hectares of peatlands directly affected by the Project).

The Agency recognizes that uncertainty remains regarding potential effects to vegetation and wetland areas of importance to Indigenous groups. The direct loss of wetland areas and drawdown of the water table in wetland areas surrounding the Project will create potential effects for current use by Indigenous groups, including access to and use of wetland plant species and wetland hunting, trapping and fishing areas, as well as effects to species of importance to Indigenous groups such as moose, beaver and wetland-dependent plant species. Further information is provided in Chapter 7.4.1 Current Use of Lands for Traditional Purposes. The Agency notes that the Proponent is committed to adaptive management protocols, implementing the Revegetation Management Plan and the Wetland Monitoring Plan to assess potential Project effects to wetlands adjacent to the PDA (within 100 to 200 metres). The Agency recommends that the Proponent engage with Indigenous groups prior to construction to identify the location of culturally sensitive wetland and vegetation areas that may be affected by the Project, including the location of plant species of traditional and cultural importance within or near the PDA and LAA, in order to collaboratively develop mitigation measures.

The Agency notes that the Proponent has committed to using native species to revegetate areas disturbed by the Project and create transitional vegetation along ROW edge habitat. The Agency recommends that



the Proponent engage with Indigenous groups regarding native seed mixes and replanting of shrubs and trees, to ensure that vegetation species of cultural and traditional importance to Indigenous groups are included. The Agency is of the view that revegetation will reduce Project effects rather than have a positive effect, as it could result in increased grassland vegetation cover which would benefit the habitat of some species (e.g., plant species of interest for Indigenous groups, including berries), but overall, the reduction in community diversity could have adverse effects to wildlife habitat.

The Agency acknowledges the concerns of Indigenous groups related to scope and adequacy of the wetlands and riparian effects assessment along with wetland monitoring and follow-up programs. In particular, Indigenous groups have identified potential effects related to hydrological changes that could affect wetlands and lake shorelines within the RAA, specifically with dewatering, erosion and the loss of functional wetland habitat and altered habitat functions that could damage or destroy viable and diverse ecosystems that contain and support culturally important wildlife and plant species. The extent of effects to terrestrial habitat from the alteration of surface water, shallow groundwater flows and fragmentation of the landscape is not clear, particularly in areas such as the downgradient area to the north of the LSMOC which will experience dewatering of both surface and groundwater sources to a large area of fen and bog containing the Buffalo Creek complex. The Agency notes that the Proponent proposed to rewater Birch Creek (near the LMOC) and the Buffalo creek complex to address the indirect effects of the project, however determined that rewatering was economically and technologically infeasible. Further information about this effect is provided in Chapter 6.1 Surface Water. As such, there is uncertainty surrounding the efficacy of proposed mitigations or key mitigation measures that could be applied to reduce or avoid Project effects to valued components. Further, the Agency is of the view that there is uncertainty about the overall effects to vegetation, wetland functions, and wildlife habitat and the effects migratory birds (including migratory birds species at risk) and to species at risk (that are not migratory birds) as described in Sections 7.2 and 7.3, respectively.

The Agency is of the view that potential project effects to the terrestrial landscape would be adequately addressed, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent and the key mitigation measures described below.

Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to ensure there are no significant adverse environmental effects to fish and fish habitat, migratory birds, and Indigenous peoples, as a result of changes to the terrestrial landscape. The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups.

Mitigation Measures

- Develop measures prior to the start of construction and in consultation with Indigenous groups, to mitigate the adverse environmental effects of the Project on the availability and distribution of wetland species of importance to Indigenous groups in the local assessment area, including those

species listed in Appendix B of the EA report, resulting from project-related changes in surface and groundwater levels that could not be avoided or minimized. The Proponent will implement these measures during all phases of the Project.

- The Proponent will undertake, in consultation with Indigenous groups and relevant authorities, revegetation of areas disturbed by project activities. Conduct seeding and planting of native trees and shrubs for revegetation purposes, to reduce the establishment of weed species, restore native and culturally important species assemblages, and reduce erosion of exposed soils. Plant and seed areas immediately upon completion of a section of the outlet channel to maximize potential for growth and establishment of vegetative cover.
 - Determine in consultation with Indigenous groups, prior to construction, the appropriate seed mixes, native shrubs and plant seedlings to use during revegetation, including:
 - species of value to moose and other mammals of interest to Indigenous groups, as identified by Indigenous groups;
 - species of interest to Indigenous groups for traditional and medicinal use as per discussions with Indigenous groups.
- Implement measures during construction and operation to limit the introduction and spread of invasive plant species within the PDA. In doing so, the Proponent shall inspect all vehicles, machinery and construction equipment before it enters the project development area for the presence of invasive species and remove any invasive species that are present before entrance to the PDA.
- Weed control herbicide application will not occur within a 30 metres setback from waterbodies and fish habitat and within 35 metres of the LSMOC.
- If clearing vegetation during time periods when denning furbearers are denning as indicated by the restricted activity periods in Appendix D Species at Risk, Migratory Birds, and Species of Cultural Importance Setbacks and Mitigation Measures, conduct, prior to construction, pre-construction surveys within the project development area to identify active denning sites. If active den sites are discovered, establish no work buffer zones for these dens. Buffer zone size must correspond to the setback distance under high disturbance for the applicable species as described in Appendix D Species at Risk, Migratory Birds, and Species of Cultural Importance Setbacks and Mitigation Measures until the den is no longer active.
- Ensure safe movement of wildlife across and through outlet channels and spoil piles as indicated by the restricted activity periods in Appendix D Species at Risk, Migratory Birds, and Species of Cultural Importance Setbacks and Mitigation Measures by:
 - Installing and maintaining wildlife crossing structures for ungulates over the outlet channels at locations identified in consultation with Indigenous groups.
 - Designing and constructing the outlet channels in a manner that allows ungulates not using the wildlife crossing structures to cross safely.
 - Installing and maintaining spoil pile breaks for ungulates, semi-aquatic furbearers and the northern leopard frog at locations identified in consultation with Indigenous groups.

- Maintaining the slopes of spoil piles at a gradient that allows ungulates, semi-aquatic furbearers and northern leopard frog to cross them safely.
- All Project specific equipment shall use noise-dampening technologies on construction vehicles and equipment and maintain these technologies in good working order throughout construction for the purpose of mitigating effects to wildlife of importance to Indigenous groups for current use.
- Lights used at night will be aimed downwards (i.e., down-lighting) to limit effects to migratory birds and species of importance to Indigenous groups for current use within and adjacent to the PDA. Lighting must not exceed the minimum intensity and duration required for safety.
- Implement measures, during construction and operation, to mitigate interactions with wildlife and Designated Project employees and contractors within the project development area. In doing so, the Proponent shall:
- Mitigate the risk of collisions of ungulates (moose, deer, elk) and furbearers (bear, gray wolf, muskrat and beaver) with project-related vehicles by
 - Determining speed limits on Designated Project roads, that take into account the potential for collisions with wildlife. Post these speed limits on Designated Project roads and require all persons to abide by these speed limits.
 - Install warning signs along project access roads to warn drivers of risk of wildlife vehicle collisions.
- No blasting shall be permitted within proximity (one kilometre) of active denning sites for denning furbearers.
- No blasting shall be permitted when moose and other ungulates are within 500 metres of blasting.

Follow-up and Monitoring

- Develop performance standards for revegetation in consultation with Indigenous groups.
- Develop a follow-up program to verify the effectiveness of the revegetation measures, including whether performance standards referred to in the Revegetation Management Plan are being met.
- If, at any point during the monitoring and follow-up program, performance standards referred to in the follow-up program are unlikely to meet the targets within a three-year timeframe of planting, implement additional or modified measures.
- Identify the species to be monitored in consultation with Indigenous groups. Monitor during the first six years of operation, at a minimum:
 - access and use of the linear corridors created by the outlet channels by predators, including gray wolf and coyote, and any associated predation on the species identified in consultation with Indigenous groups.
 - ungulate crossings of both outlet channels to verify that they are able to cross safely.
 - public access and use of the designated project area and hunting of species identified in consultation with Indigenous groups.



- As part of the follow-up for revegetation, identify objectives related to wildlife usage of revegetated areas and monitor wildlife usage during the first six years of operation, or until objectives are met, whichever comes first.
- Develop a follow-up program, in consultation with Indigenous groups and relevant federal and provincial authorities, prior to construction to assess the project's effects to the current use of lands and resources for Indigenous purposes resulting from drying and flooding of wetlands. Implement during construction and operation. As part of follow-up:
 - Monitor surface and groundwater levels in wetlands in upgradient and downgradient areas from the outlet channels, especially Birch Creek and the Big Buffalo Lake Complex illustrated in Figure 2 and Figure 3 (Chapter 2).
 - Monitor for population and distribution changes in wetland vegetation species of importance to Indigenous groups and wetland-dependent migratory birds and species at risk.
 - Monitor for changes in the population, distribution and movement of wildlife species of cultural importance to Indigenous groups that are reliant on wetland areas including moose, beaver and muskrat, and culturally important vegetation.

Additional mitigation, monitoring, and follow-up measures applicable to the terrestrial landscape are discussed in the following chapters of this EA Report: Chapter 6.1 (Surface Water), Chapter 6.2 (Groundwater), Chapter 7.1 (Fish and Fish Habitat), Chapter 7.2 (Migratory Birds), Chapter 7.3 (Species at Risk), and Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance).



7 Predicted Effects to Valued Components

7.1 Fish and Fish Habitat

The Project could cause residual effects to fish and fish habitat, as defined in the *Fisheries Act*, and listed aquatic species at risk, through permanent alteration or destruction of fish habitat, change in fish passage, and effects to fish health, growth and survival.

The Agency is of the view that the Project is not likely to cause significant adverse effects to fish and fish habitat, after taking into account the implementation of key mitigation measures, monitoring, and follow-up programs. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal and provincial authorities, Indigenous groups and members of the TAG.

7.1.1 Proponent's Assessment of Environmental Effects

Predicted Effects

The Proponent predicted that as a result of the Project, fish and fish habitat may experience adverse effects related to the permanent alteration or destruction of fish habitat, change in fish passage, and effects to fish health, growth and survival (i.e., mortality). For the purpose of the environmental assessment, the Proponent selected the following focal fish species, as they were identified within the LAA during baseline studies and their life history and habitat requirements were considered representative of fish species present within the PDA, LAA, and RAA: lake whitefish, walleye, northern pike and forage fish.

Permanent Alteration or Destruction of Fish Habitat

The Proponent indicated potential permanent alteration or destruction of fish habitat may occur during construction of the LMOC and LSMOC, which require excavation to construct channel inlets and outlets (Table 9). Additional disturbed fish habitat area would occur and be less than 10 percent of excavation areas at each location, if jetties and cofferdams are required for construction. This additional disturbed habitat would be restored within two months to two years once jetties and cofferdams are removed. Habitat changes in Watchorn Bay, Birch Bay, Lake St. Martin north basin, and Sturgeon Bay caused by excavation of inlets and outlets of the LMOC and LSMOC were not expected to have a measurable effect on the focal fish populations in the LAA or RAA (Figure 9).

Excavation of the channels will require diversion, dewatering, or filling in of existing creeks and drains and may cause a change in groundwater/surface water interactions in lakes and streams along or adjacent to the channels. In addition, depressurization pumping of groundwater to prepare for construction, during construction and potentially during operation will be required for the LMOC and LSMOC. While no change in regional groundwater inflows to Lake Manitoba, Lake St. Martin, or Lake Winnipeg are expected to occur, local groundwater inflows to Watchorn Bay and Birch Bay, and Reed Lake and Clear Lake to the



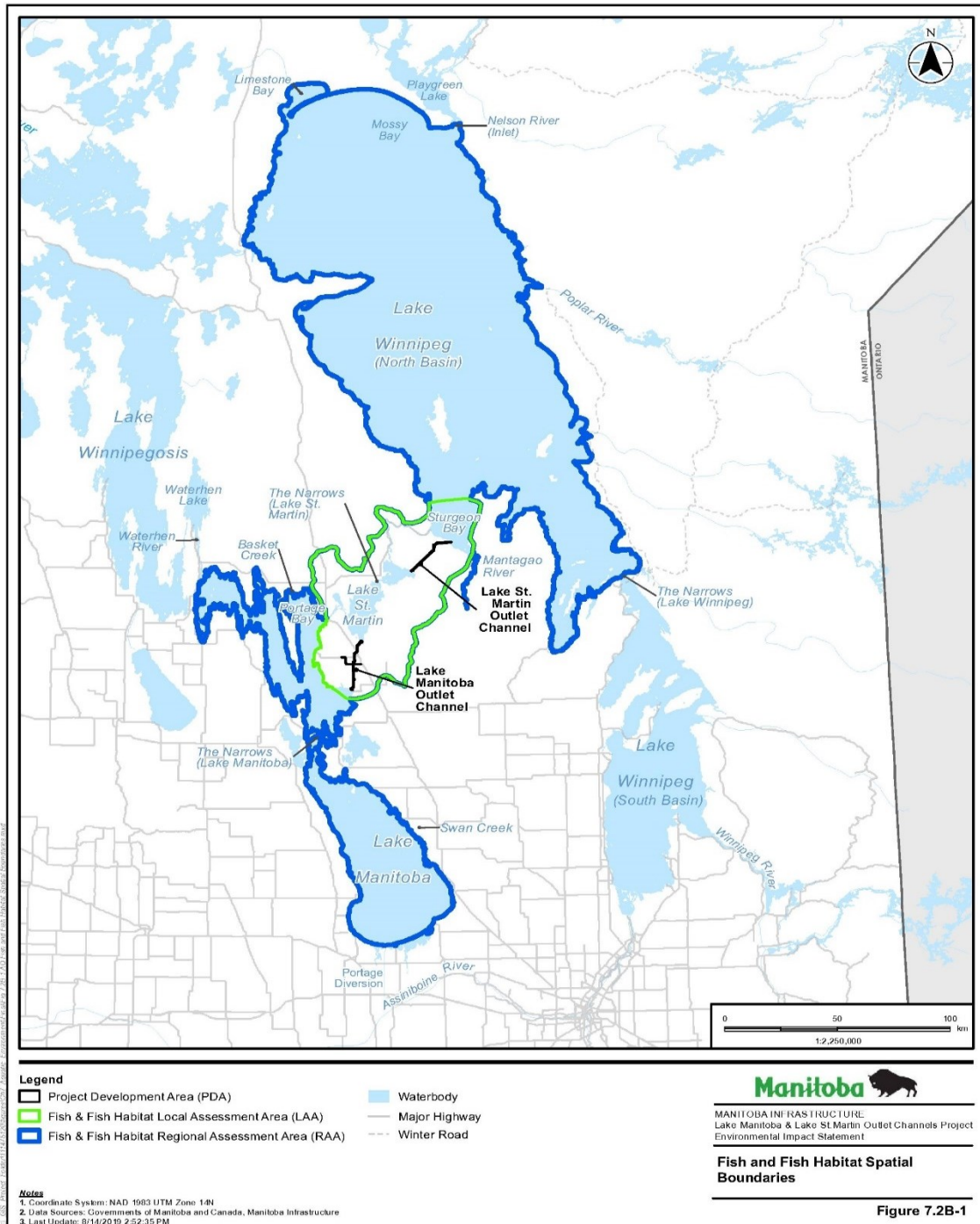
east of the LMOC may be affected by construction of the channels. Reduction in groundwater input to the lakes, wetlands, and drains to the east of the LMOC could increase summer water temperatures and reduce dissolved oxygen concentrations for fish. Reduction in groundwater input north of the LSMOC could result in the drying out of the fen downgradient of the channel and affect the quality and quantity of water in Big Buffalo Lake and connected Buffalo Creek and un-named creek systems. The Proponent concluded the potential effects to fish habitat as a result of the Project affecting groundwater would be adverse, low magnitude during construction and potentially diminishing further during operation, occurring during highly sensitive periods, continuous, irreversible, and extending into the LAA (Figure 9).

To construct the LMOC, the Proponent proposes that headwater drains will be re-routed to the channel or an adjacent drain and into Lake St. Martin and Lake Manitoba. The reduction in flow to Watchorn Creek and Birch Creek would result in a small magnitude change in access to fish habitat that is long-term, continuous and irreversible, however effects to fish populations would be negligible due to alternate spawning habitat available in the LAA (Table 9). During operation of the LSMOC, reduced water levels and inflows to the Buffalo Creek complex may affect fish habitat within these waterbodies by reducing flooded shoreline areas, wetted widths, depths and water velocities (Table 9). These reductions in habitat availability and suitability may reduce spawning success and annual recruitment of local yellow perch, northern pike, white sucker, and forage species populations in the Big Buffalo Lake system. The Proponent expected the effect of realignment, isolation, and diversion of drains and headwater streams on fish habitat to be adverse, large in magnitude (greater than 10 percent change in mean wetted area), long-term, continuous, and irreversible. Effects to fish populations in Buffalo Creek were expected to be negligible and restricted to the LAA.

Any increase in the amount of fine sediment deposited during construction and operation of the LMOC and LSMOC has the potential to decrease fish habitat suitability. Excavation of the channel inlets and outlets, along with the potential installation and removal of rock jetties and cofferdams, are the principle means by which sediments would be mobilized, introduced and deposited in fish habitat in the LAA during construction. Additional pathways by which sediment could be introduced to waterbodies during construction of the channels include activities associated with redirection of drains, groundwater depressurization discharges into the channels, and runoff from spoil piles adjacent to the channels (see Chapter 6.1 Surface Water and Chapter 6.2 Groundwater for more detail about sedimentation sources).



Figure 9 Local and Regional Assessment Area for Fish and Fish Habitat



Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Environmental Impact Statement, Volume 3 Chapter 7 (March 2020)

Figure Description: The LAA includes Watchorn Bay of Lake Manitoba, Watchorn Creek and its headwater lakes and drains, Birch Creek and its headwater lakes and drains, Fairford River, Pineimuta Lake, Lake St. Martin and tributaries, Buffalo Creek and Big Buffalo Lake, Dauphin River, and Sturgeon Bay of Lake Winnipeg. The RAA includes the LAA and extends to include the entirety of Lake Manitoba, the entirety of the north basin of Lake Winnipeg and the mouth of the Mantagao River.

The potential loss of spawning habitat (Table 9) would represent a 0.02 percent decrease in total available spawning habitat in the south basin of Lake St. Martin. A decrease in fine sediment habitat by 0.06 percent would result in a temporary (one year for recolonization to occur) loss of invertebrate production in the south basin of Lake St. Martin. Project effects to fish habitat were not expected in the north basin of Lake St. Martin. During commissioning of the LMOC and LSMOC, the Proponent expected there would be no measurable effects to fish use, fish population or invertebrate production (see Chapter 6.1 Surface Water for details on proposed mitigation measures). Mitigation would include gradual controlled opening of the WCS gates during commissioning and operation to slow flushing of sediments and reduce concentrations of suspended sediments at the outlets. Sediment remaining in the outlet channels following the commissioning period may be mobilized during future operation with similar predicted deposition effects and locations as during commissioning. The Proponent predicted that with mitigation, sediment related effects to local habitat would be short-term and negligible. Effects of sediment would extend into the RAA (i.e., northern basin of Lake Winnipeg); however, with mitigation, total inputs from the channels are expected to form a negligible percentage of total inputs to the main basin of Lake Winnipeg and residual effects of sediment erosion and deposition on fish and fish habitat are expected to be insignificant. Beyond commissioning, the Project is not expected to result in an increase in the deposition of fine sediments in Birch Bay or Sturgeon Bay during operation for flood mitigation. Multiple flood events are not likely to add sediment depth, due to wind and wave action.

Diversion of flows down the LMOC and LSMOC during high flood events could change flow patterns within the LAA and change the extent and duration of riparian area inundation along lake and river shorelines. This will include movement of water between Watchorn Bay in Lake Manitoba and Birch Bay in Lake St. Martin, and between the north basin of Lake St. Martin and Sturgeon Bay in Lake Winnipeg, where such movements did not previously exist. Diversions would transfer water that would otherwise be conveyed between the lakes by the Fairford and Dauphin rivers and have the potential to decrease discharges in the rivers, with subsequent changes in their hydraulic conditions. The diversion of water from the rivers to the channels during high flood events could reduce the availability and suitability of the rivers as migratory corridors and spawning areas for focal fish species. Operation of the LMOC and LSMOC would also alter localized flow patterns near the inlets and outlets of the channels in Watchorn Bay, Birch Bay, the north basin of Lake St. Martin, and Sturgeon Bay. This would cause previously lacustrine habitats (i.e., only wind-generated currents) at the inlets and outlets to be transformed into more riverine habitats (i.e., gravity-generated currents). During Project operation, changes in fish habitat would occur due to changes in flow patterns in the Fairford and Dauphin rivers, at the inlets and outlets of both channels, and in Lake St. Martin. In addition, increased water velocities in the Lake St. Martin Narrows would transport some sands and gravels further downstream or into the north basin of Lake St. Martin, however, the Proponent concluded that this shift in substrates would reach an equilibrium and is not expected to affect overall

spawning habitat in these areas. The Proponent concluded that the reduction in potential spawning habitat in the Fairford and Dauphin Rivers due to Project operation represents a change of less than one percent of total potential spawning habitat, which is not expected to measurably affect fish populations. While unavoidable and adverse, the Proponent concluded the potential effect on fish habitat in these rivers and lake areas was expected to be negligible in magnitude, long-term in duration, sporadic in frequency, and confined to the LAA.

Table 9 Quantitative Estimates of Harmful Alteration, Disruption or Destruction of Fish Habitat Due to the Project

Change to the Environment	Quantitative Estimate	Fish Use
Excavation of LMOC inlet at Watchorn Bay on Lake Manitoba	7.1 hectares of aquatic habitat in Watchorn Bay at Lake Manitoba elevation of 247.66 metres.	No evidence of spawning in shallow nearshore areas of Watchorn Bay. Affected area provides feeding habitat, which is widespread in Lake Manitoba.
A 25 percent reduction in the 50 th percentile (median) and 43 percent reduction of 90 th percentile flows in the Fairford River.	23 hectares (9.3 percent) of wetted area in Fairford River at median flows.	Extensive use by all fish species in the Fairford River.
Decrease of 27.4 percent of the total drainage area of the Birch Creek drainage basin and a decrease of 4.0 percent of the total drainage area in the Watchorn Creek drainage basin. The average wetted width of Birch Creek will decrease by 0.21 metres.	Decrease of 0.18 hectares in the average wetted area of Birch Creek. Negligible change in Watchorn Creek.	Spring spawning by suckers, and to small extent northern pike and fewer walleye. May provide summer foraging habitat for small-bodied fish when water is present.
Excavation of LMOC outlet at Birch Bay in Lake St. Martin	5.4 hectares of habitat below the normal high-water level of 244.1 metres in Birch Bay on Lake St. Martin.	Larval lake whitefish, sucker and walleye were captured in Birch Bay during spring. Habitat mapping has indicated the presence of suitable spawning substrate within 1.5 hectares of the construction area.
Sediment deposition in Birch Bay of Lake St. Martin during LMOC commissioning	Sediment deposition greater than 2 millimetres in depth will occur over 90 hectares in Birch Bay, including 0.9 hectares over preferred spawning substrates. Sediment deposition greater than 20 millimetres over 12 hectares over fine substrates suitable for benthic invertebrates.	Extensive use by all fish species in Lake St. Martin for feeding, overwintering and foraging. Larval suckers, lake whitefish, cisco and walleye have been captured in Birch Bay, but spawning areas have not been identified. Benthic invertebrates which provide forage for several fish



Change to the Environment	Quantitative Estimate	Fish Use
		species are present in substrates in Birch Bay.
Excavation of LSMOC inlet on Lake St. Martin	75 hectares of habitat below a high-water level of 243.8 metres at the eastern bay on Lake St. Martin.	Larval walleye, sucker species, and lake whitefish captured in north basin of Lake St. Martin, however degree to which habitat is used for spawning near the inlet is unknown. The footprint of excavated area is shallow and would not be suitable for spawning habitat for lake whitefish and likely not for spring spawning species unless under high water conditions.
20 percent reduction in 50 th percentile (median) and 50 percent reduction in 90 th percentile flows in the Dauphin River	33 hectares (4.8 percent) of wetted area in the Dauphin River median flow.	Extensive use by all fish species in the Dauphin River.
Reduction in drainage area of Buffalo Creek resulting in flow reduction.	Drainage area reduced by 51.5 percent (17.5 hectares). Significant flow reductions expected and are unquantified.	Resident population of yellow perch and forage fish. Fish surveys (2021) indicated that yellow perch and northern pike were present but no evidence of a spawning migration of large-bodied fish from the Dauphin River.
Excavation of LSMOC outlet in Sturgeon Bay	10 hectares of habitat below the 218 metre water level in Sturgeon Bay.	Spring neuston tows yielded larval goldeye/mooneye, suckers, minnows, northern pike, lake whitefish/cisco, troutperch, sticklebacks, white bass and walleye/sauger/yellow perch, indicating potential fish spawning in the vicinity of the outlet in Sturgeon Bay. However, more suitable substrate is common near Willow Point.

Change in Fish Passage

Replacement and installation of new stream crossings along PR 239, road realignments and construction road development have the potential to become a barrier to fish passage. Crossings of the LMOC planned for the PR 239 and at Township Line Road will be clear-span bridges that will not introduce a barrier to fish

passage. Crossings at municipal roads to accommodate the LMOC will be closed-bottom culverts. Upgrade of the Temporary Winter Construction Road may require the use of closed- or open-bottom culverts for stream crossings that have the potential to create barriers to fish passage if sized or installed incorrectly, but proposed measures to mitigate potential restriction or impediment of fish passage at new or replaced stream crossings are well understood and entirely applicable and effective in the environmental setting of the Project. The Proponent considered that residual adverse effects to fish passage would therefore be negligible.

The potential loss of fish from Lake Manitoba to Lake St Martin and Lake Winnipeg would be possible due to a change in fish passage during operation of the LMOC and LSMOC. Larval fish in Watchorn Bay and in the northeastern basin of Lake St. Martin may be passively entrained in the inflows to the LMOC and LSMOC when the WCSs are open, which could have adverse effects to fish populations in Lake Manitoba and Lake St. Martin if there are large concentrations of larval fish in the immediate vicinity of the channel inlets when the WCSs are opened. Adult fish may be attracted to move through the channels, either because they are within the channel when the WCS is closed (LMOC), or because they are attached to the current in the channel when the WCSs are open (LMOC and LSMOC). The Proponent noted that although fish may be redistributed to some degree, the effect on focal fish populations in the LAA and RAA from passive or active movement of fish in the channels is expected to be neutral. The effect will occur sporadically over the long-term during operation and is expected to be low in magnitude, and only detectable within the LAA.

A change in fish passage is possible due to changes in attraction flows from operation of the LMOC and LSMOC. Reductions in flow rate in the Fairford River due to LMOC operation, and similarly in the Dauphin River due to the operation of the LSMOC, may reduce the extent of outflow plumes from these rivers and introduce new plumes from the outlet channels that have the potential to reduce or divert the number of spawning fish moving up each waterbody. The Proponent determined that diversion of flow from Dauphin River to the LSMOC and from Fairford River to the LMOC is not expected to have a measurable effect on the number of walleye, suckers, northern pike or lake whitefish (depending on spawning season for each species) ascending these rivers to access spawning habitat. The Proponent concluded that the predicted increases in water velocity in the Lake St. Martin Narrows are not expected to impede upstream movement of fish. On this basis, the Proponent noted that it is expected that these changes will not be sufficiently large to affect fish migrations and the effects are not expected to cause a decrease in fish population sizes or productivity.

Change in Fish Health and Mortality

Construction activities occurring in or near water could potentially release deleterious substances to streams and lakes adjacent to or downstream of the LMOC and LSMOC. Such releases could directly affect respiration of fish and gas exchange of fish eggs, or indirectly affect plankton or benthic invertebrates that are food for many fish species. Use of heavy equipment near waterbodies poses a risk of introducing hydrocarbons into the aquatic environment and accidental releases could adversely affect fish health and mortality (see Chapter 8.1 Accidents and Malfunctions). In the event that blasting would be required in close proximity to fish bearing waterbodies, fish eggs may be damaged or destroyed, or the internal organs of juvenile or adult fish could be damaged. The health and mortality of fish could be affected by blast



residues. The Proponent noted that potential effects to fish health and mortality from accidental releases of deleterious substances and blasting in borrow pits and quarries have a low likelihood of occurrence, and the proposed mitigation measures are considered to be highly effective at reducing the risks and containing the releases.

Mobilization of sediments during construction and operation of the LMOC and LSMOC could result in indirect or direct effects to fish health and mortality. Indirect effects include reduction of primary productivity (i.e., growth of phytoplankton in the water column, attached algae on stones and rooted plants) and benthic invertebrate production in streams and rivers, and reduction of plankton and benthic invertebrate production in lakes due to increased turbidity and sedimentation. Direct effects to fish would include respiratory stress, reduced prey and predator detection, reduced gas exchange across egg membranes and avoidance of spawning, foraging or overwintering areas. Commissioning of the LMOC and LSMOC is expected to result in a pulse of sediment from the newly constructed channels and dust on the armouring materials, and from scour of areas in proximity to the inlet and outlets. Sediments deposited during construction, including cofferdam installation and removal, excavation of the channels, and dust from channel armouring upon commissioning, would be likely to mobilize. Sediments from the LMOC would be transported out into the main basin of Lake St. Martin, and finer sediments would move into the north basin and down the Dauphin River or LSMOC, and into Lake Winnipeg. Sediments in the LSMOC would be transported out into Sturgeon Bay. Sediment introductions would commence during construction, and elevated total suspended solid levels in lakes downstream of the channels are expected to occur when the WCSs are open. However, the Proponent expected that these sediment pulses would decrease with each successive use of the channels. Overall, the Proponent indicated that fish health and mortality due to sediment introductions from the Project are expected to be adverse, but low in magnitude. The effects would be restricted to the LAA.

Fish could be attracted to the LMOC and LSMOC when the WCS gates are open, and the potential therefore exists for fish and fish eggs to be stranded, or for eggs to be subject to suboptimal incubation conditions in the channels when the WCSs are closed. Fish and fish eggs may be stranded within the excavation areas if cofferdams are used and work areas are dewatered to enable construction. The Proponent noted that fish will not be susceptible to stranding in the LMOC because water levels above and below the WCSs will be maintained at the same elevation as water levels on Lake Manitoba and Lake St. Martin respectively, allowing fish to move out of the channel regardless of flow. The LSMOC has been designed to allow only downstream movement of fish throughout the open-water season, however it is possible that fish would be stranded when flows are reduced in the channel. Mapleleaf mussel (Saskatchewan – Nelson Rivers population) listed as threatened under Schedule 1 of SARA may also be stranded within any isolated excavation area in Sturgeon Bay at the outlet of the LSMOC. The Proponent predicted that although stranding of individual fish or fish eggs along the margins of the channels may be unavoidable, effects of stranding to the populations of focal fish species in the LAA and RAA was expected to be low in magnitude and would only occur sporadically over the duration of the Project. No measurable effect on the productivity of fish populations in the LAA or RAA is expected.

Aquatic Invasive Species (AIS) (e.g., spiny water flea, zebra mussels, rainbow smelt) have the potential to adversely affect fish and fish habitat, and the Project may facilitate the spread of AIS during construction and operation. No AIS occur in Sturgeon Bay or Lake Winnipeg and no AIS have been identified within

Lake St. Martin. The Project would facilitate the transport of AIS via equipment used in multiple water bodies during construction, and by recreational activities of additional anglers in the construction workforce or those accessing previously inaccessible waterbodies. The outlet channels would also form additional, and potentially easier, connections for AIS dispersion than those currently existing between Lake Manitoba and Lake St. Martin, and between Lake St. Martin and Lake Winnipeg. The armored channels may provide habitat for AIS such as zebra mussels and Prussian carp, making the management of zebra mussel an ongoing part of channel maintenance. Upstream dispersal of zebra mussels and spiny water flea would be limited as they move primarily by passive floating in currents and the channels are not designed to allow for upstream flow. The Proponent indicated that the Project's potential to increase dispersal of AIS within the LAA and RAA is low because Lake Manitoba, Lake St. Martin and Lake Winnipeg are already naturally connected and the risk of transfer of AIS already exists when boaters, anglers, and commercial fishers move between lakes. The outlet channels contain control and drop structures that are expected to mitigate potential direct upstream movement of AIS such as rainbow smelt and Prussian carp. However, the potential magnitude of this effect is high due to the substantial alteration of physical habitat and disruption of aquatic food webs that would occur in the event of the introduction of AIS. These reductions in fish habitat may affect availability of fish for sustenance and commercial fishing by Indigenous groups.

Proponent Conclusions

The Proponent noted that the Project would alter stream flows and lake levels to alleviate flooding of communities along Lake Manitoba and Lake St. Martin and, therefore, cannot be built or operated without negative effects to fish and fish habitat. However, the Proponent predicted that the potential negative effects of the Project on fish and fish habitat could be eliminated or reduced to a level that substantially reduces risks to the long-term sustainability and production of focal fish populations in the LAA and RAA, following the implementation of mitigation measures. All residual effects are expected to be negligible or low in magnitude, but medium-term to long-term in duration because they are likely to occur each time the WCSs are opened. The Proponent noted that fish passage will be altered, but the Project is not expected to measurably affect critical movements (e.g., lake whitefish spawning movements to and from Dauphin Lake) or substantially increase the risk of AIS dispersal. Although the LSMOC may cause some low level of fish and fish egg mortality (e.g., from stranding, entrainment), the risk and potential magnitude have been limited through Project design (e.g., deep pools) and how it will be operated (e.g., provision of year-round baseflows).

The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to fish and fish habitat are described in Section 7.1.3 of this Chapter.

7.1.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada expressed concerns regarding the use and management of nitrogen-based explosives during construction and the prevention of associated runoff, leaching or spills, as there may be potential nutrient-related effects from explosives and their residues on the aquatic environment as noted in Chapter 6.1 Surface Water.

Environment and Climate Change Canada and Fisheries and Oceans Canada highlighted that uncertainty remains in sediment deposition thickness, extent and location during commissioning and operation, which may have residual effects to long-term fish habitat distribution and persistence, in addition to alteration of substrate, smothering of fish eggs and distribution of benthic invertebrates. Fisheries and Oceans Canada expressed concerns regarding volumes of sediment generated during Project construction given the extent of excavation area for the inlets and outlets. Fisheries and Oceans Canada expressed concerns regarding the Proponent's two millimetre sediment deposition threshold used to determine potential adverse effects to fish and fish habitat. Fisheries and Oceans Canada recommended that the Proponent provide additional details on potential dredging activity. It was recommended that the Proponent consult with Environment and Climate Change Canada and Fisheries and Oceans Canada prior to finalization of the Aquatic Effects Monitoring Plan.

Environment and Climate Change Canada noted concerns regarding the uncertainty in hydraulic modeling, indicating that residual effects to fish and fish habitat may occur from water level changes in Lake St. Martin and flow changes in the Dauphin River. Environment and Climate Change Canada suggested that access to shoreline habitats may be affected and abrupt changes in flow may lead to fish stranding. Fisheries and Oceans Canada expressed concerns regarding adverse effects to fish and fish habitat due to the predicted loss of flows in the Fairford and Dauphin Rivers. Fisheries and Oceans Canada noted that uncertainty remains as operation of the outlet channels for flood mitigation will likely occur during spring and potentially fall timing windows, depending on flood severity, which may contribute to effects to fish and fish habitat not represented by the Proponent's current modeling. Environment and Climate Change Canada and Fisheries and Oceans Canada recommended that due to the observed increases in flood magnitude and frequency, long-term monitoring should be included in the Aquatic Effects Monitoring Plan to capture effects to fish and fish habitat that may be exacerbated or accelerated by more frequent use of the outlet channels.

Fisheries and Oceans Canada stated that the Project would result in harmful alteration, disruption and/or destruction of fish habitat that may affect whitefish and walleye spawning grounds located in Birch Bay and Sturgeon Bay, food sources including re-distribution of fish and the ability to forage for both benthic and pelagic food sources, and migration patterns. Fisheries and Oceans Canada expressed concerns regarding the risk of death of fish within the outlet channels due to stranding and anoxic conditions during winter.

Environment and Climate Change Canada expressed concerns regarding the remaining uncertainty in terms of water supply effects to wetlands surrounding the outlet channels resulting in residual effects to fish and fish habitat. Environment and Climate Change Canada and Fisheries and Oceans Canada noted that the Proponent was not able to determine the extent and magnitude of adverse effects to the watersheds for Birch Creek and Buffalo Creek on fish and fish habitat. Fisheries and Oceans Canada expressed concerns regarding the effects of flow changes on spawning potential in Birch Creek and Buffalo Creek. Environment and Climate Change Canada and Fisheries and Oceans Canada emphasized the requirement for robust monitoring to inform adaptive management decisions for effects to fish and fish habitat due to project-related changes in Birch Creek and Buffalo Creek.



Fisheries and Oceans Canada stated that current offsetting proposed by the Proponent was adequately identified and would require additional refinement based on consultation with Indigenous groups.

Indigenous Groups

Berens River First Nation, Bloodvein First Nation, Brokenhead Ojibway Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, and York Factory First Nation expressed concerns that the Proponent had underestimated the likelihood and extent of potential effects to fish and fish habitat, due to limitations in baseline studies, uncertainty in data collection and quantification of fish habitat, and model predictions.

The Interlake Reserves Tribal Council, Misipawistik Cree Nation, Peguis First Nation, and Tataskweyak Cree Nation noted concerns regarding the Proponent's hydraulic and sediment modeling affecting the accuracy of the fish and fish habitat effects assessment. The Interlake Reserve Tribal Council expressed concern regarding the size and areal extent of the sediment plumes during commissioning and subsequent operations. Peguis First Nation expressed concerns regarding the extent and dispersion area of the Proponent's modeled sediment plumes from the LSMOC discharge into Sturgeon Bay on fish spawning, rearing and migration patterns, and the ability to forage for benthic and pelagic food sources.

Berens River First Nation, Black River First Nation, Bloodvein First Nation, Brokenhead Ojibway Nation, Dakota Tipi First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak First Nation, and York Factory First Nation expressed concerns regarding potential effects to fish health and fish habitat due to erosion, sediment transport and deposition. Sediment effects to spawning, rearing, migration patterns, and the ability to forage for benthic and pelagic food sources were noted.

The Interlake Reserves Tribal Council, the Manitoba Métis Federation, and Peguis First Nation noted that the Proponent's assessment of sediment transport and deposition failed to consider operations beyond commissioning, limiting predictions of potential effects to fish and fish habitat during flood conditions. The Interlake Reserves Tribal Council, Sagkeeng Anicinabe First Nation, Peguis First Nation, the Manitoba Métis Federation and Tataskweyak Cree Nation noted the importance of understanding the effects of sediment plumes for various flood scenarios on spawning, rearing, and hunting, including whitefish, pike, and pickerel fish species, within the Lake St. Martin Narrows and north basin. The Interlake Reserves Tribal Council and the Manitoba Métis Federation noted that the Proponent did not account for additive effects to fish and fish habitat due to the accumulation of sediment transported and deposited over multiple flood events. It was requested that the Proponent assess changes to habitat, including the percentage of spawning habitat, which would be affected under multiple flood scenarios. Peguis First Nation suggested the Proponent also consider the concentrations of total suspended solids in the plumes and the length of

exposure time to fish to inform the effects to fish health. The Manitoba Métis Federation requested that the Proponent provide a rationale for using a two millimetre deposition thickness threshold for determining adverse effects to aquatic habitat. The Manitoba Métis Federation indicated that the legacy effects of Project operations on fish and fish habitat are not well understood and requested the Proponent to develop a monitoring program and mitigation measures to prevent decline of fish populations. The Interlake Reserves Tribal Council, Sandy Bay Ojibway First Nation, Sagkeeng Anicinabe First Nation, and Pinaymootang First Nation disagreed with the Proponent's conclusion on residual effects to fish health and populations, and stated direct effects from sedimentation would occur to spawning and migration in Lake St. Martin. Berens River First Nation stated that monitoring of sediment effects to fish and fish habitat should extend further into Lake Winnipeg than currently proposed by the Proponent.

The Interlake Reserves Tribal Council, the Manitoba Métis Federation, Sandy Bay Ojibway First Nation, Sagkeeng Anicinabe First Nation, and Pinaymootang First Nation disagreed with the Proponent's assertion that there would be no residual effects to fish and fish habitat from changes in water quality, as the Proponent's assessment is inconsistent with Indigenous Knowledge and studies. The Interlake Reserves Tribal Council, Sandy Bay Ojibway First Nation, Sagkeeng Anicinabe First Nation, and Pinaymootang First Nation suggested that the Proponent work with Indigenous groups to fill gaps in the assessment of potential effects of sediment transport and deposition on fish and fish habitat in the Lake St. Martin Narrows and the north basin of Lake St. Martin.

Dauphin River First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation and Misipawistik Cree Nation disagreed with the Proponent's claim that changes to flow, water levels, and water velocity would not affect habitat utilization, foraging habitats, and availability of spawning habitat in the Fairford River, Dauphin River, Lake St. Martin Narrows, the north basin of Lake St. Martin, and Lake Winnipeg, including MacBeth Point and Reindeer Island. Particular concern was expressed for the overall health and survival of lake whitefish populations, including potential effects to whitefish eggs in Lake St. Martin. Peguis First Nation indicated that additional modeling of the sediment plume emanating from the Lake St. Martin Narrows would be required to assess how the potential long-term changes to bed sediments in the north basin of Lake St. Martin would affect fish spawning, rearing and migration patterns, and the ability to forage for benthic and pelagic food sources. It was indicated that the extent of fish habitat affected by Project construction and operation was underestimated and recommended that the Proponent engage with Indigenous groups to further quantify habitat utilization. The Manitoba Métis Federation noted that operation of the outlet channels in late fall and early spring may overlap with critical lifecycle phases, causing harm to whitefish eggs and larvae. The Manitoba Métis Federation requested that the Proponent provide operational commitments to protect fish and fish habitat during vulnerable lifecycle phases.

Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation disagreed with the Proponent's assessment of Project effects to fish health, survival, aquatic ecosystem productivity and function. The Manitoba Métis Federation noted the lack of detail around sediment stability, food sources for forage fish,



and habitat cover for forage fish. Little Saskatchewan First Nation and Misipawistik Cree Nation raised concerns regarding changes to nutrient levels and potential shifts to fish communities and habitat quality from accelerated eutrophication and algae blooms in Lake St. Martin, Lake Manitoba, Lake Winnipeg, and the Nelson River.

Berens River First Nation, the Interlake Reserves Tribal Council and Misipawistik Cree Nation expressed concerns regarding the loss of spawning habitat along the shorelines of Lake St. Martin and Lake Winnipeg and shoreline erosion due to operation of the Project. Fisher River Cree Nation and Dauphin River First Nation noted concerns regarding potential effects to Lake Whitefish as a result of reduced groundwater discharge rate in the discharge zones in Lake St. Martin.

Dakota Tipi First Nation disagreed with the Proponent's conclusion that operation of the channels would not affect fish populations and requested an independent review of potential effects from changes to local flow patterns at the inlets and outlets of the lakes and rivers. The Interlake Reserves Tribal Council also disagreed with the Proponent that there would be a negligible effect on fish distribution and abundance within the LAA, referring to the lack of quantitative assessment on fish habitat loss. The Interlake Reserves Tribal Council requested the Proponent commit to the development of mitigation measures in collaboration with Indigenous groups to lessen residual effects to fish abundance.

The Interlake Reserves Tribal Council, Lake St. Martin First Nation, Misipawistik Cree Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation voiced concerns about the decrease of flow rates in Birch Creek and Buffalo Creek leading to fish stranding and death, and potential effects to egg deposition and spawning habitat. Lake St. Martin First Nation expressed concerns regarding impacts to wetlands, water quality, and fisheries from reduced water levels in Birch Creek.

Peguis First Nation, Lake St. Martin First Nation, the Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Misipawistik Cree Nation, Pinaymootang First Nation and York Factory First Nation raised concerns regarding fish passage and fish migratory patterns between Lake Manitoba, Lake St. Martin and Lake Winnipeg, and the Fairford and Dauphin Rivers due to changes in flow and velocity and Project operation. The Manitoba Métis Federation indicated that further detail regarding the fish ladder replacement on the FRWCS was needed to understand potential effects to fish passage. Fisher River Cree Nation supported the Proponent's plans to conduct upstream and downstream fish surveys to monitor potential changes in fish passage and population. Misipawistik Cree Nation suggested that fish ladders be installed in the first four LSMOC drop structures to facilitate fish movement into Lake St. Martin as changes in fish passage could have long-term effects to the Lake St. Martin fishery.

Fisher River Cree Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding fish survival due to dissolved oxygen concentrations within the outlet channels under ice conditions. Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation questioned the feasibility of maintaining the required minimum baseflow during



drought conditions and low water levels in Lake Manitoba, with concerns for potential fish stranding. The Manitoba Métis Federation, the Interlake Reserves Tribal Council and Misipawistik Cree Nation noted the lack of habitat availability or habitat enhancement within the outlet channels, emphasizing the requirement for a fish rescue program to protect fish abundance and diversity.

Brokenhead Ojibway Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal council, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and York Factory First Nation expressed concerns regarding the introduction and spread of AIS due to Project operation, and potential adverse effects to fish populations, fish health, and quality of habitat. It was requested that the Proponent use mitigation and monitoring methods informed by input from Indigenous groups, to assess the speed and extent of AIS spread, with specific emphasis on zebra mussels and associated shells, to determine compensation for impacts to rights, claims, and interests.

Brokenhead Ojibway Nation, Fisher River Cree Nation, the Interlake Reserves Tribal council, the Manitoba Métis Federation, Misipawistik Cree Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding effects to fish from the potential for mercury methylation and other potential contaminants as a result of Project-related water level fluctuations in waterbodies within the LAA. It was requested that sampling programs and protocols, along with monitoring plans be developed that consider risk of bioaccumulation over the long-term and that Indigenous groups be consulted regarding the fish species, management thresholds, locations, and duration to be monitored.

Berens River First Nation, Bloodvein First Nation, Brokenhead Ojibway Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, and York Factory First Nation expressed concerns regarding the proposed offset measures in the Fish Habitat Offsetting Plan. It was also recommended that the Proponent commit to long-term monitoring, beyond two years, in all areas of habitat disturbance and offsetting to assess project effects. It was recommended that the Proponent engage with Indigenous groups during the development and implementation of offsetting and monitoring plans, including review of plans developed for other federal authorizations or permits. Concerns were raised regarding the proposed use of reactive adaptive management for potential effects to fish and fish habitat as a mechanism to manage uncertainty in the effects assessment.

A summary of the comments provided by Indigenous groups, along with Proponent and/or Agency responses, is provided in Appendix C of this draft EA report.

Public Groups

The RM of Grahamdale expressed concerns regarding effects of outlet excavation in Birch Bay and inlet excavation in the north basin of Lake St. Martin on spawning and fish abundance given a lack of baseline



data. The RM of Grahamdale stated concerns regarding altered water levels, flow and loss of shoreline habitat on fish health, spawning and survival in the Lake St. Martin Narrows and the north basin of Lake St. Martin. Concerns were noted regarding fish passage within the Dauphin and Fairford Rivers due to altered flow rates, in addition to an inability for fish to move from Lake Winnipeg to Lake St. Martin via the LSMOC.

The RM of Grahamdale expressed concerns regarding sediment transport and deposition, changes in flow patterns and potential effects to primary productivity, water temperature and spawning conditions in Lake St. Martin, affecting benthic and fish communities.

The RM of Grahamdale raised concerns regarding the reduction of spawning and habitat conditions in Birch Creek. The RM of Grahamdale noted specific concerns regarding the lack of baseline studies on fish use of the Buffalo Creek system. Concerns were also expressed around habitat connectivity, loss and isolation, including Birch creek and nearby ponds and wetlands, due to changes in system hydrology.

The RM of Grahamdale expressed concerns regarding fish utilization within the outlet channels, including potential stranding, overwintering, dissolved oxygen concentrations, maintenance of baseflow during periods of drought, and habitat availability or enhancement. The RM of Grahamdale recommended that the Proponent develop comprehensive monitoring of AIS dispersal.

The RM of Grahamdale noted the importance of maintaining fish populations and requested offsetting measures to consider a bypass fishway as the FRWCS only allows fish through when the gates are open, habitat restoration and enhancement, habitat creation and chemical or biological manipulations, such as fish stocking in the LAA.

7.1.3 Agency Analysis and Conclusion

Analysis of the Effects

Permanent Alteration or Destruction of Fish and Fish Habitat

The Agency recognizes that the Project may permanently alter or destroy fish and fish habitat in the PDA and LAA during construction and operation of the LMOC and LSMOC and concludes that residual effects to fish habitat may result in changes to fish movement and reductions in fish abundance. The Agency agrees with Fisheries and Oceans Canada that the proposed outlet channels themselves do not constitute appropriate or effective fish habitat and should not therefore be considered in offsetting calculations and planning. The Agency recognizes that the Proponent committed to developing a fish habitat offsetting plan, in consultation with Fisheries and Oceans Canada, as part of the *Fisheries Act* authorization process to offset any project-related harmful alteration, disruption, or destruction of fish habitat. The Agency accepts Fisheries and Oceans Canada's assertion that there are no technical barriers that would prevent the Proponent from developing an adequate fish habitat offsetting plan and understands that the Proponent is committed to continue working with Fisheries and Oceans Canada to develop a fish habitat offsetting plan and obtain a *Fisheries Act* authorization for the Project. The Agency is therefore of the view that fish habitat losses would be adequately addressed and unlikely to result in a significant change in fish abundance and distribution within the LAA and RAA, provided that more detailed biological data is collected prior to



construction to support development of a fish habitat offsetting plan and a *Fisheries Act* authorization is obtained. The Agency highlights the importance of the involvement of Indigenous groups in the development and implementation of the fish habitat offsetting plan for the Project.

The Agency recognizes that uncertainty exists regarding groundwater input to lakes, creeks, wetlands and drains to the east of the LMOC and north of the LSMOC, and potential project effects to fish and fish habitat in these areas. The Proponent did not sufficiently characterize locations of groundwater depressurization activities, volumes, and durations of groundwater pumping, and plans to return pumped groundwater to areas downgradient of the outlet channels, particularly the LSMOC, to determine if extents of effect and planned mitigations would address residual effects for permanent alteration or destruction of fish habitat. The Agency recognizes that uncertainty exists as to the effect of isolation of the Birch Creek watershed, the Watchorn Creek watershed, and the Big Buffalo Lake and Buffalo Creek watershed from surface water flow volumes due to the construction of drains on the upgradient side of each of the outlet channels, and the outlet channels themselves. The Agency does not agree with the Proponent's assessment that the effects of watershed isolation as noted above would be adverse but negligible in magnitude and restricted to the LAA. The Agency finds that the potential effects of both groundwater interception and surface water restriction have the potential to be adverse and high magnitude due to permanent alteration of fish habitat in Birch Creek and the Buffalo Creek complex. On that basis, the Agency agrees with Fisheries and Oceans Canada's recommendation that the Proponent collect data prior to construction to characterize the amount and quality of fish habitat present and fish habitat utilization in Birch Creek, Big Buffalo Lake and Buffalo Creek, and conduct a comprehensive flow and fish and fish habitat monitoring program for Big Buffalo Lake and Buffalo Creek to verify the results of the hydrologic model with respect to groundwater-surface water interactions. The Agency understands that there are outstanding concerns from Indigenous groups regarding potential project effects to Big Buffalo Lake, Buffalo Creek and the fish and fish habitat present in the surrounding fen ecosystem. The Agency highlights the importance of follow-up and monitoring for Birch Creek, Big Buffalo Lake and Buffalo Lake for the life of the Project to verify the accuracy of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures.

The Agency recognizes that the construction and operation of the Project are likely to result in increased sedimentation in receiving waterbodies for the outlet channels. The Agency anticipates that residual effects of sediment deposition on fish and fish habitat are expected to be moderate and will occur sporadically over the long term focused within the LAA but are expected to extend into the RAA (i.e., northern basin of Lake Winnipeg). The effects would be irreversible and occur in undisturbed areas. The Agency notes the Proponent has committed to the use of appropriate erosion and sediment control measures during construction (e.g., silt curtains, excavating in "dry" conditions, erosion control measures) and operation (e.g., revegetation and armouring the channels, gradual and controlled gate opening during commissioning, and commissioning scheduled to occur during July to September to avoid sensitive spawning periods) which will mitigate the mobilization of sediment to some extent. The Agency agrees with Fisheries and Oceans Canada that sediment release associated with commissioning of the outlet channels will be an effect to fish habitat that requires offsetting, due to the direct effect on food sources for focal fish species. The Agency accepts Fisheries and Oceans Canada's assertion that there are no technical barriers that would prevent the Proponent from developing an adequate fish habitat offsetting plan and understands that the Proponent committed to continue working with Fisheries and Oceans Canada to develop a fish

habitat offsetting plan and obtain a *Fisheries Act* authorization for the Project. The Agency recognizes that it is not possible to fully eliminate the release of sediment into the aquatic environment, especially fine silts and clay, but that mitigation measures and follow-up and monitoring program, in addition to the *Fisheries Act* authorization will substantially reduce sediment mobilization and deposition within fish bearing-waters.

The Agency recognizes that operation of the LMOC and LSMOC will unavoidably provide additional dispersion routes for AIS to colonize Lake Manitoba, Lake St. Martin, and Lake Winnipeg. Species such as rainbow smelt, zebra mussel, spiny water flea and Prussian carp are either already in the RAA or could enter the RAA with or without the Project. The Agency anticipates that the likelihood that the Project will notably increase the risk of AIS dispersal in the LAA and RAA is low. The Agency notes that the Proponent recognizes that zebra mussels may have a greater effect in Lake St. Martin given the lake size and shoreline relative to Lake Winnipeg. The potential effect of AIS is irreversible and would occur in an undisturbed area extending through the RAA. The Agency recognizes that it is not possible to fully eliminate the introduction of AIS into the aquatic environment, but that mitigation measures within the Aquatic Effects Monitoring Plan and *Fisheries Act* authorization will substantially reduce the potential for AIS colonization within fish-bearing waters.

The Agency recognizes that the effect of realignment, isolation, and diversion of drains and headwater streams on fish habitat and fish production of focal fish species is expected to be adverse, but negligible in magnitude and restricted to the LAA. The effects would be irreversible, begin during construction and continue over the long-term, and will occur in both previously disturbed (LMOC) and predominantly undisturbed (LSMOC) fish habitat. Although Project effects are expected, the Agency recognizes that most diversions are temporary and will be offset by the proposed mitigation measures and timing of construction during the *Manitoba Restricted Activity Timing Window for the Protection of Fish and Fish Habitat*. The Agency highlights the importance of follow-up and monitoring of realigned, diverted, and isolated headwaters and streams for a sufficient time period to verify the accuracy of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures.

The Agency recognizes that changes in fish habitat will occur due to changes in flow patterns in the Fairford and Dauphin rivers, at the inlet and outlet to the LMOC in Watchorn Bay and Birch Bay, and at the inlet and outlet to the LSMOC in the northeast basin of Lake St. Martin and Sturgeon Bay. The Agency agrees that the potential effect on fish habitat in the rivers and lake areas is expected to be negligible in magnitude, long-term in duration, sporadic in frequency, and confined to the LAA. The Agency acknowledges that the LMOC and LSMOC will only be used during high flow events, and that the flows within the Fairford and Dauphin rivers will remain unchanged during spring and fall. Thresholds for offsetting will be developed in consultation with Fisheries and Oceans Canada and are described in the Aquatic Effects Monitoring Plan. The Agency highlights the importance of follow-up and monitoring of flow patterns in the Fairford and Dauphin rivers, and at the inlets and outlets of the outlet channels for the life of the Project to verify the accuracy of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures.

The Agency recognizes the importance of the involvement of Indigenous groups in the development and implementation of follow-up and monitoring plans, including the establishment of triggers and thresholds



that would inform the implementation of contingency measures. The Agency understands that the Proponent has established an EAC, which would provide a forum to share project information, obtain input and feedback from potentially affected Indigenous groups, and establish communication and reporting protocols. The EAC is further discussed in Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Importance) of this draft EA Report.

Change in Fish Passage

The Agency recognizes that the replacement or installation of new stream crossings along the PR 239 roadway, and as part of road realignments and construction road development have the potential to become a fish barrier. The Agency is of the view that these effects have been mitigated by the Proponent's plans to use clear-span bridges, maintain flows at all times to permit the safe passage of fish, and adhere to Manitoba's *Stream Crossing Guidelines for the Protection of Fish and Fish Habitat*. The Agency notes the importance of ongoing follow-up and monitoring to verify the results of the environmental assessment and the effectiveness of mitigation measures, particularly verification that closed- and open-bottomed culverts used for any road realignment or construction purpose are operating as planned and not introducing a barrier to fish movement.

The Agency recognizes that changes to the distribution of fish between the north basin of Lake St. Martin and Sturgeon Bay in Lake Winnipeg is unavoidable with the LSMOC providing a new year-round conduit in addition to the Dauphin River. The Agency is of the view that that movement of fish out of Lake Manitoba to Lake St. Martin and out of Lake St. Martin to Lake Winnipeg through the outlet channels is unavoidable and cannot be completely mitigated. While fish may be redistributed, the effect on focal fish population in the LAA and RAA from passive or active movement of fish in the channels is expected to be neutral. The Agency notes the importance of monitoring and follow-up programs to verify predictions, verify the effectiveness of mitigation measures, and to inform the need for contingency measures.

The Agency is of the view that a change in fish passage is possible due to changes in attraction flows from the operation of the LMOC and LSMOC, both in alteration of the flow rates of the Fairford and Dauphin rivers, and in introduction of new plumes from the outlet channels. The Agency notes that it is not possible to prevent fish from entering the outlet channels, and mitigations to alleviate the effects to spawning fish populations are not possible once the outlet channels are in operation (particularly the year-round operation of the LSMOC at a baseflow). The Agency acknowledges that it is not likely that changes in the number of walleye, suckers, northern pike and lake whitefish (depending on spawning season) ascending the Fairford and Dauphin rivers are likely to affect fish population sizes or productivity. The Agency notes the importance of monitoring and follow-up programs to verify predictions, and to inform the need for contingency measures.

The Agency emphasizes the importance of monitoring measures and follow-up programs to evaluate the accuracy of the predictions related to change in fish passage and passive and active movement as well as attraction flows within the Fairford and Dauphin rivers. The Agency recognizes the importance of the involvement of Indigenous groups in the development and implementation of follow-up and monitoring plans, including the establishment of triggers and thresholds that would inform the implementation of contingency measures.

Change in Fish Health and Mortality

The Agency agrees with Environment and Climate Change Canada that nitrogen-based explosives and their residues could cause adverse nutrient-related effects to the aquatic environment. Best management practices are important to prevent runoff, leaching or spills of nitrogen-based explosives and their residues. The Agency agrees with Fisheries and Oceans Canada that the percussive effects of blasting may result in fish mortality or injury and damage to fish eggs. Blasting during restricted activity periods must be avoided to limit percussive injuries to fish and damage to fish eggs. The Agency understands that the Proponent committed to developing site-specific blasting protocols for the Project and that a *Fisheries Act* authorization will be required for the Project, which will include requirements for the Proponent to comply with blasting guidelines. The Agency is of the view that this would adequately mitigate potential adverse effects to fish as a result of blasting. The Agency is of the view that mitigation measures proposed by the Proponent to address the introduction of deleterious substances into waterbodies are likely to be highly effective, and will address the risks to fish health and mortality and contain any releases.

The Agency notes mitigation measures for sediment management outlined in Chapter 6.1 Surface Water. The Proponent concluded that sediment concentrations during commissioning and residual sediments mobilized during subsequent operations would be below lethal limits and fish would be readily able to move away from sediment plumes in receiving waterbodies. The Agency is of the opinion that mitigation measures to capture and remove sediment prior to commissioning are required and achievable, resulting in a reduced commissioning sediment effect on lake substrate, and on primary producer and fish populations in the receiving lake waters. The Agency agrees that the scale of sediment transport after commissioning is within the natural range of sediment transport for the lake systems involved, however the location and subsequent distribution into novel areas will have an adverse effect on fish health and mortality that is likely to be low in magnitude and restricted to the LAA. The Agency notes the importance of monitoring and follow-up programs to verify predictions, verify the effectiveness of erosion mitigation measures, and to inform the need for contingency measures.

The Agency recognizes that the hydrological regime of the outlet channels may result in the direct or indirect death of or harm to fish. There is potential for fish to become stranded during periods when the water control structure gates are closed. During operation, the Project increases the ability of fish to move in a downstream direction by providing additional routes for fish to move between lakes. The Agency acknowledges that although stranding and mortality of individual fish or fish eggs along the margins of the channels may be unavoidable, a change in the status of fish populations within the RAA, including their abundance and distribution, is not likely. The Agency recognizes that fish species and populations that could be affected are currently highly disturbed by commercial fisheries and the mortality effects of the Project on fish would be cumulative to existing baseline disturbances (Chapter 8.3 Cumulative Effects). The Agency understands that the Proponent committed to developing a fish rescue plan and appropriate site-specific mitigation and monitoring measures, including measures to mitigate effects to surface water quantity and adjustments to outlet channel flow rates, in consultation with federal and provincial authorities and Indigenous groups. Therefore, the Agency is of the view that potential effects to fish survival due to project-related changes to hydrological regimes within the PDA and LAA would be adequately mitigated.



The Agency recognizes that increased access, the presence of a large workforce, and the construction of new roads that may provide new or improved access to previously inaccessible lakes and streams will result in an increased risk of fish mortality from fishing activities. The Project has the potential to increase fishing pressure, and the Agency agrees that the potential residual effect to large bodied focal fish species is expected to be adverse, occur during construction and operation, be medium term, low in magnitude, be continuous, reversible, and restricted to the LAA. The Agency understands that while compliance with provincial fishing regulations, which are established annually, will aid in preventing adverse effects to fish associated with potential overfishing, there are outstanding concerns from Indigenous groups regarding the cumulative effects to fish population health and mortality. The Agency highlights the importance of follow-up and monitoring for the life of the Project to verify the accuracy of the environmental assessment predictions, verify the effectiveness of mitigation measures, and to inform the need for contingency measures.

The Agency recognizes that flooding and drying/re-wetting cycles in terrestrial habitats is part of the hydrological regime planned for the LMOC and LSMOC operation. While the Agency agrees that operation of the outlet channels would result in a net reduction in flooded terrestrial habitat in Lake Manitoba and Lake St. Martin during high-water periods, the Agency notes that effects related to the drawdown and rebound of water levels in Lake St. Martin north basin related to the hydraulic model and LSMOC design updates to account for head loss at the Lake St. Martin Narrows have not been considered in the Proponent's assessment of effects. The Agency notes that the frequency of drawdown and rebound of water levels in the north and south basins of Lake St. Martin will expose shorelines and nearshore wetland areas to potentially higher production of methyl mercury and therefore potentially higher risk of methyl mercury bioaccumulation in fish populations within the lake. There are no mitigations to address this higher risk and the Agency understands that there are outstanding concerns from Indigenous groups regarding potential project effects from methyl mercury bioaccumulation. The Agency highlights the importance of follow-up and monitoring to verify the accuracy of the environmental assessment and inform the need for contingency measures.

Conclusions

The Agency is of the view that the Project is not likely to cause significant adverse effects on fish habitat and fish populations. The Agency acknowledges that the adverse effects to fish habitat, fish passage, and fish mortality and health would be reduced following the implementation of mitigation measures, monitoring, and follow-up programs. The Proponent has identified the creation of additional habitat and fish stocking as contingencies. The Agency emphasizes the importance of monitoring measures and follow-up programs to evaluate the accuracy of the predictions related to fish habitat, fish passage and fish mortality and health, and to determine the effectiveness of mitigation measures to minimize adverse effects.

Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs necessary to ensure that there are no significant adverse environmental effects to fish and fish habitat, including fish species at risk. The following key mitigation measures are based on mitigation measures, monitoring, and

follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups and members of the TAG.

Permanent Alteration or Destruction of Fish and Fish Habitat

- Implement a fish habitat offsetting plan that is compliant with the *Authorizations Concerning Fish and Fish Habitat Protection Regulations* pursuant to the *Fisheries Act*, which will be developed in consultation with relevant provincial and federal authorities and Indigenous groups, and to the satisfaction of Fisheries and Oceans Canada, to counter-balance residual harmful alteration, disruption, or destruction of fish habitat, and death of fish. The plan will be shared with Indigenous groups at least 30 days prior to formal submission to Fisheries and Oceans Canada. The Proponent will provide the approved offsetting plan to the Agency prior to implementation.
- Project activities in or near fish-bearing waterbodies will be conducted in accordance with Fisheries and Oceans Canada's *Measures to Protect Fish and Fish Habitat*, adhering to *Manitoba Restricted Activity Timing Windows of the Protection of Fish and Fish Habitat* and *Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat* when required, in accordance with any other mitigation measures stipulated by Fisheries and Oceans Canada in the *Fisheries Act* authorization for the Project.
- Prevent discharges that would be deleterious to fish or fish habitat, in accordance with the pollution prevention provisions of the *Fisheries Act* and taking into account the CCME's *Canadian Environmental Quality Guidelines for the Protection of Aquatic Life* and MWQSOG *Tier III* for fish and other aquatic life, whichever is most protective of fish and fish habitat. Prior to construction, the Proponent will develop, in consultation with Indigenous groups and relevant federal and provincial authorities, mitigation measures to reduce the potential for project-related erosion and sediment release in fish-bearing waterbodies, including wetlands with open water, which include the following:
 - During construction, conduct excavations for the inlets and outlets of the outlet channels within turbidity curtains or dewatering cofferdams taking into account Fisheries and Oceans Canada's *Interim standard: in-water site isolation*, such that excavations are isolated to prevent or minimize the migration of disturbed sediments from entering the surrounding aquatic environment.
 - Commission outlet channels between July 1 and September 14 to comply with the Fisheries and Ocean Canada Restricted Activity Timing Windows.
- Maintain a continuous baseflow during periods when the WCS is closed to provide adequate water quality conditions, including dissolved oxygen above a threshold of 6 milligrams per litre, for the protection of aquatic life. The baseflow will meet appropriate CCME's *Canadian Environmental Quality Guidelines for the Protection of Aquatic Life* and MWQSOG *Tier III* for fish and other aquatic life, whichever is most protective of fish and fish habitat. The Proponent will conduct periodic operation of the WCS to remove accumulated organic matter to reduce the sediment oxygen demand.
- Comply with the *Fisheries Act Aquatic Invasive Species Regulations* and implement measures, during all phases of the Project, to avoid the introduction or propagation of aquatic pathogens or AIS in the RAA. This includes inspecting, cleaning and disinfecting all equipment and machinery that have been in contact with other aquatic systems before entering and leaving the Project site and

prior to work in any watercourse or waterbody. In the event that AIS are discovered during inspection, equipment and machinery shall be removed from the Project site and Manitoba Natural Resources and Northern Development notified.

- Operate the outlet channels in a manner that does not impede fish passage, spawning and egg incubation in Fairford and Dauphin Rivers during spring and fall spawning periods (September 15 - June 15) in consultation with relevant provincial and federal authorities and Indigenous groups.

Change in Fish Passage

- Design and install clear-span bridges or properly sized and installed closed-bottom or open-bottom culverts that provide hydraulic conditions suitable for fish passage.
- Prior to commissioning, develop in consultation with Fisheries and Oceans Canada, Indigenous groups, and other federal or provincial authorities, guidelines for graduated adjustments to outlet channel flows that will be implemented during closing of the WCS to avoid potential fish stranding. Prior to commissioning, fish rescue and location planning will be undertaken in consultation with Fisheries and Oceans Canada and Indigenous groups, and in accordance with all applicable laws including any conditions of authorization issued under the *Fisheries Act*. The Proponent will determine the interest of and provide opportunities for Indigenous groups to participate in fish rescue and relocation programs.
 - Monitoring for fish stranding will occur following WCS closures for both outlet channels. If stranded fish are observed at monitoring locations, including the LSMOC drop structures, then fish rescue will be implemented immediately to collect and release stranded fish. Shoreline searches for fish mortality in the LMOC and LSMOC will be conducted after ice break up in the spring, if low dissolved oxygen concentrations are recorded during winter water quality monitoring.
 - Maintain a minimum water depth of one metre above the outlet channel invert in the pools between the drop structures when the LSMOC WCS gates are closed. Prevent upstream fish passage through the LSMOC.
- Install, prior to construction, screens on the water supply intake structures taking into account Fisheries and Ocean Canada's *Interim Code of Practice for End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater* and in accordance with any conditions of authorization issued under the *Fisheries Act* requirements to avoid entrainment or impingement of fish.

Change in Fish Health and Mortality

- Conduct blasting, following consultation with Fisheries and Oceans Canada and other relevant authorities, taking into account Fisheries and Ocean Canada's *Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters* and in accordance with any conditions of authorization issued under the *Fisheries Act* and its regulations.

Follow-up and Monitoring

- Prior to construction, develop a follow-up program, in consultation with Indigenous groups and relevant federal and provincial authorities, to monitor changes in fish spawning, fish abundance, fish movement, fish habitat metrics, and fish tissue mercury concentrations to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and inform the need for contingency measures. This follow-up program will be implemented during all project phases and must include:
 - A follow-up to assess the effectiveness of all the elements of the fish habitat offsetting plan, ensure the achievement of the offsetting objectives set and deploy corrective actions adapted to the results of the follow-up. This program will have to be improved in the event that the follow-up demonstrates that the Project leads to greater residual effects than anticipated.
 - Monitoring sediment quality of the aquatic environment for project-related changes. Parameters should include particle size distribution, total organic carbon, metals, nutrients, hydrocarbons, and any additional parameters monitored during baseline sediment quality monitoring. Monitoring results should be compared with baseline sediment quality monitoring results.
 - Monitoring frequency will be developed in consultation with Fisheries and Oceans Canada, Environment and Climate Change Canada, and Indigenous groups to include commissioning, post-commissioning and provisions to capture effects after a minimum number of outlet channel WCS gate openings and a range of magnitudes of floods including any new record floods. When the WCS has been closed for more than a year, monitoring would occur at to be determined intervals until outlet channel operation.
 - At a minimum, monitoring of aquatic habitat conditions, including substrate composition, distribution of aquatic macrophytes, and benthic invertebrate community (species composition and abundance) will be conducted at the inlets and outlets of the outlet channels, representation shoals in the south and north basins of Lake St. Martin, Sturgeon Bay and selected locations near McBeth Point and the southeast shore of Reindeer Island in Lake Winnipeg, and a transect within the Lake St. Martin Narrows. Monitoring of habitat conditions in the outlet channels, including both open water and under ice, will assess, at minimum, dissolved oxygen and water depth.
 - The list of fish species to be monitored will be developed in consultation with Fisheries and Oceans Canada, Indigenous groups, and other federal and provincial authorities. Fish community composition and population metric monitoring will be conducted in Lake St. Martin and Sturgeon Bay. Fish utilization of habitat will be monitored at Birch and Buffalo Creeks.
 - Fish utilization of the Dauphin and Fairford rivers by spawning species. Larval fish drift will be monitored in the Fairford and Dauphin rivers. Monitoring of lake whitefish spawning will be conducted in Lake St. Martin and Sturgeon Bay.
 - Adult and larval fish movement, fish occurrence and habitat use will be monitored within and at the outlets of the LMOC and LSMOC. Monitoring for potential egg deposition and incubation will occur below the LMOC WCS and the most downstream drop structure on the LSMOC.
 - Additional details regarding surface water quality monitoring are outlined in Chapter 6.1 Surface Water.

The Agency considers the mitigation measures, including offsetting, monitoring, and follow-up programs proposed by the Proponent listed in Section 7.1.3 to be necessary to prevent significant adverse effects to fish and fish habitat. The Agency also considers the mitigation measures, monitoring, and follow-up programs identified through expert advice from federal authorities and comments received from Indigenous groups and the public as necessary to ensure there are no significant adverse effects to fish and fish habitat.

7.2 Migratory Birds

The Project could cause residual adverse effects to birds and their eggs, nests, and habitat, including migratory birds, as defined in the *Migratory Birds Convention Act, 1994*, and bird species at risk listed under Schedule 1 of SARA or assessed as Endangered, Threatened, or of Special Concern by COSEWIC, through habitat loss or alteration, and changes in bird mortality risk.

The Agency is of the view that the Project is not likely to cause significant adverse effects to migratory birds or bird species at risk, after taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal authorities, Indigenous groups, public and members of the TAG.

7.2.1 Proponent's Assessment of Environmental Effects

The Proponent identified 14 migratory bird species listed as at risk under Schedule 1 of SARA, that may have suitable habitat in the LAA and RAA, of which 11 were observed during baseline surveys: bank swallow (*Riparia riparia*), barn swallow (*Hirundo rustica*), bobolink (*Dolichonyx oryzivorus*), common night hawk (*Chordeiles minor*), eastern whip-poor-will (*Antrostomus vociferus*), evening grosbeak (*Coccothraustes vespertinus*), horned grebe (*Podiceps auratus*), least bittern (*Ixobrychus exilis*), olive-sided flycatcher (*Contopus cooperi*), red-headed woodpecker (*Melanerpes erythrocephalus*), and yellow rail (*Coturnicops noveboracensis*) (Appendix B Species at Risk). The remaining three migratory species at risk, eastern wood-pewee (*Contopus virens*), golden-winged warbler (*Vermivora chrysoptera*) and piping plover (*Charadrius melodus circumcinctus*) were noted by the Proponent to be unlikely to occur in the LAA, based on baseline surveys and historical records (i.e., Manitoba's Piping Plover Recovery Program), that there have been no observations or signs of their activity in the PDA and LAA, and predicted to have low potential interactions with the Project, considering habitat suitability in the LAA. For migratory bird species whose nests are protected year-round under Schedule 1 of the *Migratory Birds Regulations*, the Proponent noted that only the ranges of great blue heron and pileated woodpecker overlap the RAA but did not observe their rookeries or nests in the PDA.



Critical habitat identified in the recovery strategies for eastern whip-poor-will³³ and red-headed woodpecker³⁴ are located within the LAA. The Project overlaps with 7.7 percent of the area identified to contain critical habitat for red-headed woodpecker and 2.2 percent of the area identified to contain critical habitat for eastern whip-poor-will in the LAA. However, the Proponent noted that baseline study observations indicate that the portion of the eastern whip-poor-will federally designated critical habitat did not contain the forest habitat characteristics necessary for the survival or recovery of the species (e.g., suitable nesting and foraging habitat), with the closest potential habitat identified five kilometres away, in the LAA. Red-headed woodpecker critical habitat was identified in the recovery strategy as overlapping the LMOC LAA. The Proponent did not detect the presence of this species in the PDA near the PR 239 realignment and that Environment and Climate Change Canada data indicated known critical habitat within the LAA was located 600 metres away from the PR 239 realignment, therefore the Proponent does not consider this area critical habitat as defined by the recovery strategy to contain the biophysical attributes required by the species.

Habitat Loss or Alteration

Project construction would directly remove or alter 1,722.4 hectares of terrestrial and aquatic habitat (including wetlands and shallow open waters) within the PDA used by migratory birds and species at risk. Construction activities including vegetation clearing and ground disturbance which may result in sensory disturbance and habitat avoidance through increased noise, vibration, and light levels could cause residual effects to migratory birds, their habitat and habitat use. The Proponent noted that construction noise could reduce the number of migratory birds, such as ducks and geese, breeding or staging in aquatic habitats, particularly at Reed Lake, Clear Lake, and Goodison Lake in the LAA. However, it was anticipated that noise and activity associated with bridge construction would not affect birds such as barn swallows, as construction would occur outside of the breeding bird window (April 1 to August 31).

Vegetation clearing is expected to increase habitat fragmentation within the LAA, notably north of Lake St. Martin, with the removal of tall trees and shrubs along the ROWs within the PDA, however low shrubs, herbs, grasses, and non-vascular cover would be retained as habitat for migratory birds. Development of construction camps and staging areas are expected to reduce red-headed woodpecker, yellow rail, and least bittern habitat in the LAA as complete avoidance of natural uplands, wetland areas, and sensitive wildlife areas may not be possible for these activities. The Proponent identified that edge effects, fragmentation, and altered wetland function would persist through operations.

³³ Environment and Climate Change Canada. (2018). *Recovery Strategy for the Eastern Whip-poor-will (Antrostomus vociferus) in Canada. Species at Risk Act Recovery Strategy Series*. Retrieved February 7, 2024, from https://publications.gc.ca/collections/collection_2018/eccc/En3-4-300-2018-eng.pdf

³⁴ Environment and Climate Change Canada. (2019). *Recovery Strategy for the Red-headed Woodpecker (Melanerpes erythrocephalus) in Canada. Species at Risk Act Recovery Strategy Series*. Retrieved February 7, 2024, from <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/red-headed-woodpecker.html>



Table 10 Migratory Bird Species at Risk Habitat Losses within the Project Development Area, Local Assessment Area, and Regional Assessment Area

Migratory Bird Species Common Name	Area of Habitat Loss in the PDA (hectares)	Area of Habitat Loss in the LAA (hectares)	Area of Habitat Loss in the RAA (hectares)	Percent of Habitat Loss in LAA	Habitat Loss due to LMOC (hectares)	Habitat Loss due to LSMOC (hectares)
Eastern whip-poor-will	14.7	676.1	9,860.9	2.2	14.7	0
Red-headed woodpecker	165.2	2,135.3	16,568.5	7.7	165.2	0
Bobolink	814.1	8,220.1	68,631.9	9.9	799.5	14.6
Barn swallow	706.5	8,745.9	72,738.0	8.1	702.5	4.0
Least bittern	164.9	6,274.8	11,376.5	2.6	86.3	78.6
Horned grebe	38.6	4,608.4	36,392.7	0.8	38.6	0
Yellow rail	476.9	6,814.2	38,954.9	7.0	272.2	204.6

Due to predicted Project effects to surface water and groundwater flow during construction and operation (see Chapters 6.1 and 6.2), the Proponent expected altered wetland function adjacent to the outlet channels that may extend into the LAAs. The anticipated wetting of the landscape up-gradient and drying of the landscape down-gradient due to channel construction would result in the indirect loss or alteration of suitable wetland habitat for migratory birds along both outlet channels. The Proponent noted with reductions in water flows, there is potential decrease in insect prey abundance along the Birch Creek, directly affecting species including barn swallows. Similarly, in Buffalo Creek, there may be decreased habitat and a reduction in insect prey, having potential effects for olive-sided flycatcher and common nighthawk.

The Proponent expected that the loss or alteration of wetland habitat near the LSMOC and alteration of wetland water levels along the LMOC may decrease breeding habitat for migratory birds, including wetland dependent species at risk (horned grebe, least bittern and yellow rail). The Proponent noted, as floodwaters would be diverted through the outlet channels, affecting only sub-optimal nesting habitat (i.e., side slopes). The Proponent indicated that the altered wetland function may be mitigated by the establishment of wetland habitat, through the implementation of the wetland offsetting program. The wetland offsetting program would establish wetland habitat lost during construction, including peatlands, Class III, IV and V wetlands providing replacement habitat for migratory birds and species at risk. The

Proponent determined that Class I and II³⁵ wetlands are unlikely to be used by wetland-dependent migratory birds and species at risk (e.g., yellow rail, least bittern, horned grebe) for breeding, therefore, mitigations or offsetting of these potential effects were not provided. The Proponent noted 73.4 hectares of Class II wetlands in the PDA would be directly affected by the Project but determined that these wetlands have lower suitability breeding habitat in wet years (less than 10 percent of the time) compared to Class III, IV, and V wetland habitat.

The Proponent indicated there could be potential residual effects to migratory birds from fluctuating water levels during operation under flood scenarios. Predicted effects included shoreline flooding reducing breeding and staging areas of waterfowl in the nesting islands, overwater nests, and shallow marshes along the shorelines.

Change in Mortality Risk

During construction and operation, vegetation clearing and mowing may result in the direct mortality of individuals and the destruction of nests, which may contain eggs or juveniles. These migratory birds may be at risk of mortality by vehicle collisions or by heavy equipment effects during the construction and operation; however, mortality risk would decline throughout operation. The Proponent anticipated, however, that increased road vehicle traffic and use of quarries during construction would deter nesting by ground nesting migratory bird species including species at risk (e.g., common nighthawk, bobolink).

Changes in hunting/trapping access and predation along the outlet channels may result in increased hunting pressure during operation, potentially increasing migratory bird mortality risk (migratory game birds). The risk of mortality increases during the gate opening of the outlet channels during flood conditions as a result of drowning from sudden rises in water levels. During operation, there is a risk of mortality to migratory birds from collision and electrocution from the LSMOC distribution line. The distribution line is 12 metres above ground which is below surrounding forest land cover and is greater than 400 metres from open water.

Project activities including construction of ancillary buildings and bridges, use of heavy machinery, and operation of new and existing quarries and borrow pits, may adversely affect migratory birds including avian species at risk, such as barn swallow and common nighthawk, as they may establish nesting sites. Contaminants (e.g., road salts) from the PR 239 road realignment may be washed into adjacent wetlands, directly affecting local migratory bird health and mortality risk.

The Proponent concluded that with their proposed mitigation measures, the residual effects are not considered significant, as the Project is not expected to threaten the viability of migratory birds. The Proponent expected alteration of movement of migratory birds at the local and individual scale, however, it

³⁵ Class I wetlands are those retaining water for one week or less while Class II wetlands are those retaining water for one week to one month, mainly existing in spring after winter snow melts or large rain events. See Stewart, R.E. and H.A. Kantrud. (1971). *Classification of Natural Ponds and Lakes in the Glaciated Prairie Region*. Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, Washington, D.C., USA. Resource Publication 92. 57 pp.



is not anticipated it to occur at the regional scale or to affect migratory patterns within the Central Flyway³⁶ bird migration route. It is not expected to alter the birds' ability to fly along or across the channels, and the outlet channels are not expected to provide meaningful forage, escape cover, or nesting habitat for migratory birds. During construction, the Proponent would oversee and assure remediation of the contamination to the appropriate regulatory standards. Therefore, the Proponent predicted no changes to migratory bird health or mortality risk due to changes in water quality in the RAA as a result of Project activities.

7.2.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada acknowledged the Proponent's commitment to offset for direct loss of Class III, IV, and V wetlands, and peatlands, however, expressed concerns that the direct loss of wetlands from the Project in combination with intense historical and ongoing small-scale wetland loss may contribute to cumulative effects. They recommended wetland offset for the loss of Class II wetland habitat for yellow rail at the same ratios as Class III, IV, and V wetlands (i.e., 2:1 or 3:1). In addition, Environment and Climate Change Canada recommended the offset should contain biophysical attributes to support yellow rail life history and ensure that habitat features are available within restored wetlands.

Environment and Climate Change Canada is of the view that there remains large uncertainty in terms of water supply effects to wetlands surrounding the channels and resulting effects to migratory birds and avian species at risk utilizing those habitats. Environment and Climate Change Canada recommended a monitoring plan and adaptive management plan be developed for Big Buffalo Lake and Birch Creek wetland complexes, to detect effects to migratory birds, which includes monitoring Big Buffalo Lake and Birch Creek water levels. They also expressed concerns regarding the described Autonomous Recording Unit malfunctions and resulting loss of baseline data collection and recommended additional baseline data be collected prior to construction to ensure effects to migratory birds are detected and the adaptive management plan is triggered. Any changes to wetland functions would need to be compensated as per the Wetland Compensation Plan.

Environment and Climate Change Canada disagreed with the Proponent's conclusion that Project residual effects to least bittern³⁷ and piping plover³⁸ would be low or negligible. Residences (nests) are protected during the breeding season (as per the residence descriptions, Recovery Strategies, the *Migratory Birds*

³⁶ Central Flyaway: a bird migration route that encompasses North America's interior from Canadian Boreal Forest, along the Great Plains to the USA Gulf Coast and includes the RAA.

³⁷ Environment Canada. (2011). *Recovery Strategy for the Least Bittern (Ixobrychus exilis) in Canada. Species at Risk Act Recovery Strategy Series*. Retrieved February 7, 2024, from https://www.registrelep.gc.ca/virtual_sara/files/plans/rs_least_bittern_e.pdf

³⁸ Environment Canada. (2012). *Recovery Strategy for the Piping Plover (Charadrius melodus melodus) in Canada. Species at Risk Act Recovery Strategy Series*. Retrieved February 7, 2024, from https://www.registrelep-sararegistry.gc.ca/virtual_sara/files/plans/rs_piping_plover_melodus_e1.pdf

Convention Act, 1994 and SARA) for both species. If residences (nests) or habitat are identified as being occupied by least bittern, a buffer of 500 metres around the documented breeding activity will be treated as critical habitat. Environment and Climate Change Canada recommended that if least bittern or piping plover are identified during pre-construction surveys, a species-specific mitigation and monitoring plan should be developed and implemented.

Environment and Climate Change Canada expressed concerns that the Proponent did not address potential residual effects to migratory birds resulting in destruction of nests and direct mortality such as operational flooding of vegetated portions of the outlet channels during the migratory bird nesting period. There could be potential residual effects from harmful substances migrating into wetlands or in a place from which it may enter such waters, used by migratory birds. Overall, Environment and Climate Change Canada recommended that monitoring and follow up programs be developed to assess the effectiveness of mitigation measures intended to prevent harm to migratory birds and avian species at risk and waters frequented by migratory birds. Adaptive management should be implemented if mitigation measures proved to be ineffective in avoiding/reducing harm to migratory birds and their nests.

Environment and Climate Change Canada expressed concerns regarding potential effects to migratory birds along the distribution line and recommended monitoring for potential mortality of migratory birds and the application of adaptive management measures if mortality is detected, including mitigation measures implemented to reduce mortality (e.g., tools to improve visibility day and night, roost deterrents).

Indigenous Groups

Fisher River Cree Nation, Hollow Water First Nation and Dakota Tipi First Nation expressed concerns regarding effects of changes to surface water quality on migratory birds and waterfowl due to unpredictable variabilities experienced during Project operation. Dakota Tipi, the Interlake Reserves Tribal Council, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation also expressed concerns regarding the release of harmful substances to waters, and the effect on migratory birds within riparian and wetland habitat and along roadways. They raised concerns that the Proponent has not explained residual effects of the Project on wetlands in relation to loss of habitat functions for migratory birds or identified mitigation measures for altered habitat functions resulting from the Project and requested the implementation of more detailed monitoring and follow-up plans.

Hollow Water First Nation, the Interlake Reserves Tribal Council, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns about detrimental impacts due the Project's lack of water regulation and wetland compensation, potential residual effects, and mitigations measures for wetland off-setting in relation to breeding, nesting, and rearing activities of migratory birds. Manitoba Métis Federation, Norway House Cree Nation, Hollow Water First Nation and Fisher River Cree Nation expressed concerns regarding the effect of the Project on Class II and Class III wetland habitat for yellow rail breeding populations within the PDA and the inclusion of these habitats in the wetland compensation and mitigation plans.

Hollow Water First Nation, the Interlake Reserves Tribal Council, Norway House Cree Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation requested the red-headed woodpecker and Eastern whip-poor-will Habitat Management Plans be updated and finalized by the Proponent. These



concerns include recovery strategies updates for the red-headed woodpecker and Eastern whip-poor-will along with justification and effective mitigation measures for clearing activities, if it occurs outside of the timing restrictions and habitat enhancements.

Hollow Water First Nation, the Interlake Reserves Tribal Council, Norway House Cree Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding project components impacting migrations patterns, local movement and seasonal habitat use for migratory birds. Concerns were raised about potential collisions with the distribution line, specifically considering vegetation clearing and edge effects on flight characteristics of birds known to be vulnerable to collisions with the distribution line.

Hollow Water First Nation, the Interlake Reserves Tribal Council, the Manitoba Métis Federation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted concerns about the Proponent's proposed species-specific mitigation measures and critical lifecycle periods for migratory birds (e.g., yellow rail, least bittern, piping plover, eastern whip-poor-will, and red-headed woodpecker) with appropriate mitigation measures and triggers (including set back distances).

Public Groups

The RM of Grahamdale raised concerns about impacts of the Project on wetland and shorelines water levels and effects to marsh regeneration along the shores of Lake Manitoba, Lake St Martin, the Fairford and Dauphin rivers and request that marshes be included in the wetland compensation to support a diverse migratory bird population.

The RM of Grahamdale expressed concerns that the realignment and widening of PR 239 could affect migratory bird habitat, where the decrease and degradation of habitat may result in population declines in migratory birds in the region.

The RM of Grahamdale expressed concerns about insufficient mitigation and habitat compensation for migratory bird species at risk (e.g., red headed woodpecker), especially within quarries.

7.2.3 Agency Analysis and Conclusion

The Agency is of the view that the Proponent did adequately characterize potential project effects to the habitat, mortality risk of migratory birds and bird species at risk. The Agency acknowledges that the Project will result in direct and indirect habitat losses or changes to habitat that may adversely affect migratory birds and bird species at risk within the PDA and LAA and that some habitat losses (i.e., direct removal of wetlands) will be irreversible. The Agency understands that the direct loss of habitat will be partially reversible following revegetation of the PDA, particularly for upland and grassland habitat. The Proponent acknowledged that there would be a decrease in habitat and recognized the uncertainty of the effectiveness for the revegetation mitigations and habitat enhancements, however, noted the wide availability of plants and food sources for migratory birds throughout the LAAs. The Proponent will be required to conduct pre-disturbance surveys for the presence of nesting birds and develop and implement a follow-up program to verify the effectiveness of mitigation measures.

The Agency recognizes that the establishment of grassland along the upper portion of the channels would benefit grassland birds including bobolink, and barn swallow while shrub habitats created along edges of the ROW will benefit birds such as the eastern whip-poor-will. The Agency is of the view that the species-specific mitigation measures and set back/buffers provided by the Proponent (Appendix D). would further reduce effects to migratory bird and bird species at risk individuals and habitat, including wetlands.

The Agency is of the view that there is uncertainty regarding the total wetland habitat loss from the Project in the LAA, including a limited understanding of the extent of residual effects to wetlands perpendicular to the outlet channels, including lakes along Birch Creek near the LMOC, and from alterations to surface water and shallow groundwater intercepted by the outlet channels. Alteration and loss of wetland habitat is expected to extend beyond the PDA and there is uncertainty regarding the mitigation feasibility and effectiveness. The Proponent's wetland offsetting program (Class III, IV, V and peatlands) is anticipated to mitigate for some of the effects to migratory birds (i.e., yellow rail, least bittern) from habitat loss; however, there is uncertainty as to the locations and feasibility of wetland offsetting in the RAA.

The Agency agrees with Environment and Climate Change Canada that the Proponent should implement mitigation measures to protect identified habitat areas and prevent mortality of any individuals or occupied nests that may be found, should individuals of migratory birds, including piping plover and least bittern, be discovered during construction. The Agency acknowledges that the Proponent will ensure that least bittern breeding pairs or nest habitat, if identified, will be considered as critical habitat as per the *Recovery Strategy for the Least Bittern in Canada* and a monitoring plan should be developed.

The Agency is of the view that Project components and activities such as quarries, laydowns, camps, and access roads were not quantified by the Proponent and therefore total loss of migratory bird habitat from the Project is unknown. The Agency agrees that Project infrastructure such as bridges and WCSs may provide suitable habitat for some species (e.g., barn swallows) and the outside drains along the LMOC and LSMOC may provide marginal breeding and foraging habitat. Depending on the level of activity in active quarries, these areas may also support migratory birds including species at risk (e.g. bank swallow, common nighthawk). The Agency acknowledges that the Proponent will monitor for bird nests through daily equipment and infrastructure checks, and if quarries are reactivated during the breeding bird season, nest searches will be completed by qualified individuals and buffers/setbacks would be applied to reduce the risk of disturbing any active nests identified.

The Agency concludes that residual effects to migratory birds from direct mortality during construction and or flooding of the channels would be negligible after the implementation of mitigation measures. The Agency notes that migratory bird mortality is irreversible but does not anticipate a change in the status of regional migratory bird populations. The Agency acknowledges that the distribution line may result in adverse effects to migratory birds and bird species at risk, including through line strikes. The Agency agrees with Environment and Climate Change Canada that the Proponent conduct bird surveys along the distribution line ROW to identify areas where interactions with migratory birds are likely and implement mitigation measures to protect identified habitat areas and prevent mortality of any individuals noted, where habitat, individuals, or occupied nests are found.



The Agency accepts that overall, the Project would not create barriers to migratory birds' movements, which are not limited by linear features, and it is unlikely for migratory birds to congregate as there is other suitable and more predictable habitat present in the region.

The Agency understands that bird species at risk listed in Appendix D are also managed by the Province of Manitoba and that Manitoba Environment and Climate Change will be putting in place measures to mitigate project effects to species at risk as part of the provincial environmental assessment process. The Proponent will continue to have discussions with Environment and Climate Change Canada regarding year-round protection for pileated woodpecker nests and permitting requirements for relocating red-headed woodpecker nest trees (residences) and installing nest boxes for nesting habitat.

The Agency is of the view that the Project is not likely to cause significant adverse effects to migratory birds, the abundance and distribution of bird species at risk, or threaten the long-term persistence or viability of bird species at risk as a result of effects to habitat, mortality risk, taking into account the implementation of the mitigation measures, monitoring, and follow-up programs proposed by the Proponent (Appendix D) and described below. The Agency is of the view that the mitigation measures proposed are consistent with the goals, objectives, and activities of recovery strategies, action plans, and management plans for species at risk, and meet the Agency's section 79 obligation under SARA.

Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

Mitigation Measures

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to ensure that there are no significant adverse effects to migratory birds and for meeting the Agency's section 79 obligations under SARA. The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups, the public and members of the TAG:

- All activities associated with the Project will be executed in a manner that protects migratory birds and avoids injuring, killing, or harassing migratory birds or destroying, taking, or disturbing their eggs, or damaging, destroying, removing or disturbing their nests, while taking into account Environment and Climate Change Canada's *Guidelines to Avoid Harm to Migratory Birds*. Avoidance of vegetation clearing between April 1 – August 31. Vegetation clearing, including tree clearing, will be conducted in accordance with the *Migratory Birds Regulations (2022)* and only to the extent necessary to conduct project components. If vegetation removal must occur within the restricted activity periods, have a qualified individual use non-intrusive monitoring methods to inspect the site prior to the start of the proposed construction activity and develop and implement additional mitigation measures.
- Conduct pre-construction surveys, in consultation with Indigenous groups and relevant authorities, to verify the presence of active nests for red-headed woodpecker, eastern whip-poor-will, least bittern and piping plover within the designated project area.
 - establish no work buffer zones around all active nests identified in pre-construction surveys. Buffer zone size must correspond to the setback distance under high disturbance for the

applicable species as described in *Appendix D Species at Risk, Migratory Birds and Species of Cultural Importance Setbacks and Mitigation Measures*.

- If pre-construction surveys identify red-headed woodpecker or eastern whip-poor-will breeding pairs or roosting habitat, compensate for the loss of this habitat respective of the Recovery Strategy for red-headed woodpecker (*Melanerpes erythrocephalus*) and Eastern Whip-poor-will (*Antrostomus vociferus*) in Canada.
- Implement mitigation measures to mitigate the adverse effects to bank swallow (*Riparia riparia*) during construction and operation within the designated project area.
 - Maintain the slopes of all sediment piles, including stockpiles and spoil piles at a sufficient slope to deter nesting within these piles.
 - Survey all existing inactive quarry sites for the presence of bank swallow nests immediately prior to reopening these sites during the nesting periods.
- Implement mitigation measures to reduce the risk of mortality (e.g., from strikes, electrocution) from the distribution line (e.g., tools to improve visibility day and night, roost deterrents).
- Develop, prior to construction and in consultation with Indigenous groups, Environment and Climate Change Canada and other relevant authorities, a wetland compensation plan to offset the residual effects of the Designated Project on wetlands, including Class II wetlands, resulting from project-related changes in surface and groundwater levels that could not be avoided or minimized. Environment and Climate Change Canada's Operational Framework for Conservation Allowances will be taken into account in this plan, as well as the habitat needs for listed species at risk, including yellow rail, and other wetland vegetation and wildlife species of importance to Indigenous groups. The wetland compensation plan will establish performance standards for compensated habitat, including criteria by which these standards will be measured; and ensure that the wetland compensation habitat area is larger than the area of the wetland habitat being compensated.

Follow-up and Monitoring

- Monitor, in consultation with federal and provincial authorities, interactions between project activities and migratory birds and their nests to determine the effectiveness of mitigation measures to avoid harm to migratory birds, their eggs and nests. Prior to construction, in consultation with relevant federal and provincial authorities and Indigenous groups, verify the accuracy of the environmental assessment to determine the effectiveness of mitigation measures related to avoiding harm to migratory birds, including migratory bird species at risk, their eggs and nests, and implement adaptive management strategies. The monitoring and follow-up program will be implemented during all project phases.
- Develop, prior to construction and in consultation with Indigenous groups, Environment and Climate Change Canada and other relevant authorities, a follow-up program to verify the accuracy of the environmental assessment and determine the effectiveness of the wetland compensation plan. The follow-up program will be implemented during all project phases, including monitoring of:
- Surface and groundwater levels in wetlands that are upgradient and downgradient from the outlet channels, including Birch Creek and the Big Buffalo Lake Complex illustrated in Figure 2 and Figure 3 (Chapter 2).

- Changes in the population and distribution of wetland vegetation and wildlife species, including moose, beaver and muskrat.
- Compensation habitat from the start of compensation annually for a minimum of five years and until performance standards have been met or exceeded.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to migratory birds and bird species at risk can be found in the following chapters of this EA Report: Surface Water (Chapter 6.1), Groundwater (Chapter 6.2), Terrestrial Landscape (Chapter 6.3), Species at Risk (Chapter 7.3), and Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance (Chapter 7.4).

7.3 Species at Risk

Subsection 79(2) of the SARA requires the Agency to identify any adverse effects of the Project on wildlife species listed in Schedule 1 and associated critical habitat. The Agency must ensure that measures are taken to avoid or lessen those effects and to monitor them, and measures must be consistent with any applicable recovery strategy and action plans.

For the purpose of the environmental assessment, the Agency defined species at risk as species listed in Schedule 1 of SARA or assessed as Endangered, Threatened, or of Special Concern by COSEWIC. Collectively, these are referred to as “species at risk” for the purpose of the Agency’s analysis in this EA Report. The Agency focused the analysis in this chapter on potential effects of the Project species at risk that are not fish or migratory birds as potential project effects to fish and migratory bird species at risk are discussed in Chapter 7.1 (Fish and Fish habitat) and Chapter 7.2 (Migratory Birds), respectively.

The Agency is of the view that the Proponent adequately considered potential project effects to species at risk and that the Proponent’s proposed mitigation, monitoring, and follow-up measures and the key mitigation measures identified by the Agency are appropriate to address potential project effects to species at risk. The Agency’s conclusions are based on an analysis of the Proponent’s assessment of effects to species at risk, including the Proponent’s proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal authorities, Indigenous groups, the public and members of the TAG.

7.3.1 Proponent’s Assessment of Environmental Effects

The Proponent identified five species at risk that are not migratory birds as potentially occurring in the LAA, based on the availability of suitable habitat (Table 11) and known occurrences: little brown myotis, northern myotis, northern leopard frog (western boreal/prairie population), snapping turtle and short-eared owl. The Proponent identified 34 additional species at risk potentially occurring within the LAA and RAA (Appendix B, however the Proponent noted due to a lack of suitable breeding habitat in the LAA and RAA were considered unlikely to be present and were not assessed further. The Proponent also noted some species



distribution ranges were outside of the PDA and LAA (i.e., eastern tiger salamander) and therefore were not considered in their assessments.

Federal recovery strategies are available for little brown and northern myotis, which identify critical habitat that overlaps the RAA. However, the Proponent determined that no suitable hibernacula or overwintering habitat exists within the LAA.

Table 11 Direct Habitat Losses for Amphibian and Mammal Species at Risk within the Regional Assessment Area

Species at Risk Common Name and Habitat Type	Area of Habitat Loss in the PDA (hectares)	Area of Habitat in the LAA (hectares)	Area of Habitat in the RAA (hectares)	Percent of Habitat Loss in the LAA ³⁹	Habitat Loss due to LMOC (hectares)	Habitat Loss due to LSMOC (hectares)
Northern leopard frog (breeding)	259.0	2,033.5	N/A	12.7	241.7	17.3
Northern leopard frog (foraging)	366.7	3,393.6	N/A	10.8	360	6.7
Northern leopard frog (overwintering)	0.6	271.2	N/A	0.2	0.6	0
Little brown myotis (maternity roost)	172.8	2,810.4	24,459.5	6.1	172.3	0.5
Northern myotis (maternity roost)	172.8	2,810.4	24,459.5	6.1	172.3	0.5
Snapping turtle	133.3	35,177.7	39,828.5	0.4	66.5	66.8

Little Brown Myotis and Northern Myotis

Little brown myotis and northern myotis are listed as Endangered on Schedule 1 of SARA and occupy the RAA year-round. The RAA contains open foraging areas near suitable roosting or maternity colonies (areas of mature trees, over wetlands, buildings, and rock crevices) and overwintering habitat such as karst caves that could be potential bat hibernacula. Little brown myotis and northern myotis are on the decline due to white-nose syndrome disease (spread through bat-bat interactions or human movement), which was detected outside the RAA in caves along the western edge of Lake Winnipeg. The RAA contains SARA-

³⁹ Relative to the amount of habitat available in the LAA under baseline conditions



designated critical bat hibernacula for little brown myotis and northern myotis⁴⁰, located near Gypsum Lake, however the Proponent did not identify additional suitable habitat (overwintering hibernacula) within the LAA and RAA. The Proponent also noted that maternity roosts have not been identified in the LAA, but they could occur where mature or large diameter trees exist and that availability of mature forested habitats within the PDA is limited.

Change in Habitat

Vegetation clearing during construction could result in the direct loss or alteration of habitat through the removal of up to six percent of the potential maternal roosting tree habitat within the LAA, particularly where large diameter trees are removed. The Proponent predicted effects to all other types of bat habitat would be minor and limited to the PDA and LAA. The Proponent predicted negligible effects to overwintering hibernacula identified as critical habitat during construction and operation, as critical habitat does not overlap the LAA, as well the LAA around both outlet channels would be unlikely to support overwintering bats.

Change in Mortality Risk

Vegetation clearing and ground disturbance activities in the LAA, with heavy equipment during construction may cause collisions or crushing of individuals. The anticipated rise in vehicle traffic within the PDA and along PR 239 during construction and operation could result in an increase in wildlife-vehicle collisions and mortality. During operation there is also a risk of mortality by electrocution from collision-related strikes with the LSMOC distribution line.

In addition, during construction and operation, the Project may result in the spread of white nose syndrome to hibernacula that have not been infected due to increased human movement from project workforce and increased local recreation activity due to Project activities. Though critical habitat has been identified in the RAA, the Proponent noted bat hibernacula had not been identified in the LAA, and therefore do not anticipate overwintering habitat to be affected.

Change in Movement

Linear disturbance from the outlet channels and distribution line on the landscape, particularly in forested habitats, would result in habitat fragmentation and alter movement patterns for bat species. The addition of the Project could exacerbate existing fragmentation, affecting daily and seasonal movement patterns, and contributing to a loss of bat habitat connectivity, in more open habitats or previously altered landscapes.

⁴⁰ Environment Canada. (2015). *Recovery Strategy for Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), and Tri-colored Bat (Perimyotis subflavus) in Canada. Species at Risk Act Recovery Strategy Series*. Retrieved February 7, 2024, from https://www.registrelep-sararegistry.gc.ca/virtual_sara/files/plans/rs_LittleBrownMyotisNorthernMyotisTricoloredBat_e_proposed.pdf



During operation, the PR 239 realignment could result in a change in movement for the bat species as traffic levels and associated sensory disturbances are altered within the LAA. The Proponent noted that vegetation maintenance along the outlet channels and PR 239 realignment would be required and could temporarily affect movement of bats due to sensory disturbances.

Northern Leopard Frog and Snapping Turtle

Northern leopard frog and snapping turtle are listed⁴¹ as Special Concern on Schedule 1 of SARA due to population declines associated within habitat loss, degradation and fragmentation. The Proponent noted that the permanent waterbodies, wetlands and upland habitat adjacent to the LMOC have the potential to provide overwintering habitat, summer foraging and dispersal habitat. Suitable wetland habitat has been identified within the LAAs and RAA, along both outlet channels, being the most abundant in the southern half of the LSMOC LAA. The Proponent suggested that additional overwintering habitat was present in LAA, but not directly affected by construction, including Watchorn Creek, Reed Lake, Clear Lake and the south basin of Lake St. Martin. Northern leopard frog was detected in wetlands along the ROW for both outlet channels, and in wetlands adjacent to Dauphin River. The Proponent noted no snapping turtles were detected in the RAA.

Change in Habitat

The Proponent stated that snapping turtles and northern leopard frog would be impacted by construction activities, including clearing and ground disturbance, along with development of camps and staging areas, which may change or reduce known breeding, overwintering, and upland habitats in the LAA. The Proponent anticipates that the magnitude of effect would be greater for northern leopard frog given the greater potential loss or alteration of habitat. The Proponent noted the construction of the WCSs could potentially affect snapping turtle inhabiting Lake St. Martin and the shorelines of Lake Manitoba and Lake Winnipeg; however, the likelihood is considered low.

Wetland areas down-gradient of both outlet channels may experience reductions in size and quality, which could affect access to habitat on the up-gradient side of the channels. Construction of the LMOC and LSMOC would change hydrology patterns, resulting in the loss or alteration of wetland function for breeding and overwintering habitat within the LAA. The Proponent notes the fragmentation effects are anticipated, however low in magnitude as habitat would remain intact on the down gradient side of the LSMOC. The Proponent noted potential habitat loss in Lake St. Martin could occur due to excavation and extension of the inlets and outlets during construction. The effects of expanding the inlet and outlet structures on habitat are determined to create localized loss for overwintering habitat for snapping turtle along with aquatic vegetation and other food sources (e.g., molluscs), though the Proponent does not expect a decrease in viability of the northern leopard frog and snapping turtle within the RAA.

⁴¹ Environment Canada. (2013). *Management Plan for the Northern Leopard Frog (Lithobates pipiens), Western Boreal/Prairie Populations, in Canada. Species at Risk Act Management Plan Series*. Retrieved February 7, 2024, from https://www.sararegistry.gc.ca/virtual_sara/files/plans/mp_northern_leopard_frog_e_final.pdf

Change in Mortality Risk

During construction, open excavation, dewatering activities, and the use of heavy equipment for site preparation could increase mortality risk for northern leopard frog and snapping turtle through entrapment, stranding or crushing of individuals in the PDA and LAA. The Proponent noted that northern leopard frog would be the most likely affected species at risk during construction, and higher mortality would exist for the northern leopard frog during dispersal periods, however the effects are expected to be low in magnitude. Winter construction activities could increase mortality risk as northern leopard frog and snapping turtle overwinter within the PDA. During operation, the Proponent noted that as northern leopard frog moves through areas with riprap, there may be an additional mortality risk due to lack of vegetative cover and entrapment. WCS gate opening could also increase predatory fish species (e.g., northern pike) in the outlet channel within the PDA.

Change in Movement

Both the LMOC and LSMOC would potentially fragment local populations of northern leopard frog and snapping turtle habitat, therefore reducing movement across the LAA. However, the Proponent expects no measurable effects to regional populations as habitat remains abundant and contiguous on the upgradient side of the LMOC. The LMOC PDA would directly affect movement of the northern leopard frog, reducing movements to the east within the LAA. Similarly, movement would be less widespread throughout the LSMOC LAA. The Proponent has committed to minimize fragmentation effects through spoil pile modifications. They will reduce spoil pile height or create breaks. The Proponent identified potential crossing locations and spoil pile breaks, but specific locations have not been confirmed.

The Proponent anticipated that the outlet channels could be physical barriers to the northern leopard frog during periods of high flows (gate opening) and during periods of non-flood operation (gate closed), due to armouring (riprap or limestone) parts of the channels. Additionally, anticipated reduced water levels affecting wetlands and wetland habitat loss around Reed Lake, Clear Lake and Watchorn Bay, and PR 239 sub-watersheds, may affect the movement and distribution of northern leopard frog and snapping turtle in the PDA and LAA.

Short-eared owl

Short-eared owl is a ground-nesting owl species, listed⁴² as Special Concern on Schedule 1 of SARA that breeds in open habitats including grasslands, pasture, haylands, and marshes. The Proponent noted suitable habitat was identified throughout the PDA and LAA. South of Lake St. Martin, short-eared owls were observed in pasture habitat in the RAA and potentially observed within the LAA. Construction would result in the loss of grassland habitat in the LMOC (1.1 hectares) and the LSMOC (6.7 hectares) and may affect nesting and foraging habitat availability specifically in the LMOC. The Proponent indicated that the

⁴² Environment and Climate Change Canada. (2018). *Management Plan for the Short-eared Owl (Asio flammeus) in Canada. Species at Risk Act Management Plan Series*. Retrieved February 7, 2024 from https://sararegistry.gc.ca/virtual_sara/files/plans/mp_short_eared_owl_e_final.pdf



short-eared owl could potentially benefit overall, due to the establishment of grassland communities and drier habitats.

7.3.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada noted that the Proponent proposed reasonable mitigations to reduce Project effects to little brown and northern myotis, however indicated that the PDA would affect rural properties where abandoned buildings (anthropogenic structures) exist, which bat species could use for maternity roosts and hibernacula. Environment and Climate Change Canada recommended additional mitigation measures to address effects to anthropogenic bat habitat.

Environment and Climate Change Canada expressed concerns regarding the Project's effects to northern leopard frog habitat and movement from fragmentation, along with snapping turtle overwintering habitat. Uncertainty remains, as the Proponent did not fully characterize mitigation measures or follow-up programs. Environment and Climate Change Canada recommended that the Proponent provide mitigation measures to facilitate northern leopard frog and snapping turtle movement across the outlet channels and to restrict movement into wintering habitat prior to winter excavation work. Additionally, Environment and Climate Change Canada recommended that wetland offsets be created in close proximity to the outlet channels to minimize the adverse effects of habitat fragmentation. Environment and Climate Change Canada also recommended that the Proponent restrict construction activity around snapping turtles' nests, if snapping turtle nests are identified, until late September or after the eggs hatch.

Environment and Climate Change Canada expressed concerns regarding undetected residual effects to species at risk along the distribution line. It is recommended that the Proponent conduct monitoring for mortality of species at risk and migratory birds applying adaptive management measures if mortality is detected, including mitigation measures implemented to reduce mortality (including the use of tools to improve visibility both during the day and at night, and roost deterrents).

Indigenous Groups

Norway House Cree Nation identified northern leopard frog and bats as species of cultural importance to their community and indicated that ecosystems that support habitats for these native species must be protected. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Pimicikamak Okimawin, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation identified bats as species of cultural importance and noted concerns about the preservation of bat roosting sites and hibernacula. Misipawistik Cree Nation specifically noted the importance of little brown bat and their hibernacula within their traditional territory. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, and Pinaymootang First Nation identified snapping turtle as a species of cultural importance. Lake St. Martin First Nation identified owls as species of importance to their community, noting specific concern about the decreased number of owls they have seen over time.

Dakota Tipi First Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns

about lack of baseline data collected and lack of identified thresholds for all species at risk, which reduces their confidence in the residual effects assessment and the mitigation measures put forth in the Wildlife Monitoring Plan. They requested pre-construction surveys for all species at risk.

Fisher River Cree Nation, the Interlake Reserves Tribal Council, Norway House Cree, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted concerns about the completeness of effects assessments on the local population scale, specifically for northern leopard frog and snapping turtle. These groups noted a lack of specific details on mitigation measures to address breeding ponds, overwintering areas, fluctuating water levels, habitat fragmentation and reduction in movement due to armoured and riprap areas. Other concerns noted included ensuring the Proponent adhered to avoidance periods for northern leopard frog and snapping turtle (based on reproduction periods), provide additional mitigation measures for species at risk that are susceptible to ground disturbance (e.g., northern leopard frog and snapping turtle), along with implementing appropriate mitigation measures and triggers for setback distances.

Hollow Water First Nation, the Interlake Reserves Tribal Council, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns about the loss of potential maternity roosting habitat for the myotis species in the LAA, which could have indirect effects for the species at risk in the RAA, along with potential adverse effects during operation. There were also concerns that the Proponent did not provide appropriate mitigation measures to minimize construction-related noise disturbance for myotis species. These groups also expressed concerns about the adverse effects of the distribution line, specifically requesting mitigation measures associated with vegetation clearing and edge effects on habitat of nocturnal migrants known to be vulnerable to collisions with distribution lines.

A summary of the comments provided by Indigenous groups, along with Proponent and Agency responses, is provided in Appendix C of this draft EA Report.

Public Groups

The RM of Grahamdale expressed concerns about the protection, preservation and offsetting measures for the habitat all of species at risk, as it is important for tourism (nature and outdoor activities) in the area.

7.3.3 Agency Analysis and Conclusion

The Agency understands that northern leopard frog, snapping turtle, bats, and owls, have been identified by Indigenous groups as species of cultural importance. The Agency is of the view that the Proponent adequately characterized potential effects to species at risk. The Agency notes that uncertainties remain regarding the amount of habitat that may be affected by the Project and the extent of habitat use within the PDAs and LAA species at risk, including little brown myotis, northern myotis, northern leopard frog, snapping turtle, and short-eared owl and for other species at risk that may occur within the PDA and LAA for whom effects were not directly assessed. The Proponent noted that 6.3 percent of habitat in the LAA would be affected, with residual effects extending into the LAA. The Agency understands that the Proponent committed to conducting pre-construction surveys, and construction and post-construction monitoring for the presence of wildlife and wildlife habitat, including species at risk, and interactions with



the Project. Should individuals or potential habitat features for species at risk be discovered within the PDA, the Agency encourages the Proponent to implement mitigation measures to protect identified habitat areas and prevent mortality of any individuals detected.

The Agency recognizes that uncertainty exists regarding the detection of species, habitat use and distribution of little brown myotis, northern myotis, short-eared owl, snapping turtle and northern leopard frog in the PDA, LAA, and RAA. The Agency notes that six percent of potential bat maternal roosting habitat may be disturbed by removal of trees, which limits the available habitat for subsequent seasons and may hamper species recovery. Though the Proponent anticipates that there may be potential to mitigate impacts caused by habitat removal by creating suitable habitat for species at risk, including wetland off-setting for marsh habitat for northern leopard frog and summer bat habitat or new infrastructure including WCSs and bridges that may provide roosting habitat (particularly maternity roosting habitat), the Agency agrees with Environment and Climate Change Canada that additional mitigation measures should be implemented if monitoring results indicate adverse effects to all species at risk beyond those predicted.

The Agency agrees with the Proponents conclusion that the magnitude of residual Project effects for species at risk to be low and that the Proponent has committed to species-specific mitigation measures and setbacks/buffers during construction and operation (Appendix D). Such proposed measures include scheduling construction activities outside of the breeding periods, setback buffers for known species habitat and exclusion that would prevent access by northern leopard frog and snapping turtle into habitats that will be disturbed by construction. The Agency highlights the importance of mitigating effects to species at risk, given the importance of preventing further population decline.

The Agency understands that the species at risk listed in Appendix B are also managed by the Province of Manitoba and that Manitoba Environment and Climate Change will be implementing measures to mitigate effects to species at risk as part of the provincial environmental assessment process. Specific mitigation, monitoring and follow-up measures and key mitigation measures for species at risk were provided by the Proponent (Appendix D). Therefore, the Agency is of the view that the Project is unlikely to result in population-level effects to the abundance and distribution of species at risk or to threaten the long-term persistence or viability of species at risk as a result of effects to habitat, mortality risk, or health.

The Agency is satisfied that these measures will avoid or lessen project-related effects to species at risk. The Agency is of the view that the mitigation measures proposed are consistent with the goals, objectives, and activities of recovery strategies, action plans, and management plans for species at risk, and meet the Agency's section 79 obligation under SARA.

Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to ensure that there are no significant adverse environmental effects, as defined under section 5 of CEAA 2012, and for meeting the Agency's section 79 obligations under SARA. The following key mitigation measures are based on the mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups, the public and members of the TAG.

Mitigation Measures

- Conduct pre-construction surveys in consultation with Indigenous groups and relevant authorities to verify the presence of active nests for short-eared owl, and active roosts for little brown myotis and northern myotis within the designated project area.
 - establish a 500 metre no work buffer zone around active roosts (including anthropogenic infrastructure that will be removed as part of the Project) for little brown myotis and northern myotis identified in pre-construction surveys, while the roosts are active.
 - establish buffer zones around active short-eared owl nests identified in accordance with the setback distances recommended for the species by Manitoba Conservation Data Center's *Recommended Development Setback Distances and Restricted Activity Periods for Birds by Wildlife Feature Type* (2021).
- Implement measures, in consultation with Indigenous groups and relevant authorities, during construction and operation to mitigate mortality risks to the northern leopard frog and snapping turtle in terrestrial and aquatic habitats. In doing so the Proponent shall:
 - Rescue and relocate northern leopard frog and snapping turtle prior to commencing construction activities in work areas.
 - install and maintain exclusion fences to prevent northern leopard frog and snapping turtle from accessing work areas. If the proponent must conduct work within overwintering habitat, exclusion fencing shall be installed prior to hibernation. If there are incidental findings of snapping turtle nests within the construction site, the Proponent will implement mitigation measures in consultation with relevant authorities.

Follow-up and Monitoring

- Develop a follow-up and monitoring program, in consultation with Indigenous groups to determine the effectiveness of mitigation measures for little brown and northern myotis, northern leopard frog, short-eared owl and snapping turtle. If monitoring indicates that mitigation measures are not effective at mitigating project effects, additional mitigation measures will be developed, in consultation with Indigenous groups and relevant federal and provincial authorities.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to species at risk can be found in the following chapters of this EA Report: Chapter 6.1 Surface Water, Chapter 6.2 Groundwater, Chapter 6.3 Terrestrial Landscape, Chapter 7.2 Migratory Birds, and Chapter 7.4 Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance.



7.4 Indigenous Peoples - Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance

The Project could cause residual adverse effects to Indigenous peoples' current use of lands and resources for traditional purposes (current use), physical and cultural heritage, and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance (sites of significance).

The Agency is of the view that the Project is likely to cause significant adverse effects to Indigenous peoples' current use of lands and resources for traditional purposes, physical and cultural heritage, and structures, sites, and things of historical, archaeological, paleontological, or architectural significance after taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation measures, monitoring, and follow-up programs, and the views expressed by federal authorities, Indigenous groups, and members of the TAG.

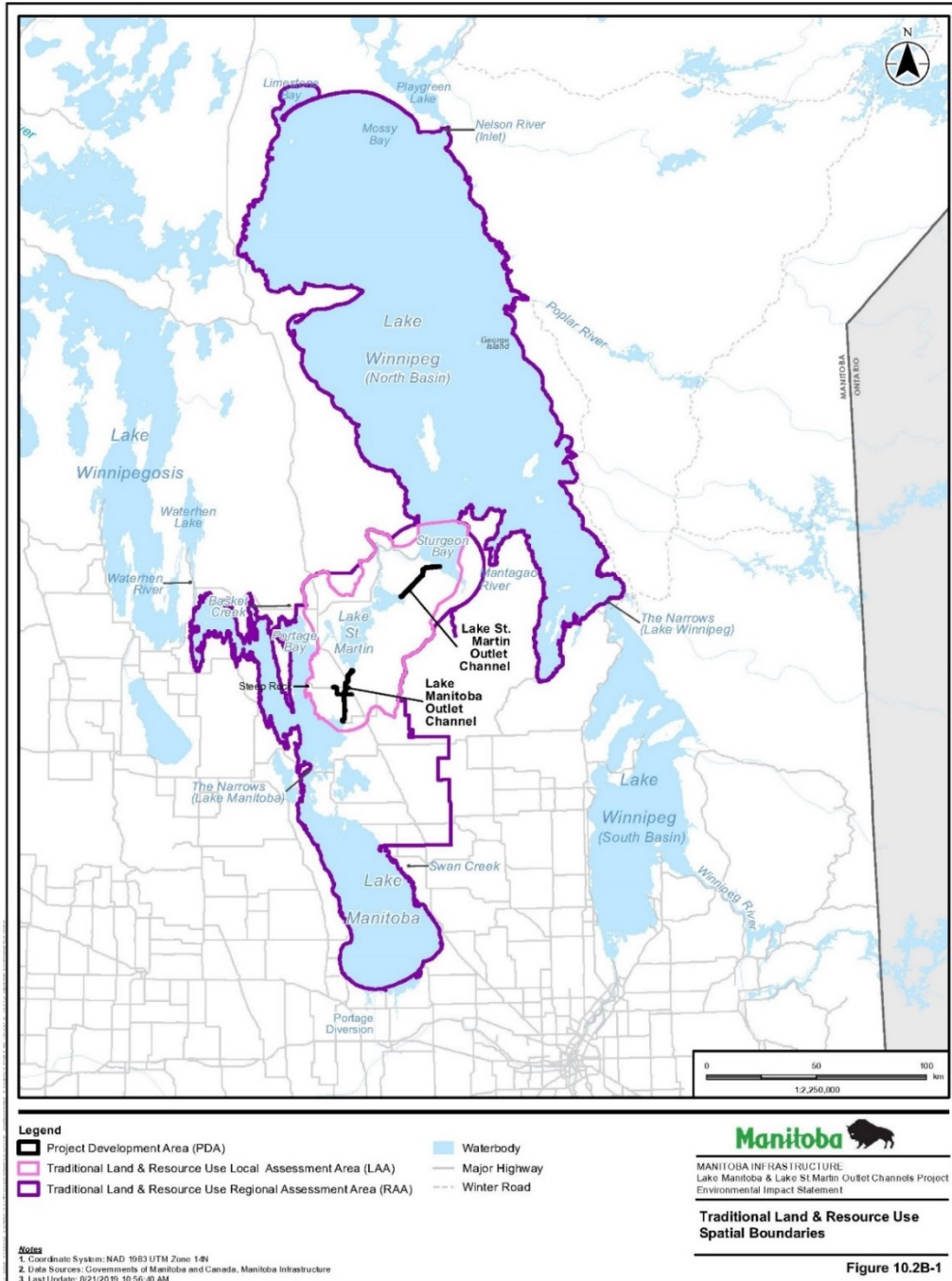
7.4.1 Current Use of Lands and Resources for Traditional Purposes

7.4.1.1 Proponent's Assessment of Effects

The Proponent indicated that the purpose of the Project is to reduce existing adverse effects created by periodic regional flooding. In the absence of specific information about current use by all Indigenous groups engaged on the Project, the Proponent conservatively assumed that there is the potential for current use activities to occur within the RAA for all Indigenous groups engaged on this Project.



Figure 10 Spatial Boundaries for the Proponent’s Assessment of Effects to Traditional Land and Resource Use



Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Environmental Impact Statement, Volume 4 Chapter 10 (March 2020)



Figure Description: *The LAA for traditional land and resource use includes the PDA and the largest extent of the LAAs established for related valued components (Vegetation, Wildlife, Groundwater and Surface Water, Fish and Fish Habitat, Land and Resource Use, and Heritage). The RAA includes the PDA and LAA and the largest extent of the RAAs established for related valued components (Vegetation, Wildlife, Groundwater and Surface Water, Fish and Fish Habitat, Land and Resource Use, and Heritage).*

Access for Current Use

The Project has potential to reduce access to traditional resources and areas of current use through the direct loss or alteration of trails or travel ways, restrictions on the ability to navigate to and through current use areas, and limitations on the ability to undertake current use activities in proximity to the Project.

The Proponent indicated that loss and alteration of trails and travel ways in the RAA could result from physical disturbance (e.g., destruction of a traditional use trail), physical deterrents or obstructions (e.g., the outlet channels themselves), changes in landscape (e.g., vegetation clearing), and changes in conditions required for current use (e.g., construction traffic). Dauphin River First Nation, Peguis First Nation, Kinonjeoshtegon First Nation, and Pinaymootang First Nation reported the use of important trails and access routes, including snowmobile routes, to access preferred fishing, hunting, and gathering areas that could intersect with the PDA. Dauphin River First Nation identified a snowmobile trail that borders wetlands southwest of the North Basin of Lake Winnipeg that would be intersected by the south end of the LSMOC and the electrical distribution line. Peguis First Nation utilizes a snowmobile trail that would be intersected by the north end of the LSMOC. The Project would modify or cut off these trails, altering or removing access by land to hunting, trapping, and plant harvesting areas immediately southwest of the North Basin and fishing areas in Sturgeon Bay.

The Proponent expects limitations on the ability to undertake current use activities in the LAA. Construction activities would affect Indigenous groups' ability to access spiritual areas within portions of the LAA. The Project would result in changes to the southwest shoreline of Lake Winnipeg, affecting access to Dauphin River First Nation gravesites. The channels would intersect traditional use trails and travel ways and act as barriers to accessing traditional resources as the channels can only be crossed at specific locations. Altered travel routes and access locations would result in Indigenous groups seeking alternate routes to access favoured areas or find new sites.

The LMOC would have four crossing locations that are vehicular bridges typical to the provincial road network with distances ranging from 2.3 kilometres to 9.85 kilometres apart. The LSMOC would have one crossing location at the WCS, also a vehicular bridge, with a distance of 21.7 kilometres from the outlet at Lake Winnipeg. The Proponent noted that because the LMOC traverses a primarily agricultural area within privately held lands, it is not anticipated that the general public, including Indigenous groups, would be able to access the LMOC PDA other than at bridge crossing locations. Conversely, the LSMOC is located in a semi-remote area, and may be encountered by individuals who may be traversing the area. Should individuals want access to the LSMOC PDA, maintenance roads located on spoil berms and dykes adjacent to the outlet channel would provide the only safe route of passage along the ROW. However, maintenance roads are not being designed for public use or high-speed traffic. Should an individual need to cross the LSMOC, the bridge at the WCS would provide the only structure for safe passage from one



side of the channel to the other. The Proponent indicated that crossing of the LSMOC at drop structures or at any other uncontrolled location would not be recommended as this would present considerable safety risks and could result in serious injury or death.

The Proponent identified that changes to waterbodies due to the Project would affect Indigenous groups' ability to traverse them, thereby restricting access. During winter, there may be changes to how ice forms near the water inlet on Lake St. Martin and near the outlet in Lake Winnipeg. This may affect the ability of Indigenous groups to travel safely on ice with recreational vehicles.

The Proponent concluded that the overall residual adverse effects of the Project on access for current use from the construction, installation, and maintenance of permanent outlet channels are anticipated to be moderate in magnitude, long-term in duration, extend to the LAA, be continuous and irreversible.

Availability and Quality of Resources for Current Use

Vegetation, Wildlife, and Wildlife Habitat

The Project would have the potential to affect the availability and quality of resources for current use through the loss, alteration, or fragmentation of vegetation and wildlife habitat; and wildlife disturbance and mortality. Project effects to vegetation, wildlife, and wildlife habitat could in turn affect the abundance and distribution of species of cultural importance to Indigenous groups, making it more difficult to practice current use activities (e.g., fewer plants and less wildlife available to harvest and hunt, plants and wildlife no longer present in areas they once were, increased travel distances to harvest plants and hunt wildlife). Potential residual effects to wildlife, vegetation, and wetlands, migratory birds, and species at risk, and proposed key mitigation, monitoring, and follow-up measures for these aspects are described in Chapter 6.3 (Terrestrial Landscape), Chapter 7.2 (Migratory Birds), and Chapter 7.3 (Species at Risk) of this EA Report.

The Proponent anticipated that project activities such as vegetation clearing, installation of an electrical distribution line, grading, construction and use of access roads, and road realignments would result in loss of native vegetation, loss of wetlands, and change plant species diversity in the PDA and LAA permanently. The Proponent indicated that the Project would reduce the abundance and spatial distribution of plant species of interest to Indigenous groups. Indigenous groups reported harvesting over 120 species of cultural importance for sustenance and medicinal benefits in the RAA. Of the plant species of cultural importance, 45 of these species were observed in the PDA and 23 produce berries known to be harvested by Indigenous groups.

The Project would result in the direct loss of 295 hectares of wetland habitat from the LMOC and 717.6 hectares of wetland habitat from the LSMOC (15.1 percent of the existing wetland habitat in the LAA). Wetland loss would alter nutrient cycles, decomposition and carbon accumulation rates, water filtration and storage, and related traditional land and resource use activities, such as fishing, hunting, and trapping. The Proponent indicated that of the 120 species of cultural importance to Indigenous groups, 23 plants were identified in wetland habitats. During construction, wetland function would be affected during vegetation clearing and water management, and during operation and maintenance, wetland function would be affected by the alteration of natural drainage. The Wetland Offset Plan would involve compensation for the

loss of 239 hectares of mineral wetlands and 769 hectares of peatlands directly affected by the Project. The Proponent indicated that the loss of wetlands along the LMOC would be largely minimized through wetland offsetting and compensation; however, only 0.1 hectares of the 768.5 hectares of wetlands removed for the construction of the LSMOC would be offset. The Proponent indicated that wetland offsetting would mitigate Project-related changes to the quantity, quality, and availability of plant resources (e.g., berries, medicinal plants, plants used for ceremonies), and would offset the loss of wetland habitats having potential to support upland game birds, waterfowl, furbearers (e.g., lynx, fisher, mink, weasel, beaver, muskrat), moose, and other wildlife resources used by Indigenous groups.

The Proponent indicated that revegetation would be conducted for areas cleared during construction. However, revegetation activities could cause fragmentation of plant communities, increase erosion potential, and lower overall community and species diversity due to the use of a seed mix. The use of seed mixes would also result in different vegetation being present following revegetation activities.

The Proponent noted that for both the LSMOC and LMOC, high flows during operation of the channels are anticipated to impede wildlife movement by deterring wildlife from entering the channels, and elevating mortality risk for furbearers and ungulates due to potential drowning and reduced escape cover. The Proponent committed to several crossing locations for the LMOC at inlets, outlets, bridge crossing locations, and WCSs and one crossing location for the LSMOC between the first drop structure and Lake Winnipeg.

The Project could result in the direct losses of wildlife through an increase in animal-vehicle collisions or expanded access for predators and people. Linear corridors created by the outlet channels could enhance access for predators and people in previously remote areas, which could affect the distribution and abundance of wildlife in the LAA for the life of the Project. Increased access for project workers and the public would result in increased hunting, trapping, and fishing pressure through increasing competition for resources such as fish, plants, and wildlife. The Proponent committed to restricting public access and consulted with Manitoba Natural Resources and Northern Development Conservation Officer Service to ensure that regular security patrols would be conducted along the outlet channels.

The Proponent indicated that vegetation clearing would fragment contiguous habitats along the distribution line and LSMOC, creating an unnatural transition between the cleared PDA and adjacent wildlife habitat (i.e., edge effects). However, these effects are expected to be minimal along the LMOC as the existing mosaic of upland and wetland habitat is highly fragmented by anthropogenic disturbance (e.g., agriculture, roads, transmission lines). The Proponent noted that spoil pile breaks would be located along the channels to create wildlife cover by breaking up sightlines (spoil pile breaks would be at lower elevations and less visible to predators).

The Proponent expected that sensory disturbance from Project activities would hinder wildlife's ability to move throughout the landscape. Some wildlife could be displaced from the LAA if exposed to noise, dust, and other sensory disturbances. These effects can result in adverse changes to hunting and trapping within the LAA. The Proponent noted that Indigenous groups indicated that moose, deer, elk, muskrat, beaver, and other species of importance are hunted in the LAA and may be subject to disturbances (e.g., noise, dust) from Project construction. In turn, these animals may move away from such disturbances,



decreasing their abundance in the LAA. This would force Indigenous hunters to travel a greater distance and expend additional time to achieve a successful hunt or have fewer successful hunts.

Moose was identified by Indigenous groups as a species of particular importance. The Proponent acknowledged that moose populations have been declining in Manitoba. The Proponent indicated that within Game Hunting Area 21⁴³, which encompasses the Project and extends northeast to cover the majority of Lake Winnipeg, moose populations were deemed to be at a critical low. Manitoba Natural Resources and Northern Development established moose hunting closures in several Game Hunting Areas, including Area 21. Habitat loss, predation, disease, habitat alteration, severe weather, and climate change adversely influence moose populations. The Project is estimated to result in the direct loss of 526.2 hectares of moose summer habitat and 58.1 hectares of moose winter habitat. Combined, this would be a loss of approximately 6.6 percent of moose habitat in the LAA and 0.5 percent of moose habitat in the RAA. Indirect adverse effects to moose are anticipated during construction due to sensory disturbance, with the potential for moose to avoid otherwise suitable habitats within 500 metres or more of the Project's ROWs in the LAA. The Proponent anticipated that the channels could act as a barrier to moose movement by deterring wildlife from entering the channels, and elevating mortality risk for furbearers and ungulates due to potential drowning and reduced escape cover. The Proponent concluded that the Project is not expected to threaten the viability of moose in the RAA.

The Proponent concluded that effects of the Project on the availability and quality of traditional resources for current use would occur throughout the life of the Project. Overall, effects are predicted to be adverse due to a loss in abundance and quality of resources, but low in magnitude as it is anticipated that current land and resource use practices would be able to continue in the RAA with minor alteration of behaviour by Indigenous groups. The direct and indirect loss of habitat for harvested species is expected to be relatively small compared to the remaining habitat available in the RAA and the habitat reclaimed by reducing the effects of flooding. Residual effects to wildlife would not pose a threat to the long-term persistence and viability of species in the RAA. Therefore, the Proponent predicted that the terrestrial species on which Indigenous peoples rely for traditional hunting and trapping would continue to be available and accessible within the RAA.

Fish and Fish Habitat

The Project could affect the availability (i.e., abundance and distribution) and quality of fish in waterbodies within the PDA and LAA through changes to groundwater and surface water quality and quantity, fish habitat, fish passage, and fish health and mortality. Further details on the Project's anticipated residual effects to groundwater, surface water, and fish and fish habitat and proposed key mitigation, monitoring, and follow-up measures are available in Chapter 6.1 (Surface Water), Chapter 6.2 (Groundwater), and Chapter 7.1 (Fish and Fish Habitat).

⁴³ See Manitoba's map of Game Hunting Areas in: Manitoba Natural Resources and Northern Development. (n.d.) *Moose Conservation Closures*. Retrieved February 7, 2024, from https://www.gov.mb.ca/nrnd/fish-wildlife/pubs/fish_wildlife/moose-conservation-closure-map.pdf

The Proponent noted that Indigenous groups reported fishing throughout the PDA, LAA, and RAA for northern pike (jackfish), walleye (pickerel), red sucker, mariah, mallet, sturgeon, sauger, carp, perch, silver bass, sunfish, catfish, tullibee, and lake whitefish as well as a variety of other fish species commonly understood to be harvested by Indigenous groups. The combination of a large construction workforce, some of whom can be expected to be recreational fishers, construction of new roads that may provide new or improved access to previously inaccessible lakes and streams, and the potential concentration of fish below the WCSs were considered by the Proponent to potentially contribute to an increase in fish harvesting and harvest pressure due to improved access in the LAA. The Proponent anticipated the potential residual effects to be low given the construction work force would only be present during construction for a maximum of three years, only a small proportion of this work force would be actively fishing recreationally, and all those who are fishing would need to abide by provincial fishing regulations.

Project-related changes to groundwater and surface water quality and quantity may result in adverse effects to availability and quality of resources for current use by affecting the distribution and abundance of fish species in the LAA. Excavation of the channels will require diversion, dewatering, or filling in of existing creeks and drains and may cause a change in groundwater/surface water interactions in lakes and streams along or adjacent to the channels.

The Project could affect fish habitat and fishing areas through the excavation of channel inlets and outlets, sensory disturbances, and changes to water quality or flows, causing fish to avoid areas. The Proponent anticipated that as a part of channel excavation and commissioning, sediments would be mobilized, introduced, and deposited in fish habitat in Birch Bay in Lake St. Martin and Sturgeon Bay in Lake Winnipeg during construction, which has the potential to decrease fish habitat suitability. Effects of sediment would extend into the RAA (i.e., northern basin of Lake Winnipeg); however, with mitigation, total inputs from the channels are expected to form a negligible percentage of total inputs to the main basin of Lake Winnipeg. Furthermore, the diversion of flows down the LMOC and LSMOC during high flood events could change the extent and duration of riparian area inundation along lake and river shorelines and alter localized flow patterns near the inlets and outlets of the channels. While unavoidable and adverse, the Proponent concluded the potential effect on fish habitat was expected to be negligible.

The Project could result in effects to fish passage and the splitting of flows between the channels and adjacent creeks and rivers that could attract fish to new areas. The Proponent acknowledged that one-way movement of fish out of Lake Manitoba to Lake St. Martin and out of Lake St. Martin to Lake Winnipeg through the outlet channels is unavoidable. The Proponent noted that it is expected that these changes will not be sufficiently large to affect fish migrations and the effects to fish passage are not expected to cause a decrease in fish population sizes or productivity.

The Project could cause effects to fish health and mortality through the accidental releases of deleterious substances such as fuel spills or sediments, fish stranding and being exposed to low oxygen levels, spread of AIS, blasting mortality, increased harvest due to increased access, and potential bioaccumulation of methylmercury. The Proponent predicted that although stranding of individual fish or fish eggs along the margins of the channels may be unavoidable, no measurable effect on the productivity of fish populations in the LAA or RAA is expected. The operation of the LMOC and LSMOC would unavoidably provide additional dispersion routes for AIS to colonize Lake Manitoba, Lake St. Martin, and/or Lake Winnipeg.



However, the Proponent noted that the LMOC and LSMOC would not provide any new connections between waterbodies that are not already naturally connected by the Fairford and Dauphin rivers.

The Proponent predicted that, after mitigation, no noticeable residual effects to fish abundance are expected and therefore there should be no effects to traditionally harvested fish species. While the Proponent expects that the Project would affect the distribution and abundance of fish species in the LAA, the direct and indirect loss of habitat for harvested species is relatively small compared to the remaining habitat available in the RAA.

Quality of Experience

Project related changes to access for current use and to the availability and quality of resources for current use as described above could in turn affect the quality of experience of Indigenous peoples while on lands and waters in the LAA and RAA during all project phases. Altered access could affect Indigenous peoples' experiences when practicing current use activities such as their ability to successfully hunt and gather in preferred use areas. Decreased availability and quality of resources for current use could alter Indigenous peoples' quality of experience through requiring them to travel further to find species of cultural importance.

The Proponent acknowledged that the Project could affect the quality of experience of Indigenous peoples as a result of a variety of personal, practical, aesthetic, and spiritual reasons, and changes to Indigenous health and socio-economic conditions. The Proponent indicated that changes to the cultural value or importance associated with current use practices are expected as a result of the Project and can be reflected in the qualities of enjoyment or satisfaction associated with traditional resources, sites, areas, and places. Effects to overall enjoyment can extend to air, water, land, sites, animals, vegetation, and culture. The Proponent acknowledged that Indigenous groups identified potential effects to quality of experience including increased noise, light, dust, and vehicular emissions; avoidance of areas due to changes in aesthetics from development, and avoidance due to perceived effects to plants and wildlife. The Proponent noted that use or enjoyment of traditional resources could be discontinued due to Project-related effects.

Project effects to the health and socio-economic conditions of Indigenous peoples may also affect quality of experience of current use. For example, the Project may deter the harvest and consumption of country foods through health effects from changes in air quality, or socio-economic effects through the increased presence of project personnel in the area. Effects of the Project on Indigenous peoples' health and socio-economic conditions from noise and vibration levels, air quality, and country foods are described in Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this draft EA Report.

Proponent Conclusions on Current Use

The Proponent predicted that the effects of the Project on current use would result in long-term loss of availability of resources and access to lands currently used for traditional practices, the permanent loss of traditional use sites and areas, and diminished value or importance of cultural sites and areas in the PDA and LAA that diminish the general quality of experience on the lands. However, these effects are not anticipated to critically reduce or eliminate availability or access to lands, resources, or cultural sites or areas. The Proponent concluded that the overall disruption to access to traditional lands and resources is anticipated to be moderate.



The Proponent expected that, with the use of mitigation measures, the direct and indirect loss of habitat for harvested species would be relatively small compared to the remaining habitat available in the RAA and the habitat reclaimed by reducing the effects of flooding. Residual effects to wildlife would not pose a threat to the long-term persistence and viability of species in the RAA. Therefore, the Proponent predicted that species on which Indigenous groups rely for traditional hunting and trapping would continue to be available and accessible within the RAA.

The Proponent noted that the Project would alter stream flows and lake levels to alleviate flooding of communities along Lake Manitoba and Lake St. Martin and, therefore, cannot be built or operated without negative effects to water and fish and fish habitat. However, the Proponent predicted that the potential adverse effects of the Project on fish and fish habitat could be eliminated or reduced to a level that substantially reduces risks to the long-term sustainability and production of focal fish populations in the LAA and RAA, following the implementation of mitigation measures. In addition, with the application of mitigation measures, residual effects to surface water quality are not anticipated to pose a threat to the long-term persistence and viability of traditionally harvested fish or wildlife species in the RAA and would not result in the loss of vegetation communities in the LAA.

The Proponent acknowledged that changes to Indigenous peoples' quality of experience are expected as a result of the Project. The Proponent noted that effects to cultural value or importance associated with current use are difficult to capture quantitatively but they appreciate that intangible values are important. The Proponent committed to continued engagement with Indigenous groups to identify mitigations for changes to cultural value or importance associated with current use.

The Proponent concluded that overall effects to current use are considered not significant. The Proponent indicated the EAC would support the meaningful participation of local communities in environmental monitoring for the Project, promote the inclusion of local and Indigenous Knowledge in the Environmental Management and Monitoring Plans, and provide a direct point of contact for local communities and Indigenous groups with the Proponent.

The mitigation measures, monitoring, and follow-up programs the Agency views as key for effects to current use are described in Section 7.4.3 of this chapter.

7.4.1.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada recommended that the Proponent provide updated floodplain maps to communities on the shores of Lake St. Martin, particularly the south basin which may see less benefit from the Project, whenever there is a major change in the hydraulic model or outlet channel operating rules, and also publish updated floodplain maps to provide an opportunity to improve safety.

Indigenous Groups

Multiple Indigenous groups, including Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Pinaymootang First Nation, and Peguis First Nation



asserted that current use activities are life-sustaining activities that are integral to their culture, well-being, and lives.

Black River First Nation, Dauphin River First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Pinaymootang First Nation, Peguis First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted that the long-term displacement of communities by historical flooding in the region has already greatly affected Indigenous groups' ability to practice current use activities. They raised concerns about the lack of consideration of this historical baseline in the Proponent's assessment.

Assembly of Manitoba Chiefs, Black River First Nation, Bloodvein First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, and York Factory First Nation raised concerns regarding the lack of engagement and meaningful integration of Indigenous Knowledge and views into the Proponent's assessment.

Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation identified concerns regarding the Proponent's proposed EAC as a means of continued engagement and involvement of Indigenous groups in monitoring efforts associated with the Project. Indigenous groups raised the following concerns regarding the EAC: lack of effectiveness of the committee, lack of transparency and accountability by the Proponent, lack of authority in decision making, limitations on Indigenous participation, and lack of capacity support.

Access for Current Use

Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, and Pinaymootang First Nation identified concerns regarding restricted access to harvesting areas and areas of cultural and spiritual importance due to the Project. Restrictions could include physical barriers due to project components, barriers due to changes in conditions, disturbance or removal of trails and travel routes, changes to navigable waters, and avoidance of areas due to noise or odours. Multiple Indigenous groups identified the need for notification of access restrictions and development of further mitigation measures, such as an additional crossing location along the LSMOC. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sandy Bay Ojibway First Nation, Sagkeeng Anicinabe First Nation, and Little Saskatchewan First Nation indicated that increased barriers to land and water access from the Project would result in the prevention of members from accessing preferred travel routes and key harvesting areas. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sandy Bay Ojibway First Nation, and Sagkeeng Anicinabe First Nation noted that the outlet channels would create nearly impassable obstacles for their members to travel by foot or all-terrain vehicles.



Dauphin River First Nation, Fisher River Cree Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation expressed concern that the access road and the Project workforce would bring hunting competition from non-Indigenous hunters. Fisher River Cree Nation noted that temporary and permanent access roads would provide access to greater numbers of hunters that would ultimately affect the supply of wild game.

Little Saskatchewan First Nation noted concerns about changes to the sense of place and community due to limited or interrupted access to culturally important places. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation noted that the Project would cause disruptions to intergenerational knowledge transmission through the inaccessibility of culturally important locations such as teaching sites.

Availability and Quality of Resources for Current Use

The Interlake Reserves Tribal Council identified that the RAA is actively used by its member Indigenous groups for fishing, trapping, hunting, canoeing, plant harvesting, and for cultural reasons such as intergenerational knowledge transfer. Multiple Indigenous groups noted that species of cultural importance would be affected by the Project, such as fish (including pickerel, jackfish, whitefish, sunfish, sauger, bass, catfish, carp, mariah, perch, sucker, and tullibee), terrestrial wildlife (including moose, elk, wolves, coyote, bears, deer, rabbits, muskrat, marten, mink, fox, lynx, wolverine, weasel, beaver, porcupine, snakes, frogs, partridge, ptarmigan, grouse, eagles, chickens, ducks, and geese), and plants (including 120 species of cultural importance). The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation further identified that the Proponent's conclusion that residual effects to wildlife would be insignificant stands in direct contrast to their concerns grounded in shared land-based experiences and observations in the project area. The Manitoba Métis Federation identified concerns regarding the Project effects to fish and fish habitat, wildlife and wildlife habitat, and management of the outlet channels which would affect Métis culture and land use.

Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Peguis First Nation, and Pinaymootang First Nation raised concerns regarding the Proponent's lack of consideration of historical context of flooding resulting in an already heavily impacted landscape and resources and thus a severely altered ability to practice current use activities.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation raised concerns about Project related effects to fish and fish habitat in turn resulting in the loss of fish for food, social, ceremonial, and economic purposes. Specific concerns were raised regarding changes to water quality due to agricultural and other runoff entering the outlet channels and changes in sedimentation patterns causing substantial, long-term effects to fish and fish habitat.

Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Fisher River First Nation, the Interlake Reserves Tribal Council, Peguis First Nation, Pinaymootang First Nation, Sagkeeng First Nation, and Sandy Bay Ojibway First Nation noted that monitoring of fish and fish habitat should occur within areas of importance for fishing such as Berens Island, Black Island, Hecla Island (Icelandic River), McBeth Point, Reindeer Island, Pigeon Bay, Sandy Bar, all bays (e.g., Goldeye Creek, Fisher Bay) and peninsulas that make up the “Narrows” connected to the North Basin of Lake Winnipeg Reservoir, and Lake Manitoba. Dakota Tipi First Nation and Bloodvein First Nation identified the need for a program for engagement with local fishers that have experience with the changes to fish and fish habitat from sediment build-up from previous floods.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation identified concerns regarding the loss and degradation of vegetation species of importance (both for medicinal and sustenance purposes). The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation also requested that the Proponent co-develop with Indigenous groups a pre-construction harvest plan for plant foods and medicines and an access plan for areas adjacent to the PDA.

Dauphin River First Nation, Fisher River Cree Nation, Lake St. Martin First Nation, Peguis First Nation, the Manitoba Métis Federation, and Tataskweyak Cree Nation noted that waterbodies and wetland complexes surrounding the Project area support wildlife and plant species of cultural importance and thus wetland drainage and changes in water levels would affect the availability and quality of resources for current use. Lake St. Martin First Nation reported that wetlands are particularly important for medicinal plant harvesting and are used as sites for families to gather and share intergenerational knowledge. Norway House Cree Nation identified concerns about the quality of wetland habitat for species of cultural importance, such as muskrat, beaver, otter, and all wetland birds.

Fisher River Cree Nation and Norway House Cree Nation identified concerns regarding Project effects to culturally significant species and habitats, including moose. Fisher River Cree Nation requested that the Proponent engage with Indigenous communities to identify and designate Moose Recovery Zones. Fisher River Cree Nation further noted that the proposed access road occurs in an area containing excellent moose habitat and calving grounds and that the Proponent underestimated potential effects to moose populations by basing their conclusions on the viability of moose in the RAA rather than in a more localized area.

Fisher River Cree Nation, the Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted concerns about the fragmentation of habitat and other effects to wildlife corridors from the outlet channels, roads, and power lines, resulting in reductions in quantities of wildlife available to harvest.

Fisher River Cree Nation and Poplar River Cree Nation identified concerns with regards to the Proponent’s revegetation management plan, in particular the lack of consideration for planting mature trees and shrubs to replace those lost due to the Project construction. It was requested that the Proponent incorporate Indigenous Knowledge during revegetation, mitigation, monitoring, and follow-up programs.



See Chapter 6.3 (Terrestrial Landscape) and Chapter 7.1 (Fish and Fish Habitat) of this EA Report for additional views expressed related to the availability and quality of resources.

Quality of Experience

Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, and Poplar River First Nation noted concerns about the disruption of knowledge transmission, including opportunities to go out on the land and waters to practice and teach important cultural activities, which in turn affects Indigenous peoples' sense of place, community, and connection to the land.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation indicated concerns about increased safety issues for members, such as the navigation of more treacherous and unfamiliar terrain resulting in avoidance of the area.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sandy Bay Ojibway First Nation, and Sagkeeng Anicinabe First Nation noted the lack of consideration of Indigenous perspectives regarding contamination and the potential of loss of use of certain bodies of water both for recreational and subsistence purposes, or portions of them, due to perceptions of contamination and pollution.

7.4.1.3 Agency Analysis and Conclusions for Current Use

Access for Current Use

The Agency is of the view that the Project's residual adverse effects to access for current use would likely be high in magnitude, irreversible, and long-term. The Agency acknowledges that the Project would result in the direct loss of important trails and access routes identified by Indigenous groups that support navigation to and through current use areas. The Agency notes the Project would result in limitations on the ability to undertake current use activities through changes to groundwater and surface water, including the risk of basal heave (that is, a fracture in the till unit that results in uncontrollable groundwater discharge) and the modification of water levels resulting in changes to shoreline access to rivers and lakes. The Agency therefore recommends additional mitigation measures, follow-up, and monitoring programs as described in Chapter 6.1 (Surface Water) and Chapter 6.2 (Groundwater).

The Agency understands that during operation, some access could be restored through agreements with the Proponent or ceasing of construction activities and removal of temporary ancillary areas; however, some access will be permanently modified by the construction of the channels as they will intersect important trails and access routes and act as a barrier that can only be crossed at specific locations. The Agency is of the view that the LMOC would have crossing locations at sufficient intervals which may allow for reasonable resumption of access. However, the Proponent has only committed to a single crossing over the LSMOC at the WCS which greatly limits the ability of Indigenous groups that utilize this area to access either side of the channel. Indigenous groups indicated that the channels would act as impassable barriers to their members. Particularly for Indigenous groups that utilize and travel through the area around the LSMOC, the barrier created by the construction of the channel and the lack of crossing locations would



result in adverse effects to Indigenous groups' ability to navigate through the LAA and access preferred areas and resources for current use. The Agency acknowledges that the Proponent intends to continue discussions with Indigenous groups on effects to access and gathering additional information to determine whether an additional crossing location would be needed; however, the Agency notes that no commitment has been made for an additional crossing.

The Agency emphasizes the importance of consulting with Indigenous groups on the identification of areas where the outlet channels can be crossed and having appropriate signage along the outlet channels to aid in navigating to these crossing locations to maintain the ability to navigate through the PDA. Particular emphasis should be placed on engaging with Dauphin River First Nation, Peguis First Nation, Kinonjeoshtegon First Nation, and Pinaymootang First Nation due to their identification of trails and travel ways that would be intersected by the outlet channels and any other Indigenous groups who have identified the use of important trails and access routes or shorelines to access fishing, hunting, and gathering areas that would intersect with the Project or be modified.

Availability and Quality of Resources for Current Use

The Agency is of the view that the Project's adverse residual effects to the availability and quality of resources for current use would likely be high in magnitude and long-term due to compounding effects to species of cultural importance and their habitat, including plants, wildlife, and fish. The Agency notes that some effects may be reversible in the long-term should areas be successfully revegetated and restored to conditions suitable for cultural practices to resume. However, altered behaviours of wildlife and Indigenous peoples due to the disturbances will likely not be able to return to baseline conditions and would be irreversible.

The Agency acknowledges that Indigenous groups identified moose as a species of particular importance. Due to their critically low populations, moose may be affected to a greater degree by the Project. While the Proponent does not expect the Project to threaten the viability of moose in the RAA, the loss of moose habitat and changes to moose behaviour and movement could adversely affect the ability of Indigenous groups to harvest moose in preferred locations and require significant effort to continue practicing in the same way as without the Project.

The Agency recognizes that the Project would result in the loss of terrestrial habitat, including the loss of native vegetation, change in plant species diversity, and the temporary and permanent loss of wetlands and wetland functions, and that these changes would affect the abundance and distribution of species of cultural importance including commonly harvested species. The Agency understands that the construction of the LSMOC would result in changes to groundwater and surface water contributions to Big Buffalo Lake and Buffalo Creek Complex which may result in changes to current use. The Agency recommends additional mitigation measures, follow-up, and monitoring programs to address this concern as described in Chapter 6.1 (Surface Water) and Chapter 6.2 (Groundwater).

The Agency understands that effects to terrestrial vegetation and wetlands would be partially mitigated through revegetation and wetland offsetting but notes that uncertainty remains in the effectiveness of the proposed offsetting in mitigating effects to species of cultural importance. The Agency notes that wetland offsetting and compensation as per Manitoba's *The Water Rights Act* would only require compensation for

0.1 hectares of the 768.5 hectares of wetlands removed for the construction of the LSMOC. The Proponent originally committed to rewatering of the Birch Creek and Big Buffalo Lake Complex to mitigate the loss of wetlands due to the Project; however, this is no longer being proposed as the Proponent has stated upon further investigation, rewatering is economically unfeasible. The Agency identified the need for additional wetland monitoring, and inclusion of species of value to culturally important wildlife and of interest to Indigenous groups in revegetation as described in Chapter 6.3 (Terrestrial Landscape). However, no additional mitigation or offsetting outside of the requirements for compensation as per *The Water Rights Act* have been identified and adverse residual effects to species of cultural importance that rely on wetlands, such as moose, beaver, muskrat, otter, and wetland birds are anticipated.

The Agency recognizes that the Project may permanently alter or destroy fish habitat, modify fish passage, and increase fish mortality in the PDA and LAA during construction and operation. The Agency is of the view that changes in fish movement (fish out of Lake Manitoba to Lake St. Martin and out of Lake St. Martin to Lake Winnipeg through the channels) are unavoidable and cannot be completely mitigated. The Agency concludes that residual effects to fish habitat may result in changes to fish movement and reductions in fish abundance, which would in turn result in adverse residual effects to current use. The Agency understands that the Proponent will be required to offset for any harmful alteration, disruption, or destruction of fish and fish habitat as a part of the *Fisheries Act* authorization required for the Project. While this offsetting may offset potential effects to fish and fish habitat, it would not likely occur within the LAA. This could in turn result in an increased effort and travel distance required by Indigenous peoples to successfully fish. The Agency understands that the Proponent committed to developing a fish rescue plan and appropriate site-specific mitigation and monitoring measures, including measures to mitigate effects to surface water quality and quantity and adjustments to outlet channel flow rates. The Agency notes the importance of providing adequate support for involvement of Indigenous groups in monitoring of effects to vegetation, wildlife, and fish and the implementation of adaptive management measures where needed.

Quality of Experience

The Agency is of the view that residual adverse effects to the quality of experience would likely be high in magnitude, irreversible, and long-term due to the large footprint of the Project, changes in aesthetics and access, increased mortality risk and alteration of behaviour of culturally important species, and changes to Indigenous peoples' cultural and spiritual connection with the land, sense of place, and intergenerational knowledge transfer. The Agency notes that Indigenous peoples' quality of experience relies heavily on their ability to access areas for current use purposes and the availability and quality of resources for current use.

The Agency recognizes that change to Indigenous peoples' experience due to the Project would be dependent on each individual and emphasizes the importance of continued engagement throughout the life of the Project to better understand how land users are experiencing changes and implementation of additional mitigations to address these experiential effects.

Overall Conclusions

The Agency accepts the views expressed by Indigenous groups that the context of historical flooding in the region must be considered in characterizing residual effects to current use. The Agency recognizes that



multiple historic flooding events have already significantly altered the landscape and resources and modified Indigenous groups' ability to practice current use activities. Therefore, the Agency understands that the Project is located in a region of already disturbed and degraded ecological and socio-economic context. The Agency anticipates high magnitude, generally irreversible, and long-term effects to Indigenous groups' access, availability and quality of resources, and quality of experience. After taking into account the implementation of key mitigation measures, monitoring, and follow-up programs, the Agency is of the view that the Project's adverse residual effects to access, availability and quality of resources, and quality of experience are likely to cause significant adverse environmental effects to Indigenous peoples' current use of lands and resources for traditional purposes.

The Proponent proposed the EAC as a means of continued engagement and involvement of Indigenous groups in monitoring of the potential adverse environmental effects as a result of the Project being carried out. However, the Agency notes that Indigenous groups have identified concerns about the limitations of this committee, including lack of transparency and accountability of decision making, limitations on Indigenous participation, and lack of support for involvement. While the Agency understands that a Proponent-led advisory committee is important to ensure continued involvement of Indigenous groups in monitoring and providing a forum for discussions, the Agency proposes some additional key considerations as a part of this committee:

- ensure opportunities to participate in this committee are offered to all Indigenous groups;
- ensure adequate support is provided to Indigenous groups to enable their participation in Indigenous monitoring;
- offer opportunities for Indigenous groups to lead sessions for the EAC, including but not limited to training, reporting on monitoring outcomes that they have been a part of, and recommendations for further mitigation measures; and
- on an annual basis, the Proponent will post a report of the key recommendations coming out of the committee, along with a plan for their implementation. Should a recommendation not be intended to be brought forward, a rationale must be provided.

In order to support ongoing engagement, address concerns regarding the EAC, and to ensure Indigenous groups are fully engaged in monitoring of potential effects of the Project, the Agency is recommending the creation of an Indigenous-led monitoring committee.

The Agency is of the view that additional key mitigation measures would be necessary to ensure that access, availability and quality of resources, and quality of experience are maintained to the extent possible in the LAA. These key measures are described below. Some critical measures include: accommodating key traditional harvesting periods when determining project activities and schedules; avoiding use and disturbance of key harvesting/cultural areas; developing community-specific notification and engagement plans; providing training for Indigenous groups; ensuring adequate support is provided to ensure the participation of Indigenous groups in monitoring programs; and ongoing consultation with Indigenous groups throughout the life of the Project.

The Agency is of the view that continued Proponent-led consultation will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions



to concerns as they arise throughout the life of the Project. The Agency notes the importance of continued engagement with each Indigenous group separately, understanding that large forums do not always allow for community-specific concerns to be raised. The Agency recognizes the importance of utilizing Indigenous Knowledge and information gathered from community-specific consultation to inform the need for additional mitigation and adaptive management measures for any unanticipated effects that arise. A follow-up program for effects to current use involving the continued gathering and consideration of Indigenous Knowledge and the incorporation of monitoring results is critical for verifying effects of the Project and for implementing adaptive management measures as required.

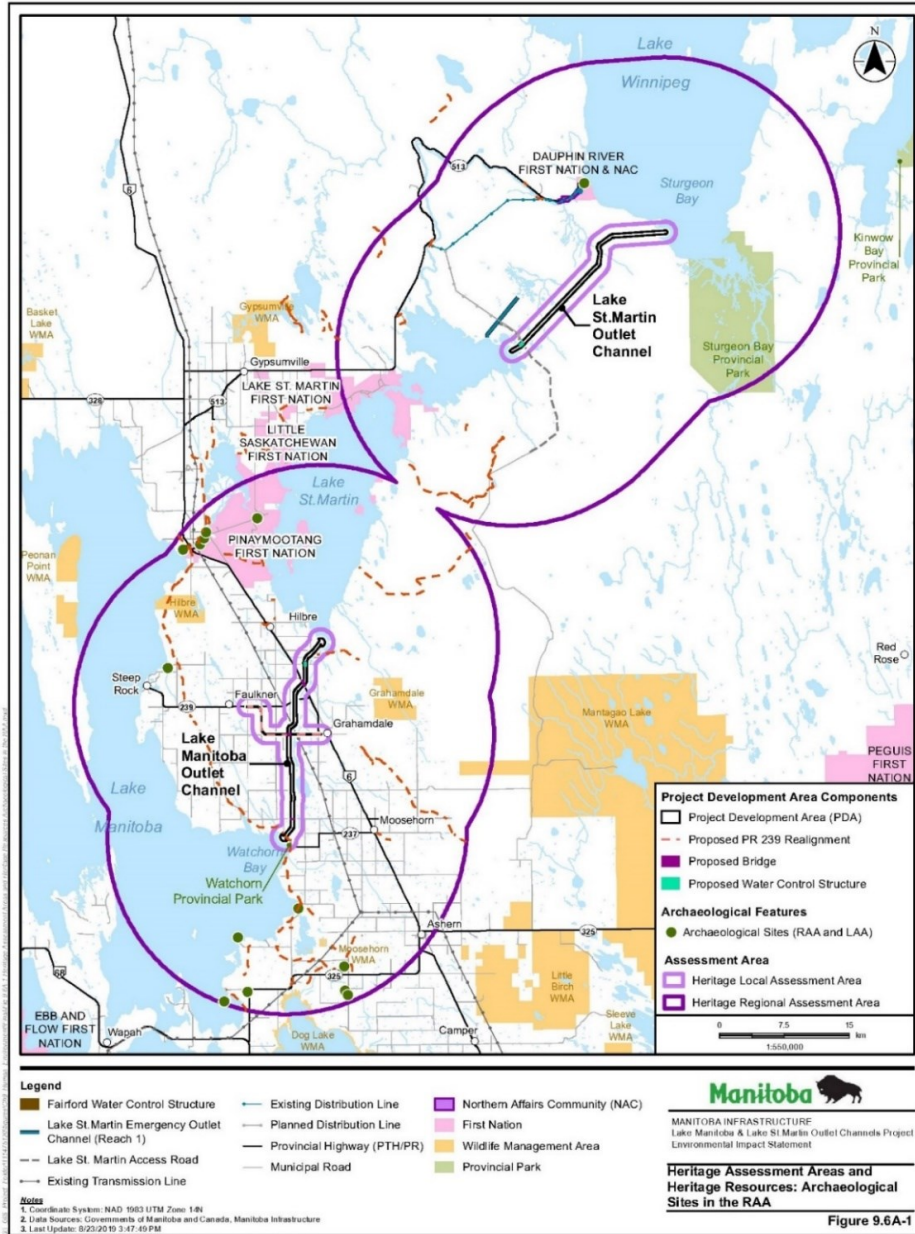
7.4.2 Physical and Cultural Heritage, and Sites of Significance

7.4.2.1 Proponent's Assessment of Effects

The Proponent analyzed effects of the Project on heritage resources and cultural and spiritual sites or areas of significance to Indigenous peoples. The assessment evaluated physical and cultural heritage and sites of significance including structures, sites and objects of historical, archaeological, paleontological or architectural significance. Cultural and spiritual sites or areas described by the Proponent included burial sites, archeological features, ceremonial sites, sacred areas, camps, and cabins; these sites are often important for knowledge and language transmission. The spatial boundaries of the Proponent's assessment of effects to heritage resources are illustrated in Figure 11. The Proponent's assessment of effects for both heritage resources and cultural and spiritual sites or areas of significance is detailed below.



Figure 11 Spatial Boundaries for the Proponent’s Assessment of Effects to Heritage Resources



Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Environmental Impact Statement, Volume 4 Chapter 9 (March 2020)

Figure Description: The LAA for heritage resources includes the PDA and a 1 kilometre buffer from the centre of the PDA. The RAA includes the PDA and LAA and a 20 kilometres buffer from the centre of the PDA.



Overview of Effects to Physical and Cultural Heritage

Heritage resources are protected under Manitoba's *The Heritage Resources Act* and are managed by the Heritage Resources Branch (HRB) under the Department of Sport, Culture, Heritage and Tourism. The Proponent conducted a review of heritage resources within the RAA in 2019, which indicated the presence of 15 archaeological sites and three paleontological sites. A pre-construction Heritage Resource Impact Assessment (HRIA) was completed in 2021 in accordance with the provincial *The Heritage Resources Act*, which identified ten heritage resource sites within the PDA. Site-specific mitigation measures have been developed for three sites that have undisturbed components. Mitigation measures proposed by the Proponent include pre-construction archaeological salvage excavations for artifact scatters and fencing to prevent disturbance of a stone feature. The remaining sites will be monitored for artifacts and features exposed during construction as part of the Heritage Resource Protection Plan (HRPP).

The Proponent indicated that in conjunction with the sites identified during the HRIA, additional cultural, ceremonial and harvesting sites identified by Indigenous groups, whether archaeologically or culturally affiliated, will be addressed by the Proponent on a site-by-site basis for mitigation strategies. Based on the knowledge provided through traditional land and resource use studies and by Indigenous groups, the Proponent identified additional locations requiring archaeological investigations: the LSMOC electrical distribution line, Snake Island and the Lake St. Martin Narrows, and burials located on Indigenous community lands at Lake St. Martin. These sites will undergo surveys to identify potential heritage resources and record and preserve heritage objects found.

The Proponent identified that the primary pathway of effects to physical and cultural heritage resources would occur through ground-disturbance and construction activities. Construction activities that could result in the loss or disturbance to site contents include vegetation or topsoil removal, channel excavation, compaction, vehicle traffic, grading for access roads, construction of project components, development of temporary construction camps and staging areas, rock quarrying, and water development and control. The removal of vegetation may also create unstable soil, resulting in the displacement of exposed heritage resources. However, the Proponent concluded that mass movement of soil is unlikely due to the subtle topography and nature of the materials within the LAA, and proposed erosion control measures as described in Chapter 6.1 (Surface Water) and 6.3 (Terrestrial Landscape).

Effects to physical and cultural heritage could occur during operation of the Project as well as during transportation activities during construction and operation in the LAA. Heritage resources could be affected by changes to surface and subsurface water flows from the Project during both construction and operation. The Proponent did not anticipate effects to heritage resources beyond the PDA, including for federal reserve lands beyond the PDA, given that the purpose of the Project is to reduce flooding and the Project is not anticipated to increase shoreline erosion. With mitigations in place, including site-specific mitigations identified in the HRIA, the Proponent did not anticipate residual effects to heritage resources in the PDA.

Overview of Effects to Cultural and Spiritual Sites

Indigenous groups expressed concerns regarding 393 cultural sites within the RAA, referred to in the 2020 Interlake Reserves Tribal Council Traditional Knowledge and Use Study, Specific to Manitoba



Infrastructure's Proposed Lake Manitoba and Lake St. Martin Outlet Channels Project (IRTC TKUS)⁴⁴. The Proponent indicated that cultural continuity values in the IRTC TKUS are defined as camping sites used while hunting, fishing, and attending cultural gatherings; ceremonial and gathering places used for sweat lodges, Treaty gatherings, powwows, and sun dances; multiple spiritual places and place names; feather collection sites; teaching areas; trails used to access the land; and birth places and burial sites. The Proponent indicated that cultural and spiritual sites and areas could be affected by direct physical disturbance related to construction and maintenance activities. Access to cultural or spiritual sites in the LAA could be altered by access restrictions to the PDA and users could experience sensory disturbances when visiting sites (see section 7.4.1.1 for further discussion).

Based on the IRTC TKUS and a review of geomatic information provided by the Interlake Reserves Tribal Council, the Proponent indicated that 19 of these sites are within five kilometres of the PDA and two are within 250 metres of the PDA. The Proponent indicated that several cultural continuity sites overlap with the PDA, and several others are located along shorelines of lakes and islands. The Proponent indicated that most of the 393 sites are not predicted to be affected by the Project. The Proponent committed to further engagement with the Interlake Reserves Tribal Council members regarding the location of cultural sites identified in the IRTC TKUS.

Cemeteries and Burial Sites

The Proponent identified that the primary pathway of effects to cemeteries and known burial sites could occur through subsurface disturbance and altered surface and ground water flow. Exposure of unmarked graves adjacent to cemeteries could occur during ground disturbing construction activities. Further, the Proponent identified that cemeteries could be affected through alteration of subsurface flows during construction and operation, causing grave shaft collapse and headstone disturbance. Additionally, project activities could cause reduced air quality and increased noise, resulting in reduced quality of experience when visiting areas of spiritual and cultural significance.

The Bayton St. Thomas Lutheran Cemetery is in the LMOC LAA and the east cemetery boundary is within 25 metres of the west edge of the LMOC PDA. The Proponent indicated that surface observation and systematic testing did not identify unmarked graves outside the cemetery boundaries. The Proponent did not anticipate adverse residual effects to cemeteries. Proposed mitigations are in place, such as providing notification to avoid noise and dust nuisances at particular times and monitoring burials for evidence of tilting.

Multiple Indigenous groups, including Dauphin River First Nation, Fisher River Cree Nation, Kinonjeoshtegon First Nation, Lake St. Martin First Nation, and Pinaymootang First Nation, have identified cemeteries and burial sites within the RAA and have expressed concerns regarding the potential for burial sites within the PDA. The Proponent indicated that no evidence of burials was observed in the PDA during HRIA fieldwork, and that no specific locations of unmarked burials in the PDA or LAA have been shared by

⁴⁴ Olson, R., and Firelight Research Inc. (2020). *Interlake Reserves Tribal Council Traditional Knowledge and Use Study Specific to Manitoba Transportation and Infrastructure's Proposed Lake Manitoba and Lake St. Martin Outlet Channels Project*.



Indigenous groups. Therefore, the Proponent concluded that effects from changes in the water table are not anticipated for cemeteries other than the Bayton St. Thomas Lutheran Cemetery.

Trails

The Proponent indicated that the Fairford Trail crosses the LMOC PDA within 380 metres of the confluence of Watchorn Creek and Watchorn Bay on Lake Manitoba. Project construction will result in the removal of a 485 metres long segment of the trail. A section of the trail is within approximately 175 to 250 metres of the lake, and there is the potential for heritage resources related to the use of the trail to be present. The Proponent noted that the HRIA did not identify evidence of any heritage resources on the ground of the Fairford Trail and noted that the municipal road system may have replaced Fairford Trail's historical function as a travel route and Watchorn Creek crossing. Other trails noted by the Proponent include an unnamed trail 400 metres from the LMOC PDA and a ridge that has been identified as a historic travel corridor by Indigenous groups.

Ceremonial Sites and Camps

The Proponent indicated that Pinaymootang First Nation and Sagkeeng Anicinabe First Nation identified ceremonial and spiritual sites within the project area but did not disclose the exact locations. The Manitoba Métis Federation identified ceremonial, burial, sacred and spiritual places, and an intergenerational camp within an area between Lake Winnipegosis and Lake Manitoba. Reduced air quality and increased noise, due to the Project, could reduce the quality of experience when visiting areas of ceremonial or teaching significance.

The Narrows and Shorelines

The Narrows of Lake St. Martin are of importance to Indigenous groups. Increased water velocities through the Narrows could result in erosion, altering the shoreline and potentially disturbing heritage resources and sites of significance. The Proponent indicated that the Project would increase water velocities in the Narrows during flood management when the outlet channels are in operation (WCS gates open). When WCS gates are closed (i.e., non-flood management when the channels are not in operation), water velocities through the Narrows would remain similar to pre-disturbance conditions. Many shoreline features in the Narrows are armoured with boulder ridges, and the substrates in the Narrows are expected to withstand predicted water velocities during operations. Therefore, the Proponent did not expect that the water velocity changes would measurably increase risks to physical or cultural heritage.

The Proponent acknowledged that shorelines at LMOC and LSMOC inlets and outlets were identified as having cultural and spiritual significance. The Proponent concluded that the Project would not cause incremental shoreline erosion at the inlets and outlets because water velocities will decrease beyond the excavated footprint and the footprints are designed to be non-eroding. Additionally, based on updated water balance modelling, the Proponent predicted that the elevation increase of Lake Winnipeg during flood operation would be negligible, and that resulting effects to heritage resources would likely be undetectable. The Proponent indicated that the majority of potential effects to Lake Manitoba and Lake St. Martin and their shorelines, as a result of the Project, would be positive due to the reduction of floodwater elevation.



Islands

The Proponent acknowledged that Indigenous groups have indicated the potential for cultural sites on islands outside of the PDA. Islands themselves may hold cultural value and be considered a heritage site. The Proponent noted that there are currently no heritage resources recorded by the HRB on islands located on lakes Winnipeg, Manitoba, and St. Martin within the RAA, and there are no islands within the PDA. The Proponent indicated that effects to physical and cultural heritage and sites of significance are not expected to increase as a result of the Project given that the Project would reduce shore and island erosion and would not increase water levels in Lake Winnipeg and Lake St. Martin beyond current variation. The Proponent did not provide mitigations specific to islands because they did not predict heritage resources effects.

Proponent Conclusions

The Proponent acknowledged that Indigenous groups have indicated that the Project has the potential to affect cultural and spiritual sites or areas, including physical and cultural heritage resources. The Proponent indicated that the disturbance or removal of cultural and spiritual sites during construction and operation is expected; however, adverse effects to heritage resources from dust and noise, altered surface and ground water, or unmarked graves, were not expected. The Proponent did not anticipate residual effects to heritage resources in the PDA. The Proponent predicted that effects to cultural and spiritual sites within the RAA would be adverse and would occur through Project construction and operation. The likelihood of disturbance, alteration, or removal of cultural and spiritual sites in the LAA would be moderate. Effects to cultural and spiritual sites located within the PDA would be of high magnitude and irreversible, as the sites cannot recover or return to baseline. The Proponent predicted that effects to cultural and spiritual sites would result in changes to current practices and restrictions on the ability to continue current practices in preferred ways or at preferred locations.

The Proponent anticipated that effects of the Project would not critically reduce or eliminate the availability of and access to cultural sites, and effects to both known and previously undiscovered heritage resources would be mitigated by the implementation of the proposed HRPP and adherence to Manitoba's *The Heritage Resources Act*, including the implementation of mitigations (such as detailed recording and mapping of spiritual or cultural sites). If there is a potential pathway of effect to a specific, identified site – whether tangible or intangible – the HRPP must include measures to address site-specific issues. While Indigenous groups have expressed concerns regarding cultural and heritage sites located on islands and federal lands beyond the PDA, the Proponent indicated that a pathway of effects from the Project does not exist for these sites, given that the purpose of the Project is to reduce flooding and the Project is not anticipated to increase shoreline erosion. The Proponent has committed to monitoring bathymetry of the Lake St. Martin Narrows to verify erosion predictions and will share the monitoring results with Indigenous groups.

The mitigation, monitoring, and follow-up measures the Agency views as key for reducing residual adverse effects to physical and cultural heritage and sites of significance to Indigenous peoples are described in Section 7.4.3 of this Chapter.

7.4.2.2 Views Expressed



Indigenous Groups

Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the lack of Indigenous Knowledge and project-specific baseline data in the physical and cultural heritage resources survey work, artifact/site management, assessment of effects, and proposed mitigation measures. Indigenous groups expressed concerns about risks to both known and undiscovered archaeological and paleontological sites and expressed interest in being consulted on and participating in the development of appropriate mitigation measures for archaeological sites. Indigenous groups identified concerns regarding numerous heritage resources and sites of significance within the PDA, LAA, and RAA. Further, Indigenous groups have noted the potential effects of the Project in this regard would be distinct for each Indigenous group.

The Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, Poplar River First Nation, and Sandy Bay Ojibway First Nation identified changes to islands as a possible pathway of effect to camp sites, hunting areas, and traditional use areas, some of which may be along shorelines and/or on islands.

Black River First Nation, Dauphin River First Nation, The Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Norway House Cree Nation, Peguis First Nation, and Pinaymootang First Nation expressed concerns that Project-related flooding could impact burial sites, and Bloodvein First Nation, Dakota Tipi First Nation, and Peguis First Nation indicated that past flooding has disturbed burial sites and churches.

The Interlake Reserves Tribal Council, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding potential adverse effects to the heritage value of the Fairford Trail, lack of engagement to confirm the location and importance of the trail or the Project's potential adverse effects, and the sufficiency of the Proponent's proposed mitigation measures for the Fairford Trail. Hollow Water First Nation indicated that there may be ongoing current use of the trail.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerned regarding the protection of a regionally significant complex settlement site that dates to 3,000 years Before the Present. Protection of the site has been identified as high priority by Indigenous groups. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation indicated that the Proponent's proposed mitigation for the undisturbed archeological sites, "the village sites" (EhLp-004 and



EhLp-006)⁴⁵ – salvage excavation and removal of artifacts – is unacceptable and that excavation is not an appropriate mitigation measure.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation indicated that archaeological monitoring should occur at all identified heritage sites within the PDA, including sites EkLm-001, EiLp-004, EiLp-005 and EhLp-003.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation indicated that the 2020 Interlake Reserves Tribal Council Traditional Knowledge and Use Study, Specific to Manitoba Infrastructure's Proposed Lake Manitoba and Lake St. Martin Outlet Channels Project identified 393 cultural sites within the RAA and expressed concerns that these sites were not considered by the Proponent in the analysis of effects to physical and cultural heritage and development of mitigation measures. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted that the Proponent must acknowledge the significance of these sites and recognize that some or all of them may be lost due to the Project.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation identified concerns about Project components or activities with locations not yet finalized by the Proponent, such as quarries and temporary work camps, that will have potential effects to resources or sites of importance, including resources and sites outside of the PDA. These Indigenous groups noted the importance of including Indigenous groups in the planning of project activities and restoration practices.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the adequacy of the HRPP proposed by the Proponent. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation indicated that there is a lack of direct Indigenous input in the development of policies and procedures within the HRPP and indicated concerns that the Proponent has not planned for the involvement of Indigenous groups in archeological work and monitoring, including during excavations, or in the hiring and selection of Project archeologists. Lake St. Martin First Nation expressed concern regarding the use of heavy equipment near burial sites. The Interlake Reserves Tribal Council highlighted the need for Indigenous monitors to protect unmapped sites in confidential locations.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation indicated that the Proponent's proposed mitigation and monitoring programs do not acknowledge Indigenous stewardship and rights to protect ancestral remains, and that there is no protocol in place for repatriation of cultural artifacts. These groups indicated that there is a need for a communication plan with Indigenous groups in the event that a chance find occurs. Fisher River Cree

⁴⁵ EhLp-003, EhLp-004 and EhLp-006, EiLp-002, EiLp-004, EiLp-005, EkLm-001, and EkLn-001 refer to sites identified through the HRIA.



Nation expressed concern regarding the potential for burial sites to be disturbed as a result of Project construction, including where human remains will be kept if they are excavated as part of the Project.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the Proponent's commitment to conduct mapping sessions to better understand how the Project may affect access to culturally important sites, specifically how and when these sessions would take place. These Indigenous groups also expressed concerns regarding the Proponent's reliance on the EAC, considering that some Indigenous groups are not participating.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation indicated that additional tangible and intangible cultural heritage sites identified by Indigenous groups through mapping exercises and ongoing consultation need to be incorporated into the HRPP and appropriate mitigation measures be provided.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation requested that the Proponent commit to an Indigenous-led monitoring program for physical and cultural heritage and greater involvement of Indigenous groups in cultural heritage and archaeological work. These Indigenous groups requested that Indigenous monitors be on site for all archaeological activities, and that Indigenous groups receive training to participate in archeological activities.

The Manitoba Métis Federation requested that training for the identification of heritage resources include Métis-specific information.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation requested that Indigenous groups be provided the opportunity to hire an archeologist that represents their interests, and that Indigenous monitors and archeologists be directly involved in the excavation activities for sites EhLp-004 and EhLp-006.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, and Poplar River First Nation expressed concerns that project workers and public could damage known sites of physical and cultural heritage.

Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, and Poplar River First Nation expressed concerns that the Project may impact Indigenous groups cultural values and connection to the PDA and LAA, cultural transmission activities, knowledge sharing and teaching, and location-specific spiritual sites and practices. For example, Fisher River Cree Nation and Pinaymootang First Nation expressed concern that intergenerational knowledge transfer could be negatively affected by the Project if community members do not teach youth fishing skills due to contamination concerns.

Pinaymootang First Nation, the Interlake Reserves Tribal Council, Fisher River Cree Nation, Little Saskatchewan First Nation, Poplar River First Nation, Dauphin River First Nation, and Hollow Water First



Nation expressed concerns that intangible aspects of cultural heritage could be negatively impacted by the Project.

Pinaymootang First Nation indicated that intangible culture could include oral traditions, social practices, rituals, cultural events, knowledge and practices related to nature, and the knowledge and skills to produce traditional crafts. Project effects such as loss of cultural connection to sites of physical and cultural heritage could occur and land users could lose their cultural/spiritual connection with these areas.

Poplar River First Nation expressed concerns regarding possible effects of altered surface water quality and quantity to Pimachiowin Aki, a UNESCO World Heritage Site, which lies on the eastern shore of Lake Winnipeg within the Project RAA.

Public Groups

Keewatinook Fishers of Lake Winnipeg expressed concern that cultural losses linked to a lack of environmental and regulatory protections have created a generational gap in the transmission of Indigenous Knowledge, and that these losses will continue to worsen.

7.4.2.3 Agency Analysis and Conclusions for Physical and Cultural Heritage and Sites of Significance

The Agency understands some physical and cultural heritage resources and sites of significance, including the complex settlement site and Fairford Trail, would be permanently lost, altered, or inaccessible and that the requirements mandated under Manitoba's *The Heritage Resources Act* may not fully mitigate or protect these sites and resources, acknowledging that the Proponent and Indigenous groups may have different definitions of physical and cultural heritage and sites of significance. The Agency notes that spiritual and cultural practices of Indigenous groups are often integrally linked to specific locations and surrounding landscape features, as well as structures, sites, and things of historical, archaeological, paleontological, or architectural significance. The Agency recognizes that the loss or alteration of heritage resources and sites of significance has the potential to affect the transmission of traditional language, oral history, and teachings between generations of Indigenous peoples. The Agency is of the view that additional key mitigation measures would be necessary to reduce adverse residual effects to physical and cultural heritage and to structures, sites, and things of historical, archaeological, paleontological, or architectural significance, as described in Section 7.4.3. These include: Indigenous monitoring of land disturbance activities, conducting ceremonies, developing an archaeological and heritage management plan in consultation with Indigenous groups, developing a procedure for the involvement of Indigenous groups in chance finds, discussing with Indigenous groups the opportunity to return artifacts of Indigenous origin to the communities, and developing additional mitigations for effects to culturally important resources, sites, and harvesting areas within the LAA and RAA.

Physical and Cultural Heritage and Sites of Significance Within the Project Development Area



The Agency acknowledges that Indigenous groups have expressed concerns regarding the HRPP, including the lack of involvement of Indigenous groups in its development and in chance find procedures. The Agency understands that the HRPP would include measures to address site-specific issues where there is a potential pathway of effect to a specific site within the PDA (whether tangible or intangible), and that the Environmental Protection Plan (EPP) would outline specific Contractor protocols to follow when working within an Environmentally Sensitive Site. The Agency understands that the Proponent will provide further opportunities to advance Indigenous content in the Environmental Management Program framework, including the HRPP. The Agency recognizes that the Proponent has developed additional procedures for human remains and regionally important heritage resources, which include notification of Indigenous groups (for human remains, notification will be made once remains are deemed non-forensic by the Royal Canadian Mounted Police), opportunities to conduct ceremony, and opportunities to make recommendations regarding concerns such as further analysis, repatriation sites, and potential memorial structures. The Agency understands that the process for releasing artifacts to Indigenous groups and the storage and curation requirements for artifacts are managed by the HRB, and that the Proponent has approached the HRB to receive more information about this process. Additionally, the Proponent would provide heritage training to Indigenous monitors.

The Agency agrees with the Proponent's assessment that adverse effects to cultural and spiritual sites located within the PDA would be of high magnitude and irreversible. While the Proponent proposed specific mitigations for sites within the PDA, Indigenous groups have indicated that they do not accept certain procedures as mitigation. For example, Indigenous groups expressed concerns regarding the protection of a regionally significant complex settlement site that dates back to 3,000 years Before the Present (EhLp-004 and EhLp-006). The Agency recognizes that Indigenous groups indicated that the proposed salvage excavation and removal of artifacts is unacceptable and that excavation is not an appropriate mitigation measure. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation stated that the complex settlement site is irreplaceable and deeply important. The Proponent indicated that realignment of the LMOC at Lake Manitoba would not be considered given that it would likely affect additional heritage resources. The Proponent committed to engage with Indigenous groups to determine and coordinate an Indigenous ceremony or other activity prior to fieldwork, involve Indigenous monitors, mitigate the heritage sites, and present the results to Indigenous groups and the HRB.

Project construction will result in the removal of a section of the Fairford Trail in the PDA. While the Proponent indicated that the trail is now a hayed meadow, the Agency notes that as Indigenous groups identified the Fairford Trail as an area with heritage value – and given that there may be ongoing use of sections of the trail – it is important to consider this trail regardless of its current state. While the Agency understands that the Proponent has committed to working with Indigenous groups to appropriately acknowledge, record, and celebrate the cultural and historical importance of the Fairford Trail, the Agency agrees with Indigenous groups that the Proponent has not provided a clear mitigation for the loss of the Fairford Trail.

The Agency is of the view that disturbance of the complex settlement site and Fairford Trail would constitute an adverse, irreversible impact on physical and cultural heritage and sites of significance. The Agency is of the opinion that it is important that the Proponent continue engaging with Indigenous groups



regarding procedures within the HRPP and discussing opportunities for the transfer or repatriation of artifacts.

Physical and Cultural Heritage and Sites of Significance Within the Local Assessment Area and Regional Assessment Area

The Agency acknowledges that Indigenous groups indicated that the baseline information for physical and cultural heritage and sites of significance provided by the Proponent was incomplete. The Agency agrees that there is uncertainty regarding how Indigenous Knowledge and views were incorporated in the assessment of effects of the Project to heritage resources and sites of significance, and intangible aspects of cultural heritage. While the Proponent conducted a pre-construction HRIA to assess the presence of heritage resources within the PDA, the focus was limited to areas of high potential for physical heritage and archaeological resources within the PDA only. The Agency understands that the Proponent provided additional locations where heritage surveys will be conducted (see Section 7.4.2.1).

The Agency understands that many sites of significance are within the LAA and RAA, and therefore were not captured in the HRIA. For example, Indigenous groups expressed outstanding concerns regarding 393 cultural sites within the RAA. The primary pathway of effects to sites of significance outside of the PDA is erosion and sedimentation, which would be mostly likely to occur near the outlet channel inlets and outlets and along the Lake St. Martin Narrows, where water levels and velocities are most likely to be altered. The Agency agrees with Environment and Climate Change Canada that uncertainty remains in the sediment deposition pattern and incoming sediment load, and that sediment load and substrate sediments should be monitored after commissioning of the channels and after each channel operation (see Views Expressed in Chapter 6.1 – Surface Water).

The Agency understands that the Proponent would work with Indigenous groups and HRB to identify sites of significance with tangible and intangible value and develop appropriate mitigations, and that the Proponent is committed to further engagement with members of the Interlake Reserves Tribal Council regarding the location of cultural sites. The Agency also understands that the Proponent would conduct mapping sessions with Indigenous groups to better understand Project effects to culturally important sites or harvesting areas, identify and map where areas or sites may be located, and develop additional mitigation or accommodation measures that may be considered to address potential adverse Project effects. The Agency is of the view that uncertainty remains regarding effects to physical and cultural heritage and sites of significance outside of the PDA and how they would be mitigated given: (1) the number of sites identified by Indigenous groups, and (2) that the Proponent has committed to future mapping sessions and mitigation development, therefore information on specific mitigations is not currently available.

The Agency recognizes that uncertainty remains regarding the locations of ancillary areas during construction (including work camps, quarries, and laydown areas). The Agency understands that the Proponent provided options of potential ancillary areas in already disturbed areas for the LSMOC (campsites or existing borrow pits). The Agency understands that these locations are adjacent to two Heritage Sensitive Areas (defined in the HRPP as locations within the Project in which there is a high potential for archaeological materials). The Agency understands that ancillary areas for the LMOC would



be located on lands owned by the Proponent adjacent to the ROW or on private lands, as negotiated with local landowners. The Proponent recognized that some sites for the LMOC are outside of the PDA and sought input from the HRB regarding whether a separate HRIA or archaeological construction monitoring would be required for each site. The Proponent indicated that any additional sites identified would undergo the same review and screening process. The Proponent indicated that the proposed approach to identifying locations for ancillary areas incorporated opportunity for Indigenous groups to provide input into the requirements for selection, development, and decommissioning of such areas. The Agency understands that there will be continued opportunities to provide feedback on construction and temporary project activities through the EAC, and that should unanticipated heritage resources be encountered, chance find procedures outlined in the HRPP would be enacted.

The Agency acknowledges that Indigenous groups expressed concerns that Project-related effects to Lake Winnipeg and its species could affect Pimachiowin Aki. The Agency accepts the proponents' predictions that, based on water balance model and engineering designs, the Project would result in negligible changes to elevations and flows in Lake Winnipeg. The Agency notes that Parks Canada oversees the cataloging and promotion of designated UNESCO World Heritage Sites in Canada, including Pimachiowin Aki.

Intangible Aspects of Cultural Heritage

The Agency acknowledges that Indigenous groups expressed concerns regarding intangible aspects of cultural heritage, including knowledge transmission and cultural and spiritual connection with the land. The Agency notes that changes to access for current use and quality of experience due to the Project are considered high magnitude, long-term, and irreversible, as described in Section 7.4.2. The Agency is of the view that changes to current use practices and quality of experience would result in adverse effects to cultural heritage by changing Indigenous peoples' spiritual connection with the land, sense of place, and intergenerational knowledge transmission. Additionally, the Agency highlights the views expressed by Indigenous groups regarding cultural continuity which is linked to both tangible and intangible aspects of physical and cultural heritage (Chapter 9 Impacts to Aboriginal or Treaty Rights), indicating that the Project could result in changes to cultural traditions and the ability to transfer knowledge, especially in the context of historical flooding which has resulted in enduring impacts to the transmission of cultural values. The Agency is of the view that residual effects to physical and cultural heritage, sites of significance, and traditional resources and areas of current use would adversely affect intangible aspects of cultural heritage – including the transmission of traditional language, oral history, and teachings between generations of Indigenous peoples – and that residual effects would remain despite the Proponent's proposed mitigations.

Overall Conclusions

The Agency understands that the Proponent proposed mitigation, monitoring, and follow-up measures to address potential effects to physical and cultural heritage resources and to structures, sites, and things of historical, archaeological, paleontological, or architectural significance sites of significance, including development of a HRPP. The Agency also understands that Indigenous groups will be invited to participate in a Project EAC and that concerns regarding sites of significance could be brought forward through the EAC. However, the Agency understands that not all Indigenous groups engaged on the Project will be

involved in the EAC, and that some Indigenous groups have chosen not to participate. The Agency understands that the proponent has a standing and ongoing offer to Indigenous groups that have chosen not to participate in the EAC to do so at any time. The Agency acknowledges that information shared by Indigenous groups regarding the use, access and location of physical and cultural heritage and structures, sites, and things of historical, archaeological, paleontological, or architectural significance would be included in the subsequent development of mitigation strategies and monitoring plans to address potential effects to physical and cultural heritage from the Project. The Agency is of the opinion that the Proponent should continue engagement with Indigenous groups to identify any known and undiscovered physical and cultural resources and any structures, sites, and things of historical, archaeological, paleontological, or architectural significance and to develop mitigation measures to address potential effects.

The Agency is of the view that residual effects to Indigenous peoples' physical and cultural heritage and to structures, sites, and things of historical, archaeological, paleontological, or architectural significance would be adverse, high magnitude, long-term, and irreversible given that: Indigenous groups have outstanding concerns regarding disturbance and salvage excavation of archaeological sites within the PDA (in particular the complex settlement site and Fairford Trail), there remains uncertainty regarding potential effects to physical and cultural heritage and sites of significance outside of the PDA, and effects to current use are anticipated to result in adverse effects to intangible aspects of cultural heritage. After taking into account the implementation of key mitigation measures, monitoring, and follow-up programs, the Agency is of the view that the Project is likely to cause significant adverse environmental effects to Indigenous peoples' physical and cultural heritage and to structures, sites, and things of historical, archaeological, paleontological, or architectural significance.

7.4.3 Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to reduce residual adverse effects to the current use of lands and resources for traditional purposes by Indigenous peoples, physical and cultural heritage, and structures, sites, and things of historical, archaeological, paleontological, or architectural significance. The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups and members of the TAG.

Taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs described below, the Agency concludes that the Project is likely to cause significant adverse environmental effects to Indigenous peoples' current use of lands and resources for traditional purposes, on physical and cultural heritage, and on structures, sites, and things of historical, archaeological, paleontological, or architectural significance.

Mitigation Measures

- In consultation with Indigenous groups, the Proponent should develop community-specific communication and engagement plans with each Indigenous group. These plans should be finalized

and provided to the Agency and to each Indigenous group prior to construction. The following should be included:

- a schedule of key harvesting periods, as determined in consultation with Indigenous groups, and scheduling of Project activities outside of these times;
- a schedule of construction activities (including blasting activities) so that areas and time periods of activity can be avoided by Indigenous land users should they wish;
- maps denoting location of Project activities and final design components;
- updated floodplain maps whenever there is a major change in hydraulic modelling or outlet channel operating rules. Publish these maps online to ensure Indigenous groups are able to access these maps easily;
- sufficient notice to potentially affected Indigenous groups of imminent flooding scenarios attributable to the Project, when the Proponent is aware of imminent flooding scenarios;
- communication and notification protocols for commissioning of the Project and each subsequent opening and closing of the WCS gates;
- a description of the safety protocols, as determined in consultation with Indigenous groups, and notification needed for Indigenous groups when WCS gates would be open during frozen conditions for potential risks associated with ice jamming and ice depth changes;
- a description of where the responsibilities of the EAC intersect with this plan;
- notification timing and methods for training and monitoring opportunities;
- at the request of Indigenous groups, a tailored complaint resolution process to identify and resolve conflicts related to effects of the Project on current use and physical and cultural heritage;
- access management for the various project components, including the access roads; and
- updating of these plans every two years to account for changes in notification preferences or methods.
- As a part of the EAC:
 - Revise the terms of reference in consultation with Indigenous groups every 5 years.
 - Provide opportunities to participate in this committee to all Indigenous groups.
 - Annually, check in with all Indigenous groups to determine interest in participating in the EAC.
 - Ensure adequate support is provided to Indigenous groups to enable their participation in Indigenous monitoring.
 - Quarterly, the Proponent will post a report of the key recommendations coming out of the EAC, along with a plan for their implementation. Should a recommendation not be intended to be brought forward, a rationale must be provided.
 - Offer opportunities for Indigenous groups to lead sessions for the EAC, including reporting on monitoring outcomes that they've been a part of and recommendations for further mitigation measures.

- Conduct ongoing community-specific engagement throughout the life of the Project.
 - Engage Indigenous groups in the implementation of follow-up programs.
 - Discuss any unforeseen impacts on Indigenous uses outside the PDA.
 - If required, develop and implement additional mitigation measures.
- Provide access to Indigenous groups to the PDA for the purpose of conducting ceremonies at each channel site prior to the start of construction. Participate at the request of Indigenous groups in ceremonies.
- In consultation with Indigenous groups, develop and implement cultural awareness training to be given to all Project personnel prior to their participation in Project work. Consult with Indigenous groups regarding their cultural protocols and include these cultural protocols as a part of this training to ensure they are respected during engagement and throughout the Project by all personnel.
- Retain, prior to construction, the services of Indigenous monitors to participate in follow-up monitoring in consultation with Indigenous groups. Prior to retaining the services of Indigenous monitors, the Proponent shall undertake a collaborative process to determine, in consultation with Indigenous groups, the scope, purpose, objectives, details of the participation of Indigenous monitors, and procedures for the Proponent to receive and respond to feedback related to Indigenous monitors. The Proponent shall provide this information to the Agency prior to construction. In doing so, the Proponent shall determine:
 - how each Indigenous monitor shall be involved in follow-up monitoring related to their area of interest, including the location, frequency, timing, and duration of their participation;
 - if opportunities for Indigenous monitor participation in specific monitoring activities do not exist, provide justification for why;
 - how the Proponent shall support the participation of Indigenous monitors, including through the provision of training (including safety or skills certification), equipment (including personal protective equipment), and access to the PDAs; and,
 - how Indigenous monitors would be involved in the identification of additional mitigation measures that will be implemented if monitoring shows that it's necessary.
- Retain the services of an independent environmental monitor that will be present during construction with reporting directly to Indigenous groups and the EAC.
- Provide opportunities for training for each Indigenous group to support their participation in monitoring programs.
- Offer in-community training sessions at the request of Indigenous groups on how to deal with flooding resulting from the Project and discuss what flood mitigation supplies and tools will be provided to them ahead of time.
- Except where there are physical project components or ongoing project activities, maintain access to sites of importance for Indigenous groups. Where access may no longer be available for safety reasons, identify the length of time access will be restricted and ensure this is communicated to Indigenous groups prior to access being restricted. Avoid restricting access to harvesting areas during key harvesting periods.

- Restrict public access to the PDA in order to maintain Indigenous groups' quality of experience through the use of fencing and signage at access points to PDA.
- Ensure appropriate signage is visible and measures are in place to support safe navigation and use of areas surrounding channel inlets and outlets. During maintenance, remove debris collected in the navigation safety boom surrounding the inlets. In frozen conditions, ensure warning signage is visible in areas surrounding the water inlet and outlet to identify where unsafe ice conditions may be present.
- The Proponent will ensure safe crossing of the channels by land. In doing so, the Proponent will:
 - identify, in consultation with Indigenous groups, trails and preferred areas to hunt, trap, gather, or fish that will be intersected by the channels or that will no longer be accessible to Indigenous groups;
 - identify and implement measures to facilitate the safe crossing over channels at suitable locations; and
 - install and maintain signage indicating distance and direction to the nearest channel crossing along both sides of each outlet channel, at locations to be determined in consultation with Indigenous groups.
- Prohibit employees and contractors associated with the Project from fishing, hunting, trapping and gathering for any purposes not associated with the Project, within the PDA, or using the PDA to access lands outside the PDA for fishing, hunting, trapping and gathering, unless an Indigenous employee or contractor is provided access by the Proponent for traditional purposes or for exercising Aboriginal rights, to the extent that such access is safe.
- Prior to construction, the Proponent will consult with Indigenous groups to determine areas within the PDA that contain plant species of cultural importance. Indigenous groups will be provided access to these areas for harvesting prior to construction at a timing reasonable for harvesting such resources.
- Prior to construction, consult with Indigenous groups to determine areas that will be revegetated with species of cultural importance for harvesting purposes. Once these areas have been identified, the Proponent will provide a timeline for revegetation and maps of these locations to Indigenous groups to identify when they may be suitable for harvesting.
- Develop a tree planting program, in consultation with Indigenous groups, to support the replanting of self-sustaining trees and shrubs to replace the coniferous and mixed wood forests that will be removed due to project construction. As a part of the implementation of this program, provide opportunities for Indigenous groups to participate in:
 - determining locations for the replating of self-sustaining trees and shrubs; and
 - replanting efforts.
- Throughout the life of the Project, engage with Indigenous commercial fish harvesters and anglers to address potential conflict, disturbance, or access restrictions to fishing/harvesting areas and availability of fish resources.
- Prior to construction, develop an archaeological and heritage management plan in consultation with Indigenous groups and relevant federal and provincial authorities, to be implemented during

construction and operation phases of the Project to protect both known and undiscovered heritage resources of tangible and intangible significance within the PDA – including but not limited to sites and things subject to Manitoba’s *The Heritage Resources Act* – and allow for adaptive management to include new and evolving strategies, protocols, and information to support and protect culture and heritage resources. The archaeological and heritage management plan must include:

- procedures for managing known heritage resources, heritage sensitive areas, and culturally important areas of the Project, including avoidance measures for any physical and cultural heritage resources or sites of significance;
- procedures for returning artifacts of Indigenous origin excavated during construction to the communities for preservation and interpretation;
- procedures to record, analyze, and mitigate the effects to any physical and cultural heritage resources or sites of significance that could not be avoided;
- procedures for chance find heritage resources, including additional procedures for specific chance find heritage resources including human remains, animal remains, artifacts (stone tools, lithics, and pottery), historic objects, features (i.e., hearths and stained soils, stone configurations, petroglyphs and pictographs, historic buildings or structures), and cultural use areas. The chance find procedure must include provisions to:
 - immediately halt work at the location of the discovery, except for actions required to be undertaken to protect the integrity of the discovery;
 - delineate an area of at least 50 metres around the discovery as a no-work zone;
 - inform the Agency and Indigenous groups within 24 hours of the discovery, and allow Indigenous groups to monitor archaeological works at the location of the discovery;
 - have a qualified individual, who is a registered archeologist under Manitoba’s *The Heritage Resources Act*, conduct an assessment at the location of the discovery;
 - consult with Indigenous groups and relevant authorities with respect to applicable legislative or legal requirements and associated regulations and protocols respecting the discovery, recording, transferring and safekeeping of previously unidentified physical and cultural heritage resources or sites of significance;
- the means by which the Proponent will retain a qualified professional, during construction and in consultation with Indigenous groups and relevant authorities, to conduct archeological monitoring of the six pre-European contact heritage sites identified through the HRIA of the PDA: EkLm-001, EkLn-001, EiLp-002, EiLp-004, EhLp-004, EhLp-006;
- opportunities for Indigenous groups to participate in the development of strategies, protocols, and procedures within the archaeological and heritage management plan (including procedures for chance find heritage resources), and information to support and protect culture and heritage resources;
- a description of the means of communication and notification procedures regarding the protection of culture and heritage resources and adaptive management strategies, including procedures to notify Indigenous groups of chance find heritage resources; and

- procedures to determine the frequency with which the plan will be reviewed and, in consultation with Indigenous groups and relevant authorities, procedures to review the plan at this frequency, updating the plan as necessary.
- Prior to construction, in consultation with Indigenous groups and relevant authorities, develop a procedure with respect to the discovery, handling, recognition, recording, transferring and safekeeping of any non-forensic human remains or regionally unique and important finds, including:
 - notification procedures for Indigenous groups and appropriate local, municipal and provincial authorities;
 - opportunities for Indigenous groups to monitor archaeological works and conduct or participate in ceremonies; and
 - opportunities for Indigenous groups to make recommendations with regard to further analysis of the discovery, repatriation of the remains or artifacts and any associated possessions, and the potential creation of memorial structures.
- Prior to construction, conduct archaeological assessments at the following locations:
 - LSMOC electrical distribution line,
 - Snake Island and the Lake St. Martin Narrows, and
 - Burial sites located on Indigenous community lands along Lake St. Martin.
- Throughout the life of the Project, provide opportunities for Indigenous groups to participate in ongoing archaeological and culturally significant work, including:
 - training opportunities for Indigenous monitors to identify heritage resources, and
 - opportunities for Indigenous monitors to be on site for any archaeological work; and prior to construction, determine, in consultation with Indigenous groups, the scope, purpose and objectives of the participation of each Indigenous monitor and provide that information to the Agency prior to construction.
- Prior to construction, consult with Indigenous groups to identify cemeteries, burial sites, and other sites of significance within the LAA and RAA that could potentially be affected by changes to water levels or sedimentation and erosion as a result of the Project, and offer opportunities for Indigenous groups to visit the locations and conduct ceremony.
- Prior to construction, develop a heritage training program, in consultation with Indigenous groups and relevant federal and provincial authorities, to enable construction monitors and other construction staff to identify chance heritage finds during construction.
- Prior to construction, develop a plan for physical and cultural heritage, in consultation with Indigenous groups and relevant authorities, related to the interaction of the Project with tangible and intangible aspects of physical and cultural heritage. The plan shall be implemented during all phases of the Project. As part of the plan, the Proponent shall:
 - consult with Indigenous groups to identify potential Project effects to culturally important resources, sites, and harvesting areas caused by the construction and operation of the Project (including direct effects due to ground disturbance and indirect effects resulting from erosion and sedimentation and altered lake levels) within the PDA, LAA, and RAA, including effects to

intangible aspects of cultural heritage. In doing so, the Proponent will consult with Indigenous groups to:

- identify and map where heritage resources or sites may be located, and
 - discuss opportunities for further studies to investigate the LAA and RAA for sites and resources of importance that could be affected by Project-related changes in erosion and sedimentation, and water levels;
- develop and implement nation-specific measures to mitigate Project-related effects to tangible and intangible aspects of physical and cultural heritage and sites of significance and identify the specific measures within the plan. In doing so, the Proponent will:
 - invite each Indigenous group to co-lead the development of the mitigation measures specific to their nation,
 - implement the mitigation measures during all phases of the Project,
 - submit these measures to the Agency prior to implementing them, while ensuring that confidential information is protected,
 - report its discussions with Indigenous groups, including the level of satisfaction of Indigenous groups on the implementation of the measures, and
 - consider: (1) supporting continued access for cultural practices on a nation-specific basis, and (2) developing or contributing to Indigenous-led programs to preserve and enhance cultural heritage.
- determine the frequency with which the plan will be reviewed and, in consultation with Indigenous groups and relevant authorities, review the plan at this frequency, updating the plan as necessary. The Proponent shall share the updated plan with Indigenous groups and relevant authorities in a timely manner. In doing so, the Proponent shall:
 - review the measures developed as part of the plan and update with any new or modified measures to mitigate Project effects to physical and cultural heritage and sites of significance, including both tangible and intangible aspects of physical and cultural heritage, and
 - demonstrate how the objectives of the plan are being achieved.
- Quarry site selection shall consider the proximity of sensitive sites including heritage resources and culturally important sites. Setbacks will vary depending on circumstances, however selected areas are to be a minimum of 30 metres from heritage resources or identified cultural sites.
- Prior to construction, ancillary areas (including work camps, quarries, and laydown areas) within the LAA or RAA must be finalized and pre-construction surveys completed for heritage resources, in collaboration with Indigenous groups and relevant federal and provincial authorities. The Proponent must provide a description detailing the reasons for selecting each location.

Follow-Up and Monitoring

- Prior to construction and in consultation with Indigenous groups, develop a follow-up program to verify the accuracy of the environmental assessment and determine the effectiveness of mitigation

measures as it pertains to the adverse environmental effects of the Project on the current use of lands and resources for traditional purposes, incorporating available Indigenous Knowledge and input from Indigenous groups. The follow-up program will be implemented during all phases of the Project and will support the gathering of traditional knowledge to verify quality and availability of resources in areas where changes to the environment may occur due to the Project, and if there is an interaction with Indigenous uses, implement contingency measures as required. As part of the follow-up program, the Proponent will:

- consult with Indigenous groups on the Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines every five years and assess the need for updates to ensure the intent of the Project is being carried out in a manner consistent in supporting Indigenous groups' ability to undertake current use activities and cultural practices.
- Prior to construction and in consultation with Indigenous groups, develop a follow-up program to verify the accuracy of the environmental assessment and determine the effectiveness of the mitigation measures as it pertains to adverse environmental effects to physical and cultural heritage caused by the construction and operation of the Project, including direct effects (such as physical disturbance or removal during construction) and indirect effects (such as Project-related changes in erosion, sedimentation, and water levels during operation). The Proponent shall invite Indigenous groups to co-lead the development of the follow-up program. As part of the follow-up program, the Proponent shall:
 - monitor, during construction and the first 10 years of operation, physical and cultural heritage indicators identified in consultation Indigenous groups, and shall establish thresholds for implementing additional mitigation measures; and
 - review the results of Project surface water monitoring plans (Chapter 6.1 Surface Water), in consultation with Indigenous groups and other relevant authorities, within one year of each surface water monitoring event. If results from the surface water monitoring plans indicate Project-related changes to water quantity or quality at the monitoring locations, monitor known heritage sites that could be affected by changes to surface water quantity and quality to assess impacts and develop and implement mitigations, in consultation with Indigenous groups and relevant authorities.
- Prior to construction, in consultation with Indigenous groups and relevant federal and provincial authorities, the Proponent will develop a plan to assess, monitor, and mitigate erosion along the Lake St. Martin Narrows and on islands within Lake St. Martin, and its effects to physical and cultural heritage and sites of significance, including:
 - identify shoreline and island locations that are (a) potentially exposed to increased erosion and (b) contain important physical and cultural heritage or sites of significance;
 - monitor bathymetry of the Lake St. Martin Narrows to verify predictions and share monitoring results with Indigenous groups and relevant authorities;
 - verify important resources through (a) input from Indigenous groups and (b) potential site visits;
 - gather historic maps and satellite imagery for verified locations to observe current shoreline changes; and

- develop a monitoring program targeting these locations including remote sensing and site visits and develop contingency measures to protect these resources.
- Should any Environmental Monitoring Committee be established in relation to the Project, the Proponent shall participate, during all phases of the Project and at the request of relevant federal authorities. In doing so, the Proponent shall:
 - provide to the Environmental Monitoring Committee, upon request, information relating to the mitigation measures and follow-up programs for the Project. If requested by the Environmental Monitoring Committee, the Proponent shall provide non-proprietary data files of the results of the follow-up programs;
 - when provided with a written recommendation by the Environmental Monitoring Committee that pertains to the Project, provide a response in writing to the Environmental Monitoring Committee which set out whether the Proponent accepts the recommendation, and if it does not, the reasons for not accepting the recommendation;
 - report to the Agency as part of a Project annual report, or more frequently if required by the Agency, on the Proponent's actions with respect to the Environmental Monitoring Committee and the associated outcomes of the Proponent's actions; and
 - allow access to the Project area, to the extent that such access is safe, to any monitor(s) established as part of the Environmental Monitoring Committee and communicate with monitor(s) regarding coordination of monitoring activities.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to the current use of lands and resources for traditional purposes, physical and cultural heritage, and sites of significance can be found in the following chapters of this EA Report: Surface Water (Chapter 6.1), Groundwater (Chapter 6.2), Terrestrial Landscape (Chapter 6.3), Fish and Fish Habitat (Chapter 7.1), Migratory Birds (Chapter 7.2), Species at Risk (Chapter 7.3), Indigenous Peoples – Health and Socio-economic Conditions (Chapter 7.5), Federal Lands (Chapter 7.6), and Accidents and Malfunctions (Chapter 8.1).

7.5 Indigenous Peoples – Health and Socio-Economic Conditions

The Project could cause residual effects to the health and socio-economic conditions of Indigenous peoples, including the physical health of individuals and communities and community well-being. The Project may cause potential changes to the atmospheric environment; surface water and groundwater quality and quantity; the availability, quality, and access to country foods; and the availability of and access to community services and infrastructure.

After taking into account the implementation of the proposed key mitigation measures, monitoring, and follow-up programs, the Agency is of the view that the Project is not likely to cause significant adverse



environmental effects to Indigenous peoples' health and socio-economic conditions. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal authorities, Indigenous groups, public and members of the TAG.

7.5.1 Effects to Indigenous Peoples' Health

7.5.1.1 Proponent's Assessment of Effects

The Proponent indicated that the Project may result in adverse effects to the health of Indigenous peoples during all project phases through changes to the atmospheric environment, surface water and groundwater quality including drinking water, the acoustic environment, and quality and quantity of country foods.

Atmospheric Environment

During the construction phase, vehicle exhaust and fugitive dust emissions from construction activities could result in the release of total suspended particulates, contaminants including volatile organic compounds into the atmosphere (e.g., nitrogen oxides (NO_x), sulphur dioxide (SO₂), fine particulate matter (PM_{2.5} and PM₁₀), ozone (O₃), carbon dioxide (CO₂), and carbon monoxide (CO)). During the construction and operation phases, direct inhalation of these contaminants or consumption of country foods affected directly or indirectly by deposition of these contaminants onto vegetation, soil, or in water could cause adverse effects to the health of Indigenous peoples.

The Proponent predicted that the Project would result in residual effects to the atmospheric environment that would be adverse and short-term in duration but would be consistent with the effects of a typical construction project. The Proponent predicted that beyond the PDA, project-related concentrations of atmospheric contaminants would remain below the Canadian Ambient Air Quality Standards. The Proponent predicted that adverse effects to the atmospheric environment would be negligible and would not result in residual effects to Indigenous peoples' health.

Water Quality

Project-related changes to surface water and groundwater quality and quantity, described in Chapter 6.1 (Surface Water) and Chapter 6.2 (Groundwater) of this draft EA Report, could occur through the introduction of sediment to waterbodies and discharge of groundwater to surface water. Further, deposition of atmospheric emissions from construction vehicle exhaust may lead to bioaccumulation of contaminants in the soil and surface water. Excavation of the outlet channels during Project construction may also increase sediment to waterbodies resulting in changes in surface water and groundwater quality in the RAA.

These changes could affect the health of Indigenous individuals who might consume untreated water from surface waterbodies in the LAA, however there is no indication that this is occurring.

The Proponent noted in their assessment that the closest surface water intake used by Lake St. Martin First Nation at the Lake St. Martin Narrows, is 30 kilometres from the LMOC outlet, in the LAA. The



Proponent predicted that the intake and filtration systems would not be affected by project construction and operation, taking into account the implementation of the proposed mitigation, follow-up, and monitoring measures proposed in Chapter 6.2 (Groundwater), the Proponent does not anticipate project effects to groundwater quality in domestic wells on reserve land in the RAA.

The Proponent indicated the Project is not expected to result in changes to Indigenous peoples' health as a result of project-related changes to surface water or groundwater quality.

Acoustic Environment

Vehicle and heavy equipment operation during the construction and operations phase may cause project-related increases in noise and vibration levels. This may result in adverse effects to Indigenous peoples' health through annoyance and sensory disturbance in the LAA which could cause individuals to alter their land use patterns resulting in a reduction in the consumption of country foods.

Construction activities may result in temporary annoyance at select receptor locations in the PDA, and LAA however, residential receptor locations at which noise and vibration level exceedances are anticipated are not located within an Indigenous groups' reserve or community lands. While project noise may result in temporary annoyance, residual effects to Indigenous People's health as a result of these changes are not expected.

The Proponent determined that during the construction phase, noise and vibration effects will be short term, sporadic, occur within the PDA and extend to a lesser extent into the LAA. Following the construction phase, sound levels are expected to decrease to pre-construction levels, apart from during channel operation under flood conditions or during maintenance activities. The Proponent predicts that, during operation, effects to the acoustic environment will be negligible for Indigenous peoples and limited primarily to the PDA.

Country Foods

Project activities could affect Indigenous peoples' health through a measurable or perceived reduction in the quantity or quality of country foods. The Proponent indicated that the Project could remove plant species harvested as country foods from the PDA and affect the distribution and abundance of wildlife and fish species in the LAA; however, the Proponent did not anticipate changes to the long-term persistence and viability of harvested species.

Combustion exhaust and fugitive dust could result in increased contaminant concentrations in soil which could increase the contaminant concentrations found in wildlife and vegetation. This could affect the health or perceived health of individual and the quality or perceived quality of harvested foods within the PDA and LAA. The Proponent predicted that Project activities that release fugitive dust will not increase concentrations of contaminants of potential concern (COPCs) in soil, or terrestrial country foods.



Fish within the LAAs and RAA currently have methylmercury concentrations lower than the Health Canada thresholds⁴⁶ for commercial marketing of freshwater fish in Canada (0.5 milligrams per kilogram or 5 parts per million) and these concentrations are not expected to measurably change due to the Project. The Proponent noted that the operation of the LMOC and LSMOC would result in a net reduction in flooded terrestrial habitat around Lake Manitoba and Lake St. Martin during high-water periods, which has the potential to reduce the uptake of methylmercury in fish.

Project construction may result in changes in surface water quality including changes in COPCs in surface water. This may result in increased localized concentration of contaminants within the LAA in vegetation and fish that may be consumed by Indigenous groups. The Proponent predicted that with the application of mitigation measures, and ongoing consultation with Indigenous groups, Project activities are not expected to result in residual effects to surface water or groundwater quality within the LAA. Therefore, there are no predicted measurable or perceived changes to the health of Indigenous peoples from the consumption of country foods.

Proponent's Conclusions

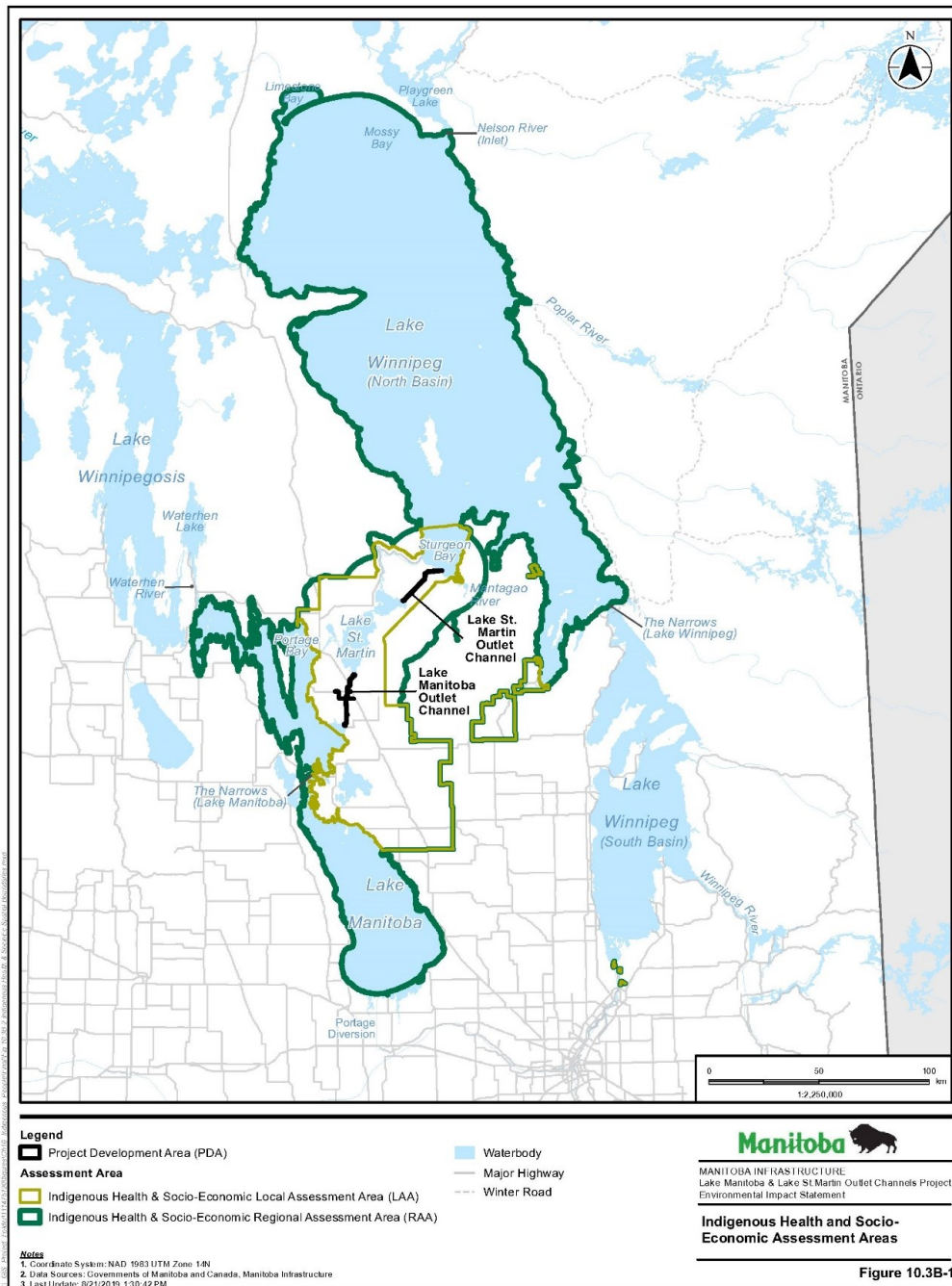
The Proponent predicted that the Project would not result in significant residual effects to Indigenous peoples' health due to changes in atmospheric environment, surface or groundwater quality, or the consumption of country foods. Project-related residual effects to the acoustic environment from construction were expected to be short-term during construction and sporadic during operation. There were no predicted significant residual effects to Indigenous peoples' health due to the Project.

The mitigation measures, monitoring, and follow-up programs the Agency views as key for preventing significant adverse environmental effects to Indigenous peoples' socio-economic conditions are described in Section 7.5.3 of this chapter.

⁴⁶ Health Canada. (2019). *Mercury in Fish – Questions and Answers*. Retrieved February 7, 2024, from <https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/environmental-contaminants/mercury/mercury-fish-questions-answers.html>



Figure 12 Indigenous Health and Socio-Economic Assessment Areas



Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Environmental Impact Statement, Volume 4 (March 2020)



Figure Description: The LAA for Indigenous health and socio-economic conditions includes the PDA and the largest extent of the LAAs established for related valued components (Surface Water, Groundwater, Atmospheric Environment, Acoustic Environment, Human Health, Infrastructure Services and Economy, and Traditional Land and Resource Use). The RAA includes the PDA and LAA and the largest extent of the RAAs established for related valued components (Surface Water, Groundwater, Atmospheric Environment, Acoustic Environment, Human Health, Infrastructure Services and Economy, and Traditional Land and Resource Use).

7.5.1.2 Views Expressed

Indigenous Groups

Brokenhead Ojibway Nation, Berens River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, the Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Pinaymootang First Nation, Peguis First Nation, Poplar River First Nation Sagkeeng Anicinabe First Nation, Tataskweyak Cree Nation, and York Factory First Nation expressed concerns regarding potential effects to the health of their community from project-related changes to the atmospheric environment, surface/ground water quality, drinking water, country foods and contaminant exposure such as nitrogen dioxide, ground-level ozone, and particulate matter emissions. These Indigenous groups also expressed concerns regarding current levels of contaminants such as cattle runoff, sewage and other contaminants and impacts on human health. The Nations also noted that they were not involved in the development of mitigation, monitoring and follow-up plans related to Indigenous peoples' health.

Bloodvein First Nation, Brokenhead Ojibway Nation, Dauphin River First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay First Nation, expressed concerns regarding the Proponent's methodology for determining potential effects to Indigenous peoples' health, including the lack of community-specific engagement and use of community recommended health models. As such, a lack of appropriate baseline information may have resulted in an inaccurate assessment of effects to Indigenous peoples' health.

Kinonjeoshtegon First Nation and Norway House First Nation indicated that physical health and well-being are challenged by perceptions that traditional foods, local water quality, and indoor air quality are unhealthy. Fisher River Cree Nation noted that if traditional harvesting activities are reduced it could impact the mental and physical health of families and children.

Peguis First Nation indicated that trauma from the 2011 Flooding events should be considered under health and socio-economic considerations.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sandy Bay First Nation First Nation, and Sagkeeng Anicinabe expressed concerns about monitoring and adaptive management protocols for potential increases in mercury concentrations in fish and noted the importance of direct engagement with potentially affected communities if increases in methylmercury are detected.



Federal Authorities

Health Canada recommended that economically and technologically feasible mitigation measures be implemented during all stages of the Project where potential implications to human health could occur and that exhaust emissions are limited to the greatest extent possible. Health Canada supports the implementation of the Complaint Resolution Process, monitoring programs as part of the overall Environmental Management Plan and the Construction Environmental Management Program.

Health Canada and Environment and Climate Change Canada supports the proponent reviewing the results of monitoring efforts to determine the adequacy of the proposed management and monitoring measures. They also recommend adaptive management should monitoring results vary considerably from modelled predictions, and noted the need for ongoing communication with potentially affected Indigenous groups regarding potential health risks associated with the Project.

Environment and Climate Change Canada indicated that the Proponent should prioritize the use of construction equipment that meets the *Tier 4 Canadian Off-road Compression-Ignition (Mobile and Stationary) and Large Spark-Ignition Engine Emission Regulations*, to limit nitrogen oxides emissions during construction.

Transport Canada is confident that, after key mitigation measures are implemented, there will not be significant residual effects to navigation from any works that are subject to the *Canadian Navigable Waters Act (CNWA)*.

7.5.1.3 Agency Analysis and Conclusions for Indigenous Peoples' Health

The Agency is of the view that the Proponent adequately characterized potential Project effects to Indigenous peoples' health. The Agency understands that the Proponent considered community-specific information from Socio-Economic and Well-Being Studies from seven Indigenous groups in the assessment. The Agency recognizes that construction and operation activities may result in adverse effects to the health of Indigenous peoples through changes to air quality, surface water and groundwater quality, the acoustic environment, and the quantity and quality of country foods. The Agency acknowledges the importance of both tangible and intangible land-based connections. The Agency also acknowledges that Indigenous groups may perceive risk to their physical health or safety caused by project-related changes to the environment, and that the measurable or perceived presence of contaminants in water and country foods may lead to changes in behaviours or practices required for harvesting country foods resulting in a negative health outcomes.

The Agency recognizes that Indigenous groups expressed concerns regarding potential health-related changes to the atmospheric and acoustic environments. The Agency understands that as part of Project approval, the Proponent will develop a Construction Environmental Management Program that includes management plans for surface water, groundwater, access management, and wildlife monitoring, and that mitigations for potential effects to the atmospheric environment would minimize effects to air quality as well as effects from dust deposition, vibration and noise. The Agency understands that a Complaint Resolution Process will also be implemented to address project-related complaints. In addition, a noise air quality monitoring plan and noise management plans will be developed in consultation with Indigenous groups.



The Agency also understands that these measures have been and would be informed by ongoing engagement with the Indigenous groups.

The Agency acknowledges that potential accidents and malfunctions could affect the health and well-being of Indigenous groups. Mitigation and monitoring measures for accidents and malfunctions scenarios are described in Chapter 8.1 (Effects of Accidents and Malfunctions).

The Agency acknowledges that Indigenous groups expressed concerns regarding potential Project-related increases in contaminants to groundwater, surface water, drinking water and in country foods. The Agency understands that the Proponent would implement monitoring and adaptive management protocols for mercury concentrations in fish tissue as part of the Aquatic Effects Monitoring Plan as well as monitoring and adaptive management protocols for wetlands as described in the Wetland Monitoring Plan. The Agency understands that the Proponent will develop a follow-up program for monitoring COPCs including notification protocols with potentially affected Indigenous groups if elevated levels of contaminants are identified.

The Agency is of the view that the mitigation, monitoring, and follow-up measures proposed to prevent or reduce project effects to air quality, surface water and groundwater quality, the acoustic environment, vegetation and wetlands, and wildlife and the key mitigation measures identified in Surface Water (Chapter 6.1), Groundwater (Chapter 6.2), Terrestrial Landscape (Chapter 6.3), Fish and Fish Habitat (Chapter 7.1), Migratory Birds (Chapter 7.2), Species at Risk (Chapter 7.3), Indigenous peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance) (Chapter 7.4), Federal Lands (Chapter 7.6), and Effects of Accidents and Malfunctions (Chapter 8.1) of this EA Report will also mitigate potential project effects to Indigenous peoples' health. The Agency highlights the importance of the participation of Indigenous groups in the development and implementation of follow-up and monitoring programs to monitor project effects to Indigenous peoples' health and to ensure that Indigenous Knowledge and views regarding measurable or perceived effects to Indigenous peoples' health are adequately considered.

After taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs, the Agency is of the view that the Project is not likely to cause significant adverse environmental effects to Indigenous peoples' health.

7.5.2 Effects to Indigenous Peoples' Socio-economic Conditions

7.5.2.1 Proponent's Assessment of Effects

The Project may result in adverse effects to the socio-economic conditions of Indigenous peoples through changes in the availability of lands and resources used for harvesting, recreational, subsistence, and commercial purposes. Increased demands on community services, local infrastructure and the economy may also result in changes to community well-being and social cohesion.



Availability and Quality of Lands and Resources

The loss of land area and increased land access restrictions due to Project activities as well as additional competition for resources due to an influx of project personnel and displaced Indigenous and non-Indigenous land users may reduce the availability and quality of resources needed by Indigenous groups for subsistence and commercial/guided harvesting activities including commercial fishing, trapping, guiding (e.g., hunting) and farming.

Increased noise and dust from construction activities in the PDA and LAAs may result in effects to harvesting activities and avoidance behaviours of wildlife which will affect the harvesting success of both Indigenous non-Indigenous land users.

The Proponent noted that the purpose of the Project is to manage flooding to avoid catastrophic flooding (i.e., a repeat 2011 flood). The Project is expected to alleviate risks of shoreline erosion at high water marks and should improve availability of farmland and access to harvesting areas that would have otherwise flooded during catastrophic floods.

Availability of Community Services and Infrastructure

The Proponent indicated that the influx of project personnel from the temporary work camp during the construction phase may increase the demand for community infrastructure and services resulting in a reduction in the availability, capacity, or quality of services and accommodations.

Further, the Proponent predicted adverse residual effects to accommodations from the influx of project personnel which may limit the availability of temporary accommodations in the RAA during the construction phase. This influx of workers may also result in a potential increase in racism, substance abuse and gender-based violence towards Indigenous peoples.

The Proponent noted that the construction of temporary construction camps that adhere to the Environmental Management Plan and Access Management Plans will ensure the well-being of local Indigenous groups. The EAC will provide a venue for Indigenous groups to discuss project issues, concerns, and effects. A Complaint Resolution Process will also be implemented to collect and manage concerns brought forward by Indigenous groups and the public. By incorporating mitigation measures, residual effects would be short term, moderate in magnitude, and reversible following the construction phase. The Proponent predicted negligible effects to the availability of accommodation in the RAA during other phases of the Project.

Economy

The Proponent indicated that project-related activities during construction and operations could create changes to employment status and income in Indigenous groups may affect community well-being and social cohesion. Further, increased employment opportunities may result in some individuals leaving school early to seek employment on the Project. Project-related spending may affect Indigenous-owned businesses in the region through increased demand for labour, goods, and services. This may result in increased operational costs through wage inflation and higher employee turnover.



The Proponent noted that the construction phase of the Project may adversely affect established commercial trappers and outfitters operating in the LAAs and RAA. Noise and dust generated during the construction phase may disrupt outfitting operations by detracting tourists or recreational users from using the areas near project work sites. Additionally, the physical components of the Project may limit commercial outfitters' and trappers' access to certain areas, and potentially reduce harvesting success.

The Proponent noted there are multiple Indigenous-employing, -owned, and/or -operated commercial fisheries active on Lake Manitoba, Lake St. Martin, and Lake Winnipeg, that could be affected by the Project. These effects are expected to cease following construction of the Project. Manitoba Natural Resources and Northern Development Fisheries Branch has indicated that commercial fishing is not currently feasible at the proposed LMOC inlet or outlet locations due to shallow water depth in those areas. In terms of the LSMOC, Sturgeon Bay has both open water and winter commercial fishing but there is no currently known use of the area immediately downstream of the proposed LSMOC outlet location by commercial fishers.

The Proponent predicted that residual effects to commercial hunting and trapping during the construction phase would be adverse and moderate in magnitude within the PDA and LAA. These effects are expected to return to near pre-construction levels following construction of the Project.

Proponent Conclusions

The Proponent predicted that, following the implementation of mitigation measures, residual effects to Indigenous peoples' socio-economic conditions would be both adverse and positive, moderate in magnitude, short-term to long-term in duration, continuous, reversible, and would occur within the LAAs.

The Proponent predicted that residual adverse effects of the Project to Indigenous peoples' socio-economic conditions would not be significant as commercial fishing and trapping would be able to continue at or near baseline conditions after construction. Further, any residual effects to local services, infrastructure, and economy were predicted to be limited.

The mitigation measures, monitoring, and follow-up programs the Agency views as key for preventing significant adverse environmental effects to Indigenous peoples' socio-economic conditions are described in Section 7.5.3 of this chapter.

7.5.2.2 Views Expressed

Indigenous Groups

Fisher River Cree Nation, the Interlake Reserves Tribal Council, Misipawistik Cree Nation, Poplar River First Nation, and York Factory First Nation expressed concerns regarding Project effects to Indigenous economic initiatives and socio-economic interests in the region including commercial and sport fishing, hunting, and tourism. These groups also expressed concerns about loss of income and livelihood through effects to fishing, farming, and tourism which have been made unstable by previous flooding in the region.

Dauphin River First Nation, Lake St. Martin First Nation, Peguis First Nation, Poplar River First Nation, noted that the commercial fisheries have been decimated as a result of existing pollution and other water



control projects in the region and that the Project may exacerbate these impacts. The Government of Manitoba is buying back commercial fishing licences resulting in increased unemployment in communities. These impacts not only have an adverse economic impact but also adverse impacts on the communities' purpose and sense of well-being and the fisherman's dignity. The trapping and forestry industries have also been in decline for some time. Norway House notes that the commercial fishing industry receives less support than other industries impacted by the Project such as farming.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Little Saskatchewan First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that traditional economies – in particular fisheries – are highly stressed and the Project may negatively affect the resource base, further reducing the viability of traditional economies.

Black River First Nation, Brokenhead Ojibway Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Lake St. Martin First Nation, Mispawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, and Sandy Bay First Nation shared concerns regarding the potential increase in racism, addictions and gender-based violence towards Indigenous peoples due to the influx of Project employees. The Interlake Reserves Tribal Council, Lake Manitoba First Nation, Sandy Bay Ojibway First Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, and Sagkeeng Anicinabe First Nation specifically noted concerns about potential effects of construction camps and the need to engage Indigenous groups in the selection of their locations.

Black River First Nation, Dauphin River First Nation, Kinonjeoshtegon First Nation, Little Saskatchewan First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, Pinaymootang First Nation, and York Factory First Nation indicated that Indigenous groups' community health and well-being are negatively affected by various factors including lack of housing, employment, issues with substance use, limited education and training opportunities, lack of connection to culture and to the land, land use and community planning, and self-harm, many of which originate or were made worse by past flooding; the Project has the potential to exacerbate these effects. Lake Manitoba First Nation and Pinaymootang First Nation noted that while compensation for homes from past flooding was received, it is unfair as flooding will happen again and there will be effects to the community and the environment.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Little Saskatchewan First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, Pinaymootang First Nation, and York Factory First Nation expressed concerns that the Project could increase the presence of drugs and alcohol in Indigenous communities and result in increases in addictions and crime, and increased stress on community housing and infrastructure, thus decreasing Indigenous group community wellness and exacerbating existing vulnerabilities.

Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, and Poplar River First Nation expressed concerns regarding the Proponent's policies on Indigenous and local employment, training, education, and other Project business opportunities.



Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anishinaabe First Nation, and York Factory First Nation expressed concerns that Project-related disruptions or increases in income inequity could make life more expensive for vulnerable groups and disrupt local business and employment.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that the Project has the potential to provide contracts, training, and employment to community members if tailored to local considerations of strengths and vulnerabilities.

Dauphin River First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation and York Factory First Nation expressed concerns that access to, from, and around their communities could be disrupted by flooding related to the Project. Kinonjeoshtegon First Nation and Pinaymootang First Nation expressed concerns that project-related increases in traffic or effects to roads could affect road safety or disrupt important travel corridors.

Dakota Tipi First Nation, Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, and York Factory First Nation indicated that existing community infrastructure, buildings, and housing are already highly stressed, and there is an opportunity to improve these conditions through the Project. Little Saskatchewan First Nation expressed concerns that the Project has the potential to tie up local resources and further constrain community housing and infrastructure projects, as well as result in on-reserve flooding, damage, and displacement through future water management decisions. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation expressed concerns that the Project could further interrupt schooling if there is a need to relocate residents, if access to educational facilities is affected, if there is competition with migrant workers for limited housing, or if existing housing and building stocks are further damaged.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, and York Factory First Nation expressed concerns that the Project could further reduce engagement in traditional activities and reduce the availability and access to traditional lands and resources. This would reduce their access to traditional foods and income from guiding while increasing the need to pay for store-bought foods.

Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation recommended that issues regarding socio-economic conditions in Indigenous groups' communities be addressed through a psychosocial lens to address underlying anxiety levels, and also recommended efforts to encourage and support individual healing journeys.

Bloodvein First Nation, Brokenhead Ojibway Nation, Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St.



Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation and York Factory First Nation expressed concerns that the assessment does not provide validated information and appropriate baseline information resulting in an inaccurate assessment of effects.

Kinonjeoshtegon First Nation requested that the Proponent work with the community to ensure that all direct and indirect project-related cultural effects are mitigated and that efforts are made to build resilience and improve cultural well-being. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation recommended further engagement with their communities to determine Project interactions with vulnerable groups and baseline conditions for socio-economic, health, and well-being factors. They also recommended that the Proponent and regulators work directly with their communities to identify, design, implement, and monitor Project mitigations, or determine appropriate accommodations where no suitable mitigation can be found.

7.5.2.3 Agency Analysis and Conclusions for Indigenous Peoples' Socio-economic Conditions

The Agency is of the view that the Proponent adequately characterized potential Project effects to Indigenous peoples' socio-economic conditions. The Agency recognizes that project infrastructure and activities would result in the loss of land; restrict access to lands and resources relied upon by Indigenous groups for recreation and harvesting activities; diminish the availability and quality of resources of importance for commercial or subsistence harvesting; increase competition for resources; increase demands on community services and local infrastructure; and result in changes to community well-being and social cohesion.

The Agency understands that the temporary construction and staging areas for the LMOC would be located on lands owned by the Proponent adjacent to the ROW or on private lands, as negotiated with local landowners. The Agency also recognizes that uncertainty remains regarding the locations of temporary construction and staging areas. The Agency understands that the Proponent provided options of potential temporary construction and staging sites in already disturbed areas for the LSMOC (campsites or existing borrow pits). The Agency notes that the Proponent committed to ongoing engagement with Indigenous groups.

The Agency recognizes that the Project is in an area currently accessed by Indigenous groups for socio-economic purposes, including subsistence use, and that adverse effects of the Project on surface water and groundwater, vegetation and wetlands, wildlife, and fish may affect Indigenous groups' ability to practice commercial, subsistence and cultural activities in the PDAs and LAAs. The Agency highlights the importance of continued engagement with Indigenous groups throughout the life of the Project to provide an opportunity to raise concerns regarding adverse project effects to Indigenous socio-economic conditions and to work with the Proponent to address them.

The Agency recommends that the Proponent consider the purposeful inclusion of Indigenous groups in the economic benefits of the Project, including training, employment, and contracting opportunities.

Further, the Agency recommends that the Proponent coordinate with Manitoba Economic Development and Training, Indigenous Services Canada, and other federal and provincial authorities to identify project labour force requirements, procurement requirements and anticipated schedules, which could assist in the development of training opportunities for Indigenous groups to support potential employment as part of construction and environmental monitoring activities.

The Agency is of the view that the Project is not likely to cause significant adverse environmental effects to Indigenous peoples' socio-economic conditions, after taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs.

7.5.3 Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to ensure that there are no significant adverse environmental effects to Indigenous peoples' health and socio-economic conditions. The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups.

Indigenous Peoples' Health

Mitigation Measures

- Adhere to noise thresholds and mitigation measures for any project activity that may increase noise and vibration levels in the PDA, LAA, or RAA, including blasting activities, as identified in *Health Canada's Guidance for Evaluating Human Health Impacts in Impact Assessment: Noise* or updates to this document.
- Develop a protocol for receiving project-related noise complaints in consultation with Indigenous groups. As part of this protocol, respond to any noise complaint attributed to the Project within 48 hours.
- The Proponent will conduct any blasting activities between 10:00 AM and 4:00 PM, avoiding statutory holidays and days of cultural importance that shall be determined in consultation with Indigenous groups.

Monitoring and Follow-Up Programs

- A follow-up program will be developed prior to construction, and in consultation with Indigenous groups, Health Canada and Environment and Climate Change Canada, to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of changes to air quality and health outcomes. The follow-up program will include:
 - The identification of monitoring locations, in consultation with Indigenous groups, that account for locations where there may be potential Indigenous receptors.
 - Monitoring of nitrogen dioxide continuously during construction.

- Monitoring of total suspended particulates, coarse and fine particulate matter (PM₁₀ and PM_{2.5}) continuously during construction, while WCS gates are open, and for 16 months after WCS gates are closed.
- Use of the CCME's *Canadian Ambient Air Quality Standards* management levels for nitrogen dioxide and PM_{2.5} when determining if modified or additional mitigation measures are required based on the results of air quality monitoring.
- A follow-up program will be developed prior to construction, and in consultation with Indigenous groups and relevant authorities, to verify the accuracy of the EA as it pertains to adverse real and perceived environmental effects to the health of Indigenous peoples through changes to water quality and country foods, taking into account available Indigenous Knowledge provided by Indigenous groups related to current use of lands and resources for traditional purposes. The follow up program will include:
 - The identification of fish species used by Indigenous groups for fish tissue sampling and the surface water locations used by Indigenous groups where water quality testing and fish tissue sampling will occur.
 - Monitoring of methylmercury and any other COPCs in surface water and fish tissue of species identified by Indigenous groups.
 - The identification of additional country foods beyond fish that are being harvested within the LAA where Project-related contamination of these country foods may occur, as available through consultation or Indigenous Knowledge. These country foods will be monitored for COPCs at locations identified in consultation with Indigenous groups.
 - If monitoring identifies an increase in COPCs beyond what was predicted during the environmental assessment, the Proponent shall update the human health risk assessment using the results of monitoring and implement modified or additional measures.
 - A process to notify potentially affected Indigenous groups should monitoring identify an increase in methylmercury or other COPC concentrations.

Indigenous Peoples' Socio-economic conditions

- Recreation will not be allowed along the outlet channels during construction and operations; the Proponent will install warning signs where required.
- The Proponent will continue to consult with the Indigenous groups to identify and address any additional effects to well-being, health, and socio-economic conditions created as a result of the Project.
- Temporary construction camp locations will be selected in consultation with Indigenous groups and will be used to house the majority of the Project workforce.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to Indigenous peoples' health and socio-economic conditions can be found in the following chapters of this EA Report: Groundwater (Chapter 6.2), Surface Water (Chapter 6.3), Terrestrial Landscape (Chapter 6.4), Fish and Fish Habitat (Chapter 7.1), Migratory Birds (Chapter 7.2), Species at Risk (Chapter 7.3),



Indigenous peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance (Chapter 7.4), and Effects of Accidents and Malfunctions (Chapter 8.1).

7.6 Federal Lands

The Project has the potential to cause adverse residual effects to federal lands through changes to surface water quantity and quality, vegetation and wetlands, and socio-economic conditions of Indigenous peoples. The Agency is of the view that additional potential adverse environmental effects to groundwater; fish and fish habitat; migratory birds; species at risk; the current use of lands and resources for traditional purposes by Indigenous peoples; and physical and cultural heritage and sites of significance – beyond those identified in the respective valued component chapters of this EA Report – are unlikely to occur on federal lands. Therefore, these valued components were excluded from the analysis of effects to federal lands. Additional details regarding potential effects from changes to these valued components can be found in Chapter 6.2 (Groundwater), Chapter 6.3 (Terrestrial Landscape), Chapter 7.1 (Fish and Fish Habitat), Chapter 7.2 (Migratory Birds), Chapter 7.3 (Species at Risk), and Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance) of this EA Report.

The Agency is of the view that the Project is not likely to cause significant adverse environmental effects to federal lands, after taking into account the mitigation measures, monitoring, and follow-up programs discussed in Chapter 6.1 (Surface Water), Chapter 6.2 (Groundwater), Chapter 6.3 (Terrestrial Landscape), Chapter 7.1 (Fish and Fish Habitat), Chapter 7.2 (Migratory Birds), Chapter 7.3 (Species at Risk), Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions), and Chapter 8.1 (Accidents and Malfunctions).

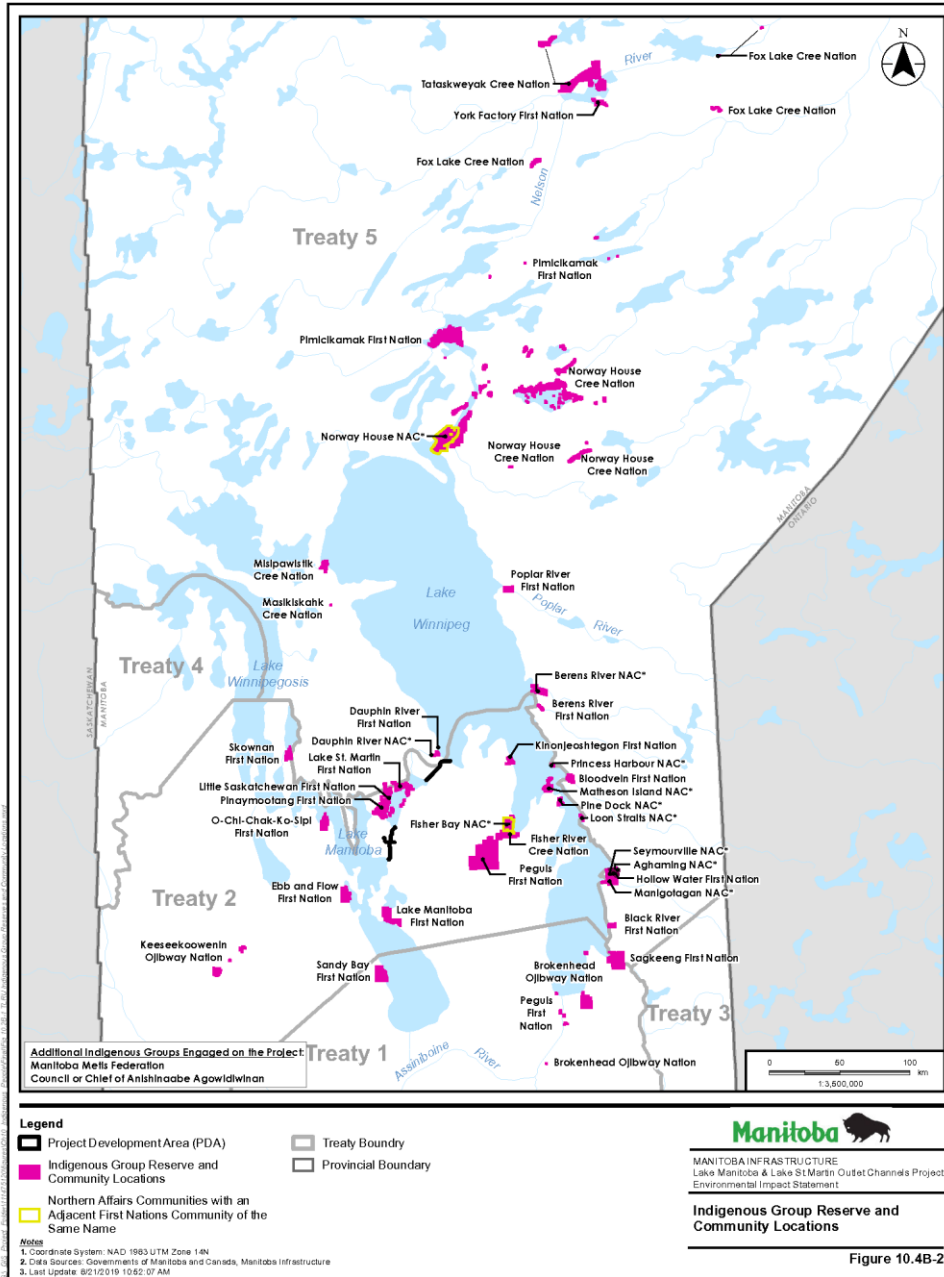
The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal authorities, Indigenous groups, and members of the TAG.

7.6.1 Proponent's Assessment of Environmental Effects

Federal lands within the vicinity of the Project consist of reserve lands associated with Indigenous groups. The Proponent indicated there are no federal lands within the PDA (Figure 13). Pinaymootang First Nation Fairford 50 Reserve is the closest First Nation reserve to the LMOC and PR 239 realignment, located 8 kilometres northwest of the LMOC and 13.7 kilometres northwest of the PR 239 realignment. Dauphin River First Nation Reserve 48A is the closest First Nation reserve to the LSMOC, located 4.4 kilometres to the northwest. Lake St. Martin First Nation Narrows 49A Reserve is the closest First Nation reserve to the proposed distribution line, located 11.4 kilometres to the west.



Figure 13 Indigenous Group Reserve and Community Locations Engaged on the Project



Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Environmental Impact Statement, Volume 4, Chapter 10 (March 5, 2020).

Figure Description: Indigenous group reserve and community locations are indicated by pink shading.

Changes to Surface Water

The Proponent indicated that the Project is intended to reduce flooding and inundation of low-lying areas. The Proponent predicted that changes to surface water on federal lands would provide a benefit to federal lands in the same manner as non-federal lands. In the event that a channel breach occurs, effects to reserve lands could occur (see Chapter 8.1 Effects of Accidents and Malfunctions). The Proponent did not identify additional follow-up and monitoring programs required specifically for federal lands. Additional details regarding potential changes to surface water quality and quantity can be found in Chapter 6.1 (Surface Water) of this EA Report.

The Proponent indicated that, had the Project been in place prior to the 2011 flood, there would have been a reduction in the area flooded by 451.6 square kilometres for Lake Manitoba, including a reduction of flooded area within reserve lands by 9.2 square kilometres (affecting O-Chi-Chak-Ko-Sipi First Nation, Sandy Bay Ojibway First Nation, and Lake Manitoba First Nation). Similarly, for Lake St. Martin, the Project would have resulted in a reduction in the area flooded of 18.2 square kilometres, including a reduction of flooded area on reserve lands by 7.1 square kilometres (affecting Lake St. Martin First Nation, Little Saskatchewan First Nation, and Pinaymootang First Nation).

The Proponent indicated that Comprehensive Settlement Agreements in relation to impacts from longstanding flood claims on the reserve lands of Pinaymootang First Nation, Little Saskatchewan First Nation, Lake St. Martin First Nation, and Dauphin River First Nation are expected to include an 806 foot above sea level flood easement to the Province of Manitoba to allow for some inundation of reserve land due to the operation of flood control infrastructure. The easement would mitigate potential flood damages by limiting future development below easement based on existing infrastructure and historic record water levels, wind set-up, wave uprush and other effects.

Changes to Vegetation and Wetlands

The Proponent predicted that effects to the terrestrial environment may occur on federal lands due to changes in water levels of Lake St. Martin and changes in the area of land flooded. Changes to water levels could affect the abundance and distribution of wetlands along Lake St. Martin, affecting First Nations' Reserves that border the lake, including Pinaymootang First Nation, Little Saskatchewan First Nation, and Lake St. Martin First Nation. The Proponent expected reduced flooding, as a result of the Project, to improve the function of upland native vegetation areas. Additional details regarding potential project effects to the terrestrial environment can be found in Chapter 6.3 (Terrestrial Landscape) of this EA Report.

Changes to Health and Socio-economic Conditions

The Proponent indicated that due to legacy effects from the 2011 flood, individuals living on reserve lands – in particular individuals from Lake St. Martin First Nation, Little Saskatchewan First Nation, Dauphin River First Nation, and Pinaymootang First Nation – may be operating in a lower state of resilience than those living outside of reserve lands in the LAA. Because of such lowered resilience, these communities may experience adverse socio-economic effects to a higher degree than other communities in the LAA.



The Proponent indicated that the Project could potentially affect individuals and businesses located on reserve lands. However, the Proponent expected the effects of flood control by the Project to be beneficial to Indigenous groups located on low-lying areas near Lake Manitoba and Lake Winnipeg. The Proponent expected the Project to have positive long-term effects to soil capability and productivity along Lake St. Martin and anticipated that this could result in a positive effect to agriculture along the shoreline of Lake St. Martin First Nation, Little Saskatchewan First Nation, and Pinaymootang First Nation reserve lands.

The Proponent did not expect the Project to affect human health on reserve lands in the RAA through effects to air quality, soil quality, surface water quality, groundwater quality, or terrestrial and aquatic country food quality. Additional details on potential effects to the socio-economic conditions of Indigenous Peoples – including infrastructure and services, the economy, and human health – can be found in Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report.

7.6.2 Views Expressed

Indigenous Groups

Berens River First Nation, Dauphin River First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the lack of information provided on the frequency of potential flooding on reserve lands during operations. They requested additional information regarding measures being considered to reduce the risk of flooding events on reserve lands for future flood scenarios, including 1 in 50, 1 in 100, 1 in 300, and 1 in 500-year flood events.

Dauphin River First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation requested that the Proponent consider establishing a co-management governance structure for the management of water levels on Lake St. Martin, sharing decision-making with Indigenous groups.

Little Saskatchewan First Nation expressed concerns that the Project is not designed to mitigate flooding for Indigenous groups that were most affected by flooding in 2011 and 2014.

Dauphin River First Nation expressed concerns regarding access to their reserve lands, indicating that their lands have been made inaccessible by road due to flooding of the Dauphin River and have been evacuated a number of times. Dauphin River First Nation noted a lack of clarity on the predicted frequency that access to their reserve lands would be cut off by flooding.

Fisher River Cree Nation expressed concerns regarding potential effects to their Conservation Areas Initiative which aims to protect the health of the southeastern Interlake Region natural landscape and includes a section of Lake Winnipeg.

A summary of comments provided to date by Indigenous groups, along with the Proponent and Agency's responses, are provided in Appendix C of this EA Report.

7.6.3 Agency Analysis and Conclusions

The Agency acknowledges that Project-related changes to the environment could affect federal lands due to potential changes to surface water quantity and quality, and vegetation and wetlands. These changes could subsequently affect the health and socio-economic conditions of Indigenous peoples. The Agency understands that the Project is intended to reduce flooding along Lake Manitoba and Lake St. Martin, including on federal lands, and acknowledges that changes to water levels as a result of the Project could affect the abundance and distribution of wetlands along Lake St. Martin. Project-related changes to wetlands could affect wildlife, fish and fish habitat, migratory birds, species at risk, and Indigenous peoples, as described in Chapters 6.3, 7.1, 7.2, 7.3, 7.4, and 7.5 of this EA Report.

The Agency understands that, based on updated water balance models and engineering designs, the Proponent has indicated that the Project would result in negligible measurable changes to elevations and flows in Lake Winnipeg and that no measurable changes are anticipated to the predicted effects to Indigenous peoples as a result. The Agency acknowledges that there is some uncertainty given the nature of the parameters and concerns from Indigenous groups about downstream effects to Lake Winnipeg, and that mitigations to address these concerns are difficult to develop.

The Agency is of the view that some uncertainty remains regarding the *Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines*⁴⁷ for the Project, however, it accepts that the intention of the Project is to reduce flooding along Lake Manitoba, Lake St. Martin, and Lake Winnipeg, including on federal lands and that the Proponent will develop an Operations and Maintenance Manual for the Project.

The Agency understands that in relation to the longstanding flood claims, Comprehensive Settlement Agreements are to be negotiated between the Province, Indigenous Services Canada, and each of Pinaymootang First Nation, Little Saskatchewan First Nation, Lake St. Martin First Nation, and Dauphin River First Nation. Each Comprehensive Settlement Agreement would have a Flood Risk Zone Agreement, which identifies the easement level in which the Province can flood reserve land. The parties may negotiate a different easement level within each of the Comprehensive Settlement Agreements. The Agency understands that the Flood Risk Zone Agreements are only for existing water control structures and works and do not include the Project. At this time, the Flood Risk Zone Agreements are being contemplated up until 2030 to cover the timeframe for construction of the Project only. The Flood Risk Zone Agreements are not for flooding during operation of the Project; however, the term of Flood Risk Zone Agreements can be renewed. If the Comprehensive Settlement Agreements are not agreed to, the Province would not have obtained the easements for flooding reserve land during project construction. The Agency understands that not all Comprehensive Settlement Agreements have been signed yet. The Agency notes that as a condition of signing the Flood Risk Zone Agreements, Indigenous Services Canada has requested that the Province provide a baseline assessment of the lands within the contemplated Flood

⁴⁷ Manitoba Transportation and Infrastructure. 2022. *Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines (Draft as of June 16, 2022)* in Lake Manitoba and Lake St. Martin Outlet Channels Project Supplemental Submission, Attachment 6. Retrieved February 19, 2024 from <https://iaac-aeic.gc.ca/050/evaluations/document/144334><https://iaac-aeic.gc.ca/050/evaluations/document/144334>.



Risk Zones, such that that the Province would rehabilitate the land back to a suitable, environmentally sound state, if the lands were flooded under the Comprehensive Settlement Agreements.

The Agency understands that effects to federal lands would be mitigated through mitigation measures, monitoring, and follow-up programs for other valued components, as noted below. The Agency is satisfied that the Proponent has adequately considered the effects of the Project on federal lands and that the mitigation, follow-up, and monitoring measures proposed by the Proponent are appropriate to address potential adverse environmental effects to federal lands. The Agency is of the view that the Project is not likely to cause significant adverse environmental effects to federal lands, after taking into account the proposed mitigation measures, monitoring, and follow-up programs identified below.

Key Mitigation Measures to Avoid Significant Adverse Effects

The Agency considers the key mitigation measures, monitoring, and follow-up programs discussed in Chapter 6.1 (Surface Water), Chapter 6.2 (Groundwater), Chapter 6.3 (Terrestrial Landscape), Chapter 7.1 (Fish and Fish Habitat), Chapter 7.2 (Migratory Birds), Chapter 7.3 (Species at Risk), Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions), and Chapter 8.1 (Effects of Accidents and Malfunctions) of this EA Report to be necessary to ensure there are no significant adverse environmental effects to federal lands.

8 Other Effects Considered

8.1 Effects of Accidents and Malfunctions

Paragraph 19(1)(a) of CEAA 2012 requires that the environmental assessment take into account the environmental effects of accidents and malfunctions that may occur in connection with the Project.

The Agency is of the view that the Proponent adequately considered potential environmental effects as a result of accidents and malfunctions. The Agency is of the view that the Project is not likely to result in significant adverse environmental effects from accidents and malfunctions, after taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal authorities, Indigenous groups, public groups, and members of the TAG.

8.1.1 Proponent's Assessment of Environmental Effects

The accidents and malfunctions scenarios assessed by the Proponent included containment dyke breach or overtopping and WCS failure, hazardous material spills, fires, and vehicle collisions. The Agency is of the view that a containment dyke breach or overtopping or WCS failure could result in residual adverse environmental effects, and the Proponent identified significant adverse effects that could result from hazardous material spills and fires; therefore, these scenarios are assessed below. The Proponent predicted that vehicle collisions would be unlikely to result in residual adverse effects to valued components and were therefore not assessed further.

Breach or Overtopping of the Containment Dyke and Water Control Structure Failure

A breach or overtopping of containment dykes or failure of WCS may occur due to:

- extreme flood events beyond the design capacity (the Project is designed to accommodate a 1-in-300 year flood event);
- instability or failure of channel side slopes or containment dykes;
- temporary constriction resulting in an artificial and uncontrolled increase in water levels (i.e., ice jams as described in Chapter 8.2, debris accumulation, and bridge failure and collapse);
- malfunction or failure of the WCSs; or
- vandalism.

Malfunction or failure of WCS (i.e., failing to open or close) could cause a backup of water and result in overtopping and breach of the containment dykes. WCS malfunction could also raise lake levels downstream or upstream of the affected structure, affecting either Lake Manitoba, Lake St. Martin, or Lake

Winnipeg depending on the malfunction (failure to close versus failure to open). Failure of channel side slopes, resulting from a containment dyke breach, could cause sediment to enter waterbodies. A breach would be most likely to occur in the spring (following snowmelt) or in the summer (due to severe rain events). The Proponent indicated that in the event that operational measures to prevent substantial ice jams are ineffective – either because ice jams go unnoticed by staff or there is a delay in operating gate control equipment – a breach of the containment dykes could occur, although the likelihood of this occurring would be low. Changes to ice processes in the outlet channels are discussed in Chapter 6.1 (Surface Water) and operational measures and mitigations for ice dams are discussed in Chapter 8.2 (Effects of the Environment on the Project).

If a breach were to occur, the effects to valued components would be similar to a flood event in the absence of the Project; the Proponent considered this the worst-case scenario of an outlet channel breach or WCS failure. Potential adverse effects due to a breach could include effects to surface water quality and quantity, fish and fish habitat, vegetation, wildlife and wildlife habitat, drinking water, country foods, and heritage resources. In the event of a channel breach, unidentified or un-excavated heritage resources could be damaged or removed by the erosive footprint of the outflow, and repair work could adversely affect heritage resources. A containment dyke breach or overtopping could result in direct damage to infrastructure, such as downstream bridges and roads. Infrastructure repairs may have economic effects, temporarily interrupt travel, and restrict use of and access to land and water resources for recreation and traditional uses. Introduction of sediment to waterbodies could affect surface water quality and fish and fish habitat.

In the event that a breach occurs, the Proponent indicated that effects to federal lands such as Indigenous reserves could occur and these effects to federal lands would remain until damage from flooding was repaired. Site-specific drainage control measures and the flooding response outlined in the Operation Environmental Management Program⁴⁸, would limit flooding effects to federal lands.

The Proponent indicated that the magnitude of effects from a dyke breach or WCS failure could be high, while the likelihood of occurrence would be low. The Proponent predicted that residual effects to identified valued components would be not significant with the implementation of design and construction requirements, regular inspections, and emergency response plans to address public safety concerns and mitigate damage to infrastructure and services.

Hazardous Material Spills

The Proponent indicated that a significant adverse effect could result from a spill that destroys habitat for vegetation, wildlife or fish species of conservation concern (i.e., listed in Schedule 1 SARA or of importance for current use), affecting current use and human health. The Proponent predicted that the probability of worst-case scenario spills would be low. The Proponent indicated that designated areas will be established for fuel storage, materials handling and storage, equipment cleaning, refueling, and

⁴⁸ Manitoba Transportation and Infrastructure. (2022). *Lake Manitoba and Lake St. Martin Outlet Channel Project Supplemental Submission. Attachment 1: Updated Environmental Management Plans*. Retrieved February 7, 2024, from iaac-aeic.gc.ca/050/documents/p80148/144328E.pdf



servicing, and will be located at least 100 metres from any waterbody or wetland. The Proponent indicated that contractors would prevent fuel, lubricants, or compounds from being released, and that all empty containers from equipment refueling and servicing will be removed to a licensed disposal site. Materials required for spill containment and clean-up will be available at all work sites and designated areas. All vehicles will carry materials and equipment for emergency spill containment.

Fires

The Proponent indicated that a significant adverse effect could result from a fire that destroys critical habitat for wildlife species listed in Schedule 1 of SARA or prevents traditional land and resource use or agricultural operations. The Proponent indicated that the potential for fires to occur due to the Project activities is low. Scheduling vegetation clearing during the winter would reduce the risk of wildfire, and fires would be completely extinguished after a controlled burn. Additionally, construction crews would be required to carry appropriate fire-fighting equipment. Emergency response plans would limit potential environmental effects, and the Proponent is committed to following the Manitoba Emergency Plan⁴⁹ along with their own Project Environmental Requirements.

Proponent Conclusions

The Proponent anticipated a low likelihood of significant residual effects to the Project, and associated effects to the environment and Indigenous groups, as a result of effects of accidents and malfunctions. The Proponent's conclusion took into account project design and contingency planning and the implementation of engineering and quality controls to mitigate these risks. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse environmental effects, as described under section 5 of CEAA 2012, as a result of accidents and malfunctions are described in Section 8.1.3 of this chapter.

8.1.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada noted concerns regarding the lack of clear management plans or operating procedures to ensure machinery is clean and in good working order. Environment and Climate Change Canada indicated that the Proponent should develop maintenance plans and/or standard operating procedures for equipment to ensure that it is kept in good working order throughout its use at the construction site.

Environment and Climate Change Canada noted concerns regarding aboveground storage tanks for petroleum products, indicating that double-walled tanks do not provide overfill protection and should not be used interchangeably with perimeter dykes for protection against overfills. Environment and Climate

⁴⁹ Government of Manitoba. (2018). *Manitoba Emergency Plan*. Retrieved February 7, 2024, from gov.mb.ca/emo/pdfs/MEP.pdf



Change Canada indicated that storage of bulk petroleum products should use both perimeter dykes and tanks designed with secondary containment (i.e., double-walled) to reduce the likelihood of spills.

Public Groups

The RM of Grahamdale expressed concerns regarding the Project's ability to withstand flood events equivalent to a repeat of the 2011 flood and subsequent effects of an outlet channel breach on infrastructure. They expressed concerns regarding how sediment will be prevented from entering passive depressurization wells. They also expressed concerns regarding the potential for the passive depressurization well casings to corrode and deteriorate over time, given that the wells would be located within the outlet channels and therefore would be difficult to access for maintenance. Finally, they noted concerns that the Project access road could increase the potential for human-caused wildfires throughout the life of the Project.

Indigenous Groups

Misipawistik Cree Nation and Peguis First Nation expressed concerns about a lack of clarity on the methods that will be used to contain a breach to the carbonate bedrock aquifer if it is encountered during excavation of the channels or occurs during operation.

Peguis First Nation expressed concerns regarding whether groundwater pressure from the carbonate aquifer would compromise sediment control mitigations.

The Interlake Reserves Tribal Council expressed concerns regarding emergency response measures with regards to wildfires, flooding, and other potential accidents that could potentially affect the health and wellbeing of Indigenous groups in the region.

Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the sufficiency of flood scenario modelling, and noted a lack of clarity on how failure of the WCS was incorporated into flood modelling. In addition, they expressed concerns regarding a lack of clarity on the risk of an outlet channel breach and subsequent erosion effects to valued components.

Black River First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, and Sagkeeng Anicinabe First Nation expressed concerns that project-related flooding, due to a channel breach or other catastrophic failure, could disturb culturally important sites such as ceremonial and burial sites.

Indigenous groups expressed concerns that accidents and malfunctions could negatively affect the health of Indigenous peoples in the area, and expressed concern regarding the lack of engagement in effects characterization and monitoring and follow-up programs. Fisher River Cree Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, Peguis First Nation, Sandy Bay Ojibway First Nation, and Sagkeeng Anicinabe First Nation requested that Indigenous groups be informed and engaged regarding accidents and malfunctions, and any associated adverse effects to the environment, and Aboriginal and treaty rights. They also requested that they be



provided with summary reports of follow-up programs and the opportunity to participate. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sandy Bay Ojibway First Nation, and Sagkeeng Anicinabe First Nation indicated it is not sufficient to use the EAC as the only tool for addressing Indigenous concerns.

Little Saskatchewan First Nation requested that the Proponent list all sensitive sites identified in the accidents and malfunctions assessment and describe how these locations were considered in developing contingency plans for worst-case scenarios.

A summary of the comments provided by Indigenous groups, along with Proponent and Agency responses, is provided in Appendix C of this EA Report.

8.1.3 Agency Analysis and Conclusions

Analysis of the Effects

The Agency is of the view that the Proponent appropriately identified and assessed potential accidents and malfunctions scenarios associated with the Project, including potential effects to the environment and Indigenous peoples. The Agency is of the view that most accidents and malfunctions scenarios would result in medium to long term, reversible effects, with the exception of irreversible effects to physical and cultural heritage should a containment dyke breach or overtopping occur. The Agency is of the view that, taking into account Project design considerations and the mitigation, monitoring, and follow-up measures proposed by the Proponent, the likelihood of potential accident and malfunction scenarios occurring would be low.

The Agency understands that the LMOC and LSMOC are designed to accommodate a 1 in 300 year flood event, and that the channels can accommodate a 1 in 1,000 year flood without risk of failure of major Project components including the WCSs but with a decreased safety factor against erosion. The Proponent indicated that the provincial emergency alert process is managed by the Manitoba Emergency Measures Organization under the Province's *The Emergency Measures Act*⁵⁰. In the event of a containment dyke breach, the Agency understands that the procedures under Manitoba Infrastructure's Manitoba Flood Coordination Plan⁵¹ would be implemented during a flood event, including procedures for public notification of flooding and evacuation requirements. The Agency understands that the Proponent will develop a Project-specific Operations and Maintenance Manual for the WCSs to ensure maintenance needs for the Project are addressed during the operation and maintenance phase; the operation and maintenance will adhere to the Canadian Dam Association's Dam Safety Guidelines⁵².

⁵⁰ *The Emergency Measures Act*, CCSM c E80. Retrieved February 7, 2024 from <https://canlii.ca/t/561tf>

⁵¹ Manitoba Infrastructure. (2019). *Manitoba Flood Coordination Plan*. Retrieved February 7, 2024, from https://www.gov.mb.ca/emo/pdfs/flood_annex.pdf

⁵² Canadian Dam Association. (2007, revised 2013). *Dam Safety Guidelines*. Retrieved February 7, 2024, from <https://cda.ca/publications/cda-guidance-documents/dam-safety-publications>

The Agency acknowledges that Indigenous groups and public groups expressed concerns regarding the potential for Project-related fires to occur and subsequent effects to valued components. The Agency is of the view that the Proponent has developed appropriate emergency response measures in the event of a fire and acknowledges that the Proponent has committed to mitigation measures to reduce the likelihood of Project-related fires. The Agency agrees with Environment and Climate Change Canada that the Proponent should develop maintenance plans for equipment and that storage of bulk petroleum products should use both perimeter dykes and tanks designed with secondary containment.

The Agency acknowledges that Indigenous groups expressed concerns regarding the incorporation of sensitive sites in the accidents and malfunctions assessment. The Agency understands that the Proponent's Environmental Protection Plan will include mapbooks for Environmentally Sensitive Site that occur within the PDA, with a corresponding summary of relevant mitigation measures to address the potential environmental effects at each of the Environmentally Sensitive Site. The Agency understands that the Proponent has committed to implementing mitigation measures to prevent a containment dyke breach or overtopping and water control structure failure. The Agency understands that a containment dyke breach could result in adverse effects to heritage resources. For heritage resources affected or discovered as a result of a breach or site disturbance, the Agency understands that the Proponent would inform the HRB under the Department of Sport, Culture, Heritage and Tourism and follow their required mitigation measures. The Agency is of the view that a containment dyke breach is unlikely, and that in the event of this scenario, protocols are in place through the HRPP to manage effects to heritage resources. For a description of relevant key mitigation measures, refer to Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes and Physical and Cultural Heritage, and Sites of Significance).

The Agency acknowledges that groundwater quality conditions are such that project components in contact with groundwater, such as passive depressurization wells, may be susceptible to corrosion which may affect their functionality and lifespan. The Agency notes that effects to groundwater, as a result of potential well corrosion, could have the potential to affect Indigenous peoples' health and current use of lands and resources for traditional purposes, migratory birds, and species at risk. Groundwater conditions and groundwater management and mitigations are described in Chapter 6.2 (Groundwater). The Agency understands that the Proponent will develop a plan, in consultation with relevant authorities, to describe procedures for access, inspection, and replacement of groundwater wells throughout the life of the Project. Additionally, Indigenous groups expressed concerns regarding the potential for a breach to the carbonate bedrock aquifer (also referred to as basal heave) during construction and operation. The Agency understands that the Proponent would implement mitigations to prevent a breach to the aquifer, and that if a breach were to occur, the Proponent is committed to installing a reverse drain at the location of the breach.

The Agency understands that to minimize the likelihood of accidents and malfunctions, and in the event of an accident or malfunction, the Proponent would adhere to their Project Environmental Requirements, Environmental Management Plans, Access Management Plan and Emergency Response Procedure within the Project Construction Environmental Management Program (including the Emergency Spill Response and Reporting Procedures and the Fire Prevention and Response Procedure), as well as the Canadian Dam Association's Dam Safety Guidelines. The Agency understands that hazardous materials associated with the Project will comply with the federal *Transportation of Dangerous Goods Act* as well as the

provincial *Dangerous Goods Handling and Transportation Act* and related regulations such as the *Storage and Handling of Petroleum Products and Allied Products Regulation 188/2001*. The Agency recognizes that the Proponent will have a finalized accidents and malfunctions response plan prior to operation, and engage Indigenous groups, stakeholders, and relevant authorities in its creation. The accidents and malfunctions response plan will clearly indicate the means of communication and notification procedures for all accidents and malfunctions scenarios.

The Agency is of the view that the Project is not likely to cause significant adverse environmental effects due to accidents and malfunctions, after taking into account the implementation of the proposed key mitigation measures, monitoring, and follow-up programs.

Key Mitigation Measures and Monitoring to Avoid Significant Adverse Effects and Follow-Up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to ensure that there are no significant adverse environmental effects to fish and fish habitat, migratory birds, and Indigenous peoples as a result of accidents and malfunctions. The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups.

- Take all reasonable measures to prevent accidents and malfunctions associated with the Project that may result in adverse environmental effects and all reasonable measures to mitigate any adverse environmental effect from accidents and malfunctions that occur.
- Prior to construction, consult with Indigenous groups and relevant authorities about the measures to be implemented to prevent accidents and malfunctions.
- Develop, in consultation with Indigenous groups and relevant authorities, an accidents and malfunctions response plan for each phase of the Project. The Proponent shall develop each plan prior to the phase to which it pertains, and provide each plan to the Agency prior to that phase. The accidents and malfunctions response plan for each phase shall include:
 - a description of the types of accidents and malfunctions that may cause adverse environmental effects during the phase to which it pertains;
 - the measures to be implemented in response to each type of accident or malfunction to mitigate any adverse environmental effect caused by the accident or malfunction; and
 - for each type of accident and malfunction, a description of the roles and responsibilities of those involved in the implementation of the mitigation measures, including the Proponent, each relevant authority, and any other party that may be called upon to respond to an accident or malfunction.
- Prior to construction, develop a plan for accidents and malfunctions describing the means of communication, notification procedures, and urgent and long-term communication requirements for possible emergency event types, including notification of affected Indigenous groups. Summary reports following accident or malfunction events will be made available to Indigenous groups.

- Throughout the life of the Project, implement standard operating procedures for, and conduct, regular maintenance of Project components and equipment, including the passive depressurization system, to ensure that they are kept in good working order.
- Store bulk petroleum products using both perimeter dykes and tanks designed with secondary containment (i.e., double-walled) to reduce the likelihood of spills.
- Store fuel and hazardous materials a minimum of 100 metres from watercourses and surface water bodies to prevent contamination of surface water. There shall be no fueling, equipment maintenance, repair or washing within 100 metres of the ordinary high-water mark.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects from accidents and malfunctions can be found in the following chapters of this EA Report: Surface Water (Chapter 6.1); Groundwater (Chapter 6.2); Indigenous Peoples – Current Use of Lands for Traditional Purposes and Physical and Cultural Heritage, and Sites of Significance (Chapter 7.4); Indigenous Peoples – Health and Socio Economic Conditions (Chapter 7.5); Federal Lands (Chapter 7.6), and Effects of the Environment on the Project (Chapter 8.2).

8.2 Effects of the Environment on the Project

Paragraph 19(1)(h) of CEAA 2012 requires that the environmental assessment take into account any changes to the Project that may be caused by the environment, including extreme and periodic weather events.

The Agency is of the view that the Proponent adequately considered potential effects of the environment on the Project and that the Proponent's proposed mitigation measures, monitoring, and follow-up programs (detailed in the previous valued component chapters) would adequately address potential effects of the environment on the Project. The Agency's conclusions are based on an analysis of the Proponent's assessment, including the Proponent's proposed mitigation, follow-up and monitoring measures, and views expressed by federal authorities, Indigenous groups, public groups, and members of the TAG.

8.2.1 Proponent's Assessment of Environmental Effects

The Proponent indicated that environmental factors, including those discussed below, may result in damage to Project infrastructure and equipment, cause interruptions to Project activities, and could increase the potential for accidents and malfunctions. Geophysical and geotechnical hazards, including seismic events and landslides, were discussed by the Proponent in the EIS but are not discussed in this chapter given their low likelihood of occurrence and low magnitude of effect as characterized by the Proponent. Potential adverse environmental effects from accidents and malfunctions of project infrastructure are discussed in Chapter 8.1 (Effects of Accidents and Malfunctions) of this EA Report.

Extreme Weather and Hydrologic Conditions

The Project may be affected by localized storms and large-scale weather systems. Extreme weather events (e.g., wind and ice conditions, tornadoes, hail, and lightning strikes) may increase the risk of accidental events including spills, cause damage to erosion control measures such as unprotected or newly revegetated slopes, or could damage project infrastructure such as the WCSs. Extreme events could create unsafe working conditions, cause road blockages, and may result in work stoppages. Excessive rainfall/snowfall events could reduce visibility and create hazardous conditions. Tornadoes, hail, lightning strikes, extreme wind, and icing conditions could affect infrastructure (e.g., power lines, access roads) and supporting maintenance or repair activities. Damage to WCSs could result in flooding. While extreme weather could result in economic costs for repair and increased risk to valued components, the Project is designed to accommodate extreme weather events and reduce the effects. The Proponent determined that through project design, along with prevention and response procedures, effects of the environment on the Project, due to extreme weather, would be reduced and any adverse environmental effects would not be significant.

Extreme hydrologic conditions, including flooding, may affect the Project. Past flooding has resulted in extensive damage and displacement of communities and would pose a risk to the integrity of Project infrastructure. The Project is designed for a 1-in-300-year flood, while capable of accommodating a 1-in-1,000-year flood without risk of failure of the major Project components such as the WCSs and channel dykes. The purpose of the Project is to alleviate flooding surrounding Lake Manitoba and Lake St. Martin; therefore, the Proponent did not anticipate that flooding would affect the Project. The Proponent indicated that the site-specific drainage control measures implemented during construction, and the flooding response outlined in the Operation Environmental Management Program, would limit flooding effects to valued components.

The Proponent expected that drought conditions would typically correspond to extended periods where the channels would not be operational. The Proponent stated that drought is not anticipated to substantially affect the Project, except where it results in higher likelihood for wildfires. Extended drought periods could affect revegetation including that used for erosion and sediment control (see Chapter 6.3 Terrestrial Landscape). Based on historical observations, the Proponent anticipated that long-term groundwater pressure in the bedrock aquifer under the LMOC would remain upwards under foreseeable future conditions, including droughts, limiting infiltration from the surface downwards into the aquifer.

The Proponent's mitigation measures, monitoring, and adaptive management are anticipated to address effects from extreme hydrologic conditions on the Project, and the Proponent predicted that residual effects would not be significant.

Ice and Ice Formation

The Project could interact with ice and ice formation processes and result in environmental effects, including flooding. Winter operation of the channels to maintain or reduce water levels in Lake Manitoba and Lake St. Martin may cause ice jams or the formation of frazil ice. Subsequent ice accumulation in the outlet channels may cause overtopping of the containment dykes (discussed in Chapter 8.1 Effects of Accidents and Malfunctions) and subsequent flooding, resulting in effects to surface water, vegetation, wildlife, fish and fish habitat, infrastructure, and current use of lands and resources for traditional purposes by Indigenous peoples. Large volumes of frazil ice may accumulate on the underside of thermal ice covers

downstream in and downstream of the outlet channels, potentially creating hanging ice dams that may reduce the hydraulic capacity of the channels. In the spring, hanging ice dams may be slower to melt and may reduce channel conveyance when maximum channel capacity would be required and could result in overtopping of the outlet channels and overland flooding. However, the Proponent predicted that the likelihood of a fully breached containment dyke would be low.

The Proponent indicated that operational measures (i.e., controlled winter flow releases using the WCS gates to limit channel flow while maintaining baseflow to provide suitable habitat for fish) and regular ice condition monitoring would promote the formation of stable ice cover in the channels and reduce the volume of frazil ice. Warning signage would be installed as a safety measure to prevent crossing of the channel. If an ice jam is at risk of causing a containment dyke overtopping, the blockage could be removed within the LMOC. Due to the large spatial extent, removing a hanging ice dam would not be possible for the LSMOC, and flows in the channel would be maintained to prevent further growth of a hanging ice dam. If a substantial hanging ice dam formed causing impacts the operation or integrity of the LMOC, the primary mitigation would be to shut down the channel for the remainder of the winter season (while maintaining baseflow releases). In the event of a substantial hanging ice dam in Sturgeon Bay, the primary mitigation would be to reduce or shut off flow in the LSMOC. In the event that an ice jam with overtopping were to occur despite mitigations, the Proponent indicated that the event would have small volumes and be short in duration compared to a natural flood event. The flooding would be limited to low lying areas, and due to the predicted timing during winter and early spring, frozen soil would limit erosion.

Climate Change

Climate change is anticipated to influence average temperatures, precipitation, seasonality, seasonal flooding, and long-term drought. Climate change is likely to increase the frequency, duration, and magnitude of extreme weather events, including extreme precipitation and flooding. Extreme weather events in the future related to climate change may prevent or delay access to Project facilities and affect maintenance, and exacerbate climatic events for which the Project was designed to accommodate. The anticipated increases in precipitation and risk of seasonal flooding associated with climate change may affect the frequency of flood operations and volume of floodwaters handled by the Project.

Climate change related changes to precipitation and temperature could affect the overall movement of water in the Lake Winnipeg basin and downstream waterbodies and affect flooding. Using climate change modelling, the Proponent predicted that the Project would increase total inflow into Lake Winnipeg by 0.3 percent on average, compared to the 1976-2021 historical record. The Proponent concluded that climate change implications to project operation and hydraulic effects are negligible. The Project is anticipated to maintain operational requirements in consideration of future climate scenarios.

Residual effects could result from damage to infrastructure from increased wildfires and tornadoes due to climate change. If the damage occurred at the same time as a flood event, the potential residual effects of a channel breach could extend beyond the PDA and lessen the effectiveness of the Project as a flood mitigation measure, affecting surface water quantity and quality, fish and fish habitat, vegetation, wildlife and wildlife habitat, drinking water, country foods, current use, and infrastructure. As the Project is a flood mitigation project, effects of increased flooding due to climate change were expected to be less than those



expected without the Project, even in a scenario where damage to Project infrastructure were to occur at the same time as a flood event.

Fire Hazards

The fire cycle in parts of Manitoba has lengthened in the past 150 years, which raises the risk of a large fire. The Proponent indicated that fires affecting the Project could result from uncontrolled grass and forest fires, burning of brush piles during construction, and uncontrolled fires on agricultural lands (grass or stubble fires). Fires could affect personnel, equipment, temporary and constructed infrastructure, and the Project schedule during construction. During operation, fires could damage vegetation and wildlife habitat, and infrastructure such as bridges, WCSs, and distribution lines. Fires could affect air quality in the short term.

Potential adverse effects of fires could include damage to Project infrastructure, reduced visibility due to smoke (which may affect equipment maneuverability to and within the project), and effects to air quality, which may interact cumulatively with project effects. The Proponent indicated that measures to prevent and manage the risk of fires are outlined in the Project Environmental Requirements, Operation Environmental Management and Construction Environmental Management Programs. With prevention and response measures in place, the Proponent determined the effects on the Project to be not significant.

Proponent Conclusions

The Proponent did not anticipate adverse effects to the Project, and associated effects to the environment and Indigenous peoples, as a result of effects of the environment, in consideration of project design and planning for extreme weather conditions, climate change, and fire during the life of the Project, and the implementation of mitigation measures.

8.2.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada indicated that the predicted frequency of channel operation reported in the original EIS did not account for the increasing trend in the frequency and magnitude of floods which may be due to climate change or land use changes. Environment and Climate Change Canada indicated that the Proponent addressed these concerns and acknowledged that the channels may operate more frequently.

Indigenous Groups

Brokenhead Ojibway Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, the Manitoba Métis Federation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding potential effects of climate change and the adequacy of flood and erosion modelling. Norway House Cree Nation expressed concern that modelling is based on the 2011 flood, which encompasses a particular set of circumstances, and the need



to consider changes in precipitation with climate change in models. Indigenous groups expressed concerns regarding the accuracy of climate change modelling, the data used in modelling, and potential effects to valued components if a flood more severe than current predictions were to occur.

Brokenhead Ojibway Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, the Manitoba Métis Federation, Norway House Cree Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Peguis First Nation, and Fisher River Cree Nation requested a risk assessment that includes failure of Project outlet channels and validation of the risk assessment from comparative studies of similar projects.

Dakota Tipi First Nation, the Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the Project's ability to withstand higher magnitude flood events than the 2011 flood as a result of climate change. These groups requested clarity on the risk of erosion and overtopping during higher magnitude flood events, how erosion would affect the risk of overtopping, and the subsequent effects to adjacent waterbodies and wetlands. Peguis First Nation expressed concerns regarding the design of the LSMOC inlet, indicating that it could affect the dynamics of currents, erosion, bed sediments, and turbidity in the north basin of Lake St. Martin.

Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the Proponent's lack of consideration of the potential effects of climate change, level of conservatism applied to address uncertainty, and sufficiency of information in models used to assess climate change. The Interlake Reserves Tribal Council, Lake St. Martin First Nation, Pinaymootang First Nation, Norway House Cree Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the effect that more extended and more frequent droughts, as a result of climate change, could have on the Project and subsequent effects to wetlands and lake levels within the project area. Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation also expressed concerns regarding the effect of the Project in combination with extended drought on country foods. These groups requested clarity on how drought conditions would affect water management and wetland mitigation along the outlet channel alignments, and the effects of channel construction and dewatering activities.

Peguis First Nation expressed concerns regarding potential changes to the nutrient supply to Lake Winnipeg under predicted climate change scenarios, and the effect of the Project on this dynamic. Tataskweyak Cree Nation raised concerns that effects of multiple floods on the nutrients and algal growth had not been assessed and requested that the Proponent assess whether nutrient supply to Lake Winnipeg would change in the next 30 years under climate change scenarios. Tataskweyak Cree Nation stated that the Proponent had not determined the added effect that climate change would have on future sediment and nutrient loadings.

Berens River First Nation, Fisher River Cree Nation, Peguis First Nation, Poplar River First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the potential for elevated water levels on



Lake Winnipeg, Lake St. Martin, and Lake Manitoba, and the effects of wind events on water levels. Fisher River Cree Nation requested an assessment of the potential project effects due to increased water flow into Lake Winnipeg on Fisher Bay and the Fisher River during high north wind events. Berens River First Nation also expressed concerns regarding elevated water levels during high north wind events, specifically at the Berens River inlet.

Black River First Nation expressed concerns regarding the effects of climate change on Lake Winnipeg that may impact the environment and other valued components within the Black River First Nation.

The Manitoba Métis Federation requested that the Proponent evaluate the cumulative effects of reduced flooding on fish habitat such as wetlands and riparian zones.

Fisher River Cree Nation expressed concerns that ice jams in the channels or around Project infrastructure could cause over-topping of the channels and lead to potential corresponding effects to valued components. Fisher River Cree Nation and Peguis First Nation have both identified a low wet area near the mouth of the Mantagao River where water from the Mantagao River watershed can move into the Fisher River watershed in the event of over-topping. Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding the methods that would be used to remove ice jams from the channels. The Proponent indicated that several Indigenous groups raised concerns regarding ice jams, such as downstream effects and their extent, and the need for monitoring, communication and signage.

Hollow Water First Nation expressed concerns regarding potential effects of wildfires on fuel storage and flammable materials located in the Project. Hollow Water First Nation requested that the Proponent describe measures that will be taken to minimize risk of fire and explosions associated with temporary and permanent fuel storage areas and minimize the likelihood of wildfires spreading to the project area.

Public Groups

The RM of Grahamdale expressed concerns regarding the sufficiency of climate models and indicated concerns that the design capacity of the channels would be diminished in the future due to land use changes that result in the drainage of wetlands in the Upper Assiniboine Basin. The RM of Grahamdale indicated that land use change is an important factor affecting the hydrology of the Upper Assiniboine Basin and Lake Manitoba Basin, noting that climate change is not the only significant factor.

The RM of Grahamdale expressed concerns that drought has not been considered in climate and flood modelling scenarios. The RM of Grahamdale also expressed concerns that wind events were not considered in lake level predictions.

8.2.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent adequately characterized the likelihood and magnitude of potential effects of the environment on the Project and designed the Project to account for effects of the environment on the Project. The Agency recognizes that climate change may result in more frequent extreme weather events, including both flooding and drought. The Agency understands that Indigenous



groups expressed concerns regarding the sufficiency of models related to climate change and flooding, the ability of the channels to withstand high magnitude floods, and potential effects to water levels on Lake Winnipeg. The Agency acknowledges that climate change may result in floods of a higher frequency and magnitude, and that the Project is designed to manage the design flood volume and has additional capacity to divert and store water. The Agency notes that follow-up and monitoring programs will be in place to monitor surface water quality, as discussed in Chapter 6.1 (Surface Water).

The Agency acknowledges that the formation of ice jams and hanging ice dams could result in overtopping of containment dykes, and that the Proponent would monitor ice conditions to mitigate risks. The Agency notes that the Proponent would consider implementation of further contingency measures through adaptive management such as incorporating locations for controlled breaches and raising containment dykes, as needed.

The Agency acknowledges that Indigenous and public groups expressed concerns that the Project could result in elevated lake levels, exacerbating flooding that occurs during high wind events. The Agency notes that the Proponent has committed to monitoring of water levels, wind speeds, and wind direction on Lake Manitoba and Lake St. Martin. The Agency understands that the Proponent has indicated that the Project would result in negligible measurable changes to water elevations in Lake Winnipeg. The Agency acknowledges that there is some uncertainty given the nature of the parameters and concerns from Indigenous groups regarding downstream effects to Lake Winnipeg, and that mitigations to address these concerns are difficult to develop. The Agency notes that follow-up and monitoring programs will be in place to monitor surface water quantity, including at Sturgeon Bay in Lake Winnipeg, as discussed in Chapter 6.1 (Surface Water).

The Agency understands that the Proponent will implement measures to prevent and manage the risk of fires, as outlined in the Project Environmental Requirements, Operation Environmental Management and Construction Environmental Management Programs.

The Agency is of the view that the Project's design and mitigation measures proposed by the Proponent would avoid or reduce potential effects of the environment on the Project. The Agency recognizes that key mitigation measures are required to mitigate the potential effects of the environment on the Project, and that the mitigation measures are applicable to changing climate change scenarios and their contribution to potential effects of the environment on the Project.

Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

The Agency considers the following mitigation measures, monitoring, and follow-up programs to be necessary to ensure that there are no significant adverse environmental effects to fish and fish habitat, migratory birds, and Indigenous peoples, as a result of effects of the environment on the Project. The following key mitigation measures are based on mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous groups.

- Design and construct the outlet channels in adherence with engineering and design standards including the Canadian Dam Association's Dam Safety Guidelines and Manitoba Infrastructure design standards, in consultation with Indigenous groups and relevant authorities, to ensure Project components can accommodate water volumes and velocities associated with the design flood as described in the Canadian Dam Association's Dam Safety Guidelines.
- Prior to construction, develop an ice management plan to mitigate potential negative impacts of ice formation in the channels and channel inlets and outlets, such as unforeseen ice conditions (i.e., development of an ice jam, hanging ice dam, or excessive accumulation of ice on the drop structure crests). The operating procedures must include:
 - a description of the types of ice formation scenarios that may cause adverse environmental effects during any phase of the Project;
 - a monitoring plan for ice conditions in the LMOC and LSMOC and inlets and outlets, as well as containment dyke freeboard, including regular monitoring during winter operation of the outlet channels;
 - thresholds for the implementation of mitigation measures with respect to meteorological and ice conditions; and
 - mitigation measures for each type of ice formation scenario (i.e., lowering the WCS gates, removing ice jams).

Additional mitigation measures, monitoring, and follow-up programs applicable to effects of the environment on the Project can be found in the following chapters of this EA Report: Surface Water (Chapter 6.1), Terrestrial Landscape (Chapter 6.3) and Effects of Accidents and Malfunctions (Chapter 8.1).

8.3 Cumulative Environmental Effects

Cumulative environmental effects are defined as the effects of a project that are likely to result when a residual effect acts in combination with those of other projects or activities that have been or will be carried out. This cumulative effects assessment was guided by the Agency's *Operational Policy Statement Assessing Cumulative Effects Under the Canadian Environmental Assessment Act, 2012*⁵³, which recommends that cumulative effects analysis consider environmental effects, as described in section 5 of

⁵³ Canadian Environmental Assessment Agency. (2015). *Operational Policy Statement: Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012*. Retrieved February 8, 2024 from <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/assessing-cumulative-environmental-effects-under-canadian-environmental-assessment-act-2012.html>



CEAA 2012, or effects to valued components noted by Indigenous peoples and the public to be of specific interest.

The Agency focused its analysis on effects to fish and fish habitat; the current use of lands and resources for traditional purposes; physical and cultural heritage; structures, sites, and things of historical, archaeological, paleontological, or architectural significance; and the health and socio-economic conditions of Indigenous peoples. The Agency recognizes that project effects to migratory birds and species at risk may interact cumulatively with the effects of past, present, and reasonably foreseeable projects and activities; however, the Agency is of the view that with the implementation of the key mitigation measures identified in Chapter 7.2 (Migratory Birds) and Chapter 7.3 (Species at Risk) of this EA Report, the Project's contributions to cumulative effects to migratory birds and species at risk will be adequately mitigated. The Agency is of the view that effects to the other valued components identified in this EA Report are unlikely to act in combination with the effects of other past, present, or reasonably foreseeable projects or activities, given the negligible to low magnitude and limited geographic extent of the Project's anticipated residual effects to these components. The Agency therefore excluded other valued components from the analysis of cumulative effects.

The Agency is of the view that the Project, in combination with past, present and reasonably foreseeable projects and activities is likely to cause significant adverse cumulative environmental effects to current use of lands and resources for traditional purposes, on physical and cultural heritage, and on structures, sites, and things of historical, archaeological, paleontological, or architectural significance after taking into account the proposed key mitigation measures, monitoring, and follow-up programs. The Agency is of the view that the Project, in combination with past, present, and reasonably foreseeable projects and activities, is not likely to cause significant adverse cumulative environmental effects to fish and fish habitat, and the health and socio-economic conditions of Indigenous peoples and that additional mitigation measures or follow-up programs are not required. The Agency's conclusions are based on an analysis of the Proponent's cumulative effects assessment, including the Proponent's proposed mitigation, monitoring, and follow-up measures, and the views expressed by federal authorities, Indigenous groups, and members of the TAG.

8.3.1 Proponent's Assessment of Cumulative Environmental Effects

The Proponent identified past, present, and reasonably foreseeable projects and activities that could potentially interact with the Project, including infrastructure development, resource use, residential and community developments, recreation and tourism, agriculture, fishing, roads, quarries and borrow pits, and other land uses (Table 12 and Figure 14).

Table 12 Projects and Physical Activities Included in the Cumulative Effects Assessment

Category of Physical Activities	Specific Project or Physical Activity	Description
Past or Present Physical Activities that Have Been Carried Out		
Agriculture	Ranching and Farming Activities	The majority of the agricultural land use in the RAA is for cattle production with small areas for pasture and forage crops.
Fishing	Commercial and Subsistence Fishing	Commercial and subsistence fishing takes place in the RAA in Lake Manitoba, Lake St. Martin, Dauphin River, Mantagao River, Sturgeon Bay, and some tributaries to Lake Manitoba, Lake St. Martin, and Sturgeon Bay.
Infrastructure	Roads	The provincial highway network includes primary routes (PTHs) and secondary routes (PRs). One primary route exists in the RAA (PTH 6, 1947 to present). PRs in the Project LAA include PR 325, PR 239 and PR 513 (all 1976 to present).
	Power Transmission	Sections of the Bipole I and II High Voltage Direct Current lines (constructed in 1966, commissioned in 1972) pass through the RAA in a ROW adjacent to PTH 6. Sections of two 230 kilovolt transmission lines are located within the RAA. There is a transformer station located at Ashern, within the RAA for the current use of lands and resources for traditional purposes, physical and cultural heritage, and sites of significance valued component.
	Railway Lines	One abandoned railway line (built in 1912) is located in the RAA that parallels PTH 6. The 104 kilometres long line segment for the Warren to Steep Rock Junction and its associated spur lines were abandoned in 1997.
	Telecommunications	Communications cables and towers are located throughout the RAA.
	Airports	The Ashern Airport (1976 to present) is located in the RAA in Ashern.
	Waste Disposal	Six solid waste disposal grounds are located in the RAA near communities of Ashern, Dauphin River, Faulkner, Moosehorn and Pineimuta. Seven wastewater lagoons are located in these communities as well as in the Lake St. Martin First Nation, Little Saskatchewan First Nation, and Pinaymootang First Nation within the RAA.
	Flood Control	The RAA contains the following flood control structures:

Category of Physical Activities	Specific Project or Physical Activity	Description
		<ul style="list-style-type: none"> the FRWCS, an outlet to regulate water level of Lake Manitoba (construction 1959, operational 1961 to present); the Portage Diversion, a 29 kilometres channel from Assiniboine River north to Lake Manitoba (construction started 1965, operational 1970 to present); and the Lake St. Martin EOC (construction and operation 2011 to present).
Resource Use	Industrial Land Use and Mineral and Aggregate Resources	Graymont Western Canada Inc. limestone and gypsum quarries (opened in 1972) and processing plant (opened in 1976) is located in the RAA. Quarry withdrawal activities, quarry leases, private quarry permits, mining claims and casual quarry permits are present in the RAA
	Trapping and Hunting	The RAA contains registered trap lines and open trapping area and game hunting areas.
	Forestry	Forest Management Units 10, 41, 42, 43 and 45 are present in the RAA.
Residential and communities	Residential Dwellings and Communities	RM of Grahamdale (1997) and RM of West Interlake (incorporated in 2015), and communities of: Moosehorn (1911), Gypsumville (1905), Ashern (1911), Camper, Grahamdale (incorporated in 1945), Hilbre, Faulkner, and Steep Rock.
	Reserves	Dauphin River First Nation, Dauphin River Northern Affairs Community, Lake St. Martin First Nation, Pinaymootang First Nation, Little Saskatchewan First Nation, Peguis First Nation, Fisher River Cree Nation, Kinonjeoshtegon First Nation, Lake St. Martin Northern Affairs Area, Lake Manitoba First Nation, Fisher Creek First Nation, and Kinonjeoshtegon First Nation are in the RAA.
	Cottage Developments	Cottage developments are present on the eastern shores of Lake Manitoba within RAA
Recreation and Tourism	Campgrounds	Five provincial campgrounds (Beaver Creek, Camp Morton, Hecla, Lake St. George, and Watchorn) and one private campground (Roviera) are located in the RAA.
	Provincial Parks	Watchorn Provincial Park, established in 1961, and Sturgeon Bay Provincial Park, established in 2015, are in the RAA.

Category of Physical Activities	Specific Project or Physical Activity	Description
	Snowmobile Trails	Snoman Inc. Trails occur in the vicinity of Gypsumville, Grahamdale, Moosehorn, and Ashern, and in proximity to PTH 6 within the RAA.
	Lodges and Outfitters	Five lodges and outfitters are located in the RAA.
	Recreational Fishing	Recreational fishing takes place in the RAA in Lake Manitoba, Lake St. Martin, Dauphin River, Mantagao River, Sturgeon Bay and some tributaries to Lake Manitoba, Lake St. Martin and Sturgeon Bay.
Future Physical Activities that are Certain or Reasonably Foreseeable		
Infrastructure	Flood Control	Replacement of the fish ladder at the FRWCS and maintenance and repairs to the Portage Diversion channel will be located in the RAA.
	EOC Decommissioning	The EOC will be decommissioned once the LSMOC is commissioned.
Roads ⁵⁴	Rehabilitation of PTH 6	PTH 6 Rehabilitation Phase 2 from the north junction of PR 325 to the PR 239 realignment (stretch between Ashern and Grahamdale).
	Upgrade of Lake St. Martin Access Road	Upgrading of the Lake St. Martin access road.
Quarries and Borrow Pits	Borrow Pits and Rock for Construction	Locations and timing are not defined but there are potential sites in the RAA. Some are expected to be used during construction of the Project.

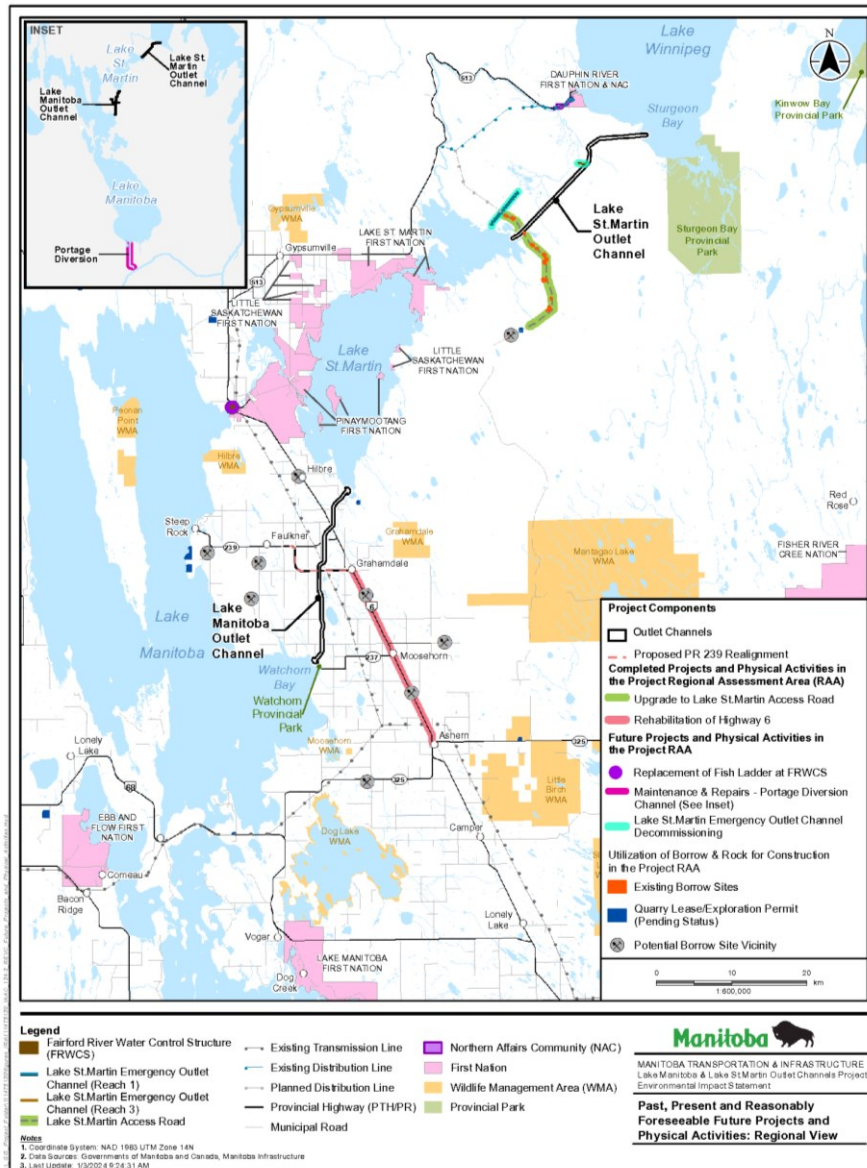
Sources:

1. Lake Manitoba and Lake St. Martin Outlet Channels Project, Environmental Impact Statement, Volume 5 (March 2020)
2. Lake Manitoba and Lake St. Martin Outlet Channels Project, Response to IAAC Public Information Requests (IRs), Round 1 (May 2022), IR IAAC-124
3. Lake Manitoba and Lake St. Martin Outlet Channels Project, Response to IAAC Technical Review Information Requests, Round 3 (October 2023), IR IAAC-R3-03

⁵⁴ In October 2023, the Proponent removed the Roads and Trails projects from the list of reasonably foreseeable future physical activities as those projects are now complete.



Figure 14 Past, Present and Reasonably Foreseeable Future Projects and Physical Activities in the Regional Assessment Area

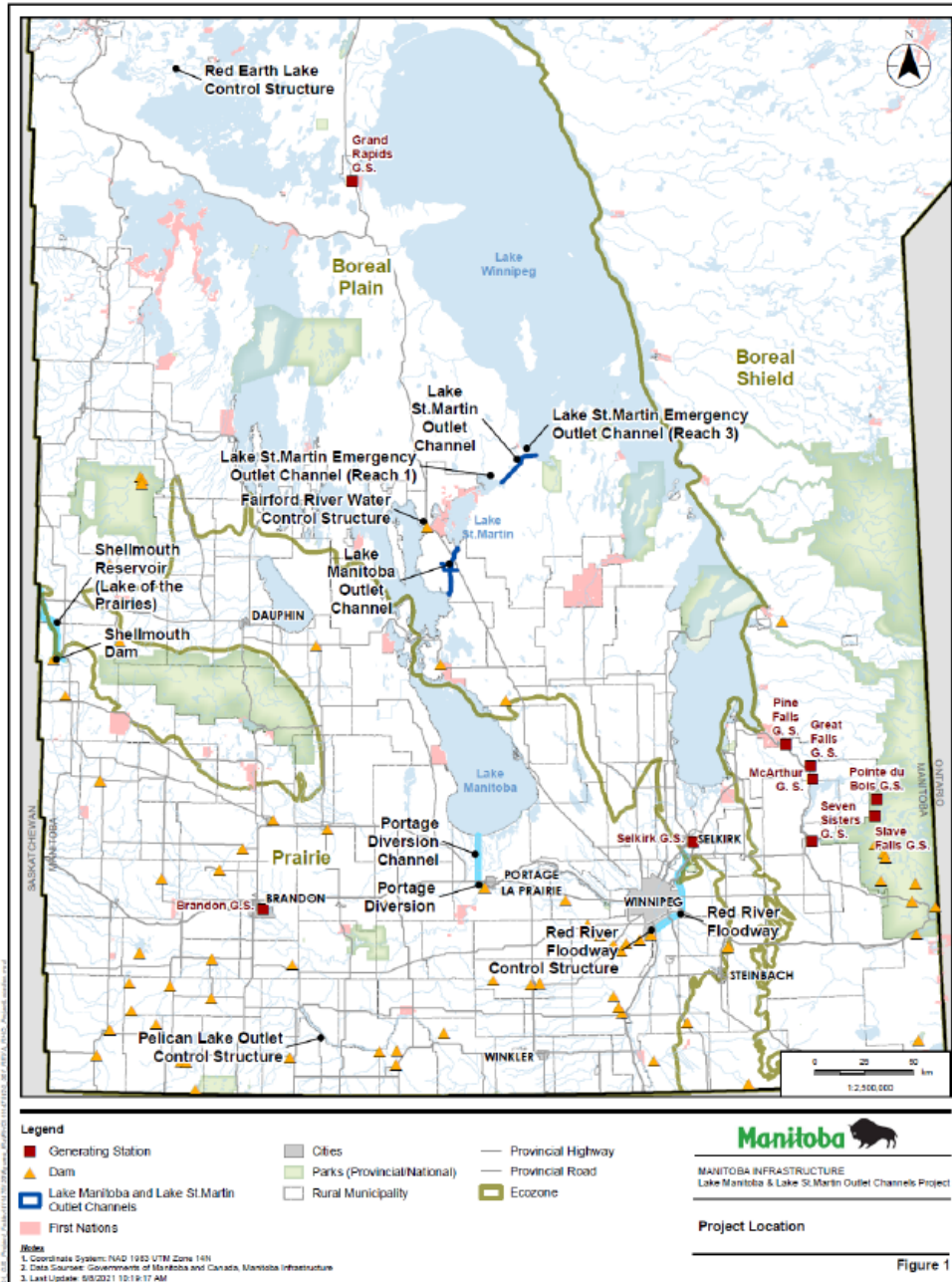


Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Response to IAAC Public Information Requests, Round 1 (May 2022), IR IAAC-124; Response to IAAC Technical Review Information Requests, Round 3 (October 2023), IR IAAC-R3-03

Figure Description: Reasonably foreseeable projects and activities considered in the cumulative effects assessment include those located within the Project RAA in Interlake Region of central Manitoba, within Treaty 2 and Treaty 5 lands.



Figure 15 Project Location in Regional Assessment Area with Other Flood Management Infrastructure



Source: Lake Manitoba and Lake St. Martin Outlet Channels Project, Response to IAAC Public Information Requests, Round 1 (May 2022), IR IAAC-127

Figure Description: The present system of major provincial water management and flood control infrastructure in the Lake Manitoba, Lake Winnipeg, Red River, and Saskatchewan River basins in central and southern Manitoba. Past



and present flood management infrastructure projects within the Project RAA include the FRWCS, the Lake St. Martin EOC (Reach 1 and Reach 3), and the Portage Diversion channel. The Lake Winnipeg Regulation, located in the northeast of Lake Winnipeg, is not labeled in the figure.

The Proponent indicated that existing cumulative effects of other past and present projects or physical activities on the biophysical environment and Indigenous peoples are reflected in the existing environment within the RAA. Such effects were also considered in the assessment of project-specific residual effects presented in this draft EA Report.

Cumulative Effects to Fish and Fish Habitat

The Project's predicted residual effects to fish and fish habitat are described in Chapter 7.1 of this draft EA Report. These residual effects could interact cumulatively with other reasonably foreseeable projects and activities, such as quarries and borrow sites, replacement of the fish ladder at the FRWCS, maintenance and repairs to the Portage Diversion channel, and the decommissioning of the EOC. Cumulative effects to fish and fish habitat include permanent alteration or destruction of fish habitat, change in fish passage, and change in fish health and mortality.

Quarries and borrow pits include physical alteration of instream and riparian habitat at watercourse crossings. Potential residual effects from the proposed projects also include release and deposition of sediment mobilized by heavy machinery working in or near watercourse crossings during installation or restoration of these watercourse crossings, erosion, and the potential introduction of AIS from transport on heavy machinery travelling between watersheds. The replacement of the fish ladder at the FRWCS would result in the temporary disruption of fish habitat, temporary prevention of fish passage and potential effects to fish health and mortality in the Project RAA due to the potential introduction of sediment. According to the Proponent, the Project is unlikely to interact cumulatively with the effects of other projects to measurably increase the risk of AIS dispersal in the RAA.

Assuming the application of the standard fish habitat mitigation measures, the Proponent concluded that the interactions between the Project's effects and any residual effects of the future projects are anticipated to be low in magnitude, short-term in duration, and highly localized.

Residual effects of the Project on fish passage are not expected to interact cumulatively with potential effects to fish passage from any of the existing or reasonably foreseeable future projects in the RAA. Changes in fish passage may be associated with the improperly designed, sized, or installed stream crossings along any new roads needed to access quarries or borrow pits that will have the potential to impede or block upstream or downstream passage of fish. However, mitigation measures proposed for effects to fish and fish habitat would be applied and future projects would likely be required to implement measures to mitigate effects to surface water quality and fish and fish habitat; therefore, the Proponent concluded that effects to surface water quality and fish and fish habitat are not anticipated to affect fish populations used for commercial, recreational and Indigenous traditional purposes in Lake Manitoba, Lake St. Martin, or Lake Winnipeg. The replacement of the fish ladder at the FRWCS would have a positive



effect on fish passage within the LAA, as it would facilitate easier movement of fish, including the ability for smaller fish to move upstream from the Fairford River into Lake Manitoba.

The Proponent noted that potential effects to fish health and mortality due to mobilization and deposition of sediment caused by residual effects of the Project and potential future residual effects from future projects are expected to be negligible. The Project, existing and future projects have the potential to cumulatively increase access to fish bearing watercourses and waterbodies; however, no measurable cumulative effects to fish populations in the LAA or RAA are expected to occur.

The Proponent stated that the proposed maintenance and repairs to the Portage Diversion channel will not expand the capacity of the structure, and therefore will not increase the volume of water into Lake Manitoba. As such, there are no anticipated cumulative incremental effects.

The Proponent expected that potential interaction between any residual effects of the EOC decommissioning and the residual effects of the Project would be restricted to the portion of Reach 3 that would not be incorporated into the LSMOC ROW.

No other reasonably foreseeable projects or activities were predicted to occur within the LAA, and the Proponent predicted that there would be no spatial or temporal overlap of any residual effects from other reasonably foreseeable projects or activities with the residual effects of the Project to fish and fish habitat. For these reasons, cumulative effects of the Project and other reasonably foreseeable projects and activities on fish and fish habitat were not anticipated.

Cumulative Effects to the Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance

The Project's potential residual effects to the current use of lands and resources for traditional purposes by Indigenous peoples, physical and cultural heritage, and sites of significance are described in Chapter 7.4 of this EA Report. These residual effects could interact cumulatively with the residual effects of other past, present, and reasonably foreseeable projects and physical activities, to cause change in availability of lands and resources used for traditional purposes; change in access to lands and resources used for traditional purposes; changes to cultural and spiritual sites or areas, and changes to the cultural value or importance associated with current use.

The residual effects of the Project could act cumulatively with the residual effects of past, present, and future projects in the RAA to cause changes to habitat for traditionally used plant and animal species, movement patterns of wildlife, wildlife health or mortality, plant community and diversity, and the function of wetlands. Past and present projects and activities have resulted in the loss of native wetland and upland habitat (e.g., grassland, forests) including habitat for species of cultural importance. The Proponent indicated that considering current and reasonably foreseeable future projects' interaction with wildlife habitat availability, cumulative effects are anticipated to be adverse, although the Project's contributions to direct change in habitat availability is anticipated to be low in magnitude. Such changes could affect hunting, trapping, fishing, and plant gathering activities for Indigenous groups.



Past, present, and reasonably foreseeable projects and activities (such as quarries and borrow sites, and the EOC decommissioning) whose residual effects overlap with the RAA, may contribute to increased mortality risk to wildlife and causes change in terrestrial wildlife movement in the RAA. The Proponent considered the Project's contribution to cumulative change in wildlife movement as low since most wildlife would be capable of crossing the channels following construction and during periods of low flow (when channels are not conveying flood waters; 70 to 87 percent of the time). The Proponent concluded that the Project's contribution to residual cumulative effects to wildlife would be managed through the application of mitigation measures.

The residual effects of the Project would interact cumulatively with the effects of past, present, and future projects to create changes in access to lands and resources for traditional purposes that could affect hunting, trapping, fishing, and plant gathering activities for Indigenous groups. Residual cumulative effects because of the Project and future projects were anticipated to be adverse and long-term in duration, due to the permanent nature of the components of future projects.

Potential cumulative effects to changes to cultural and spiritual current sites arising from past, present and future projects have the same effect pathways as those identified for construction and operation of the Project. Cultural and spiritual sites or areas and their use could be adversely affected directly through construction-related losses, ground disturbance, vegetation clearing, barrier erection, or indirectly through sensory disturbance from present and future projects.

The Proponent reasoned that the residual effects of the Project could act cumulatively with the residual effects of past, present and future projects to change the cultural value or importance associated with traditional activities and use of physical and cultural heritage sites. Development of quarry and borrow sites has the potential to cause sensory disturbance in the form of diminished enjoyment of the landscape and its features, or through effects to culturally valued areas or places. The Proponent stated that no adverse cumulative effects are anticipated as a result of the EOC decommissioning with respect to Indigenous peoples' health and socio-economic conditions, physical and cultural heritage, and the current use of lands and resources for traditional purposes.

The Proponent predicted that the magnitude of adverse cumulative effects would be low as it relates to the change in availability of lands and resources currently used for traditional purposes; medium for the change in access to lands and resources currently used for traditional purposes; and medium to high in changes to cultural and spiritual sites or areas. All residual cumulative effects to the current use of lands and resources for traditional purposes, physical and cultural heritage, and sites of significance would be long-term in duration, continuous in frequency, irreversible, and would occur within the RAA.

Cumulative Effects to Indigenous Health and Socio-economic Conditions

The Project's potential residual effects that could affect Indigenous peoples' health and socio-economic conditions are described in Chapter 7.5 of this EA Report and are related to the effects to other biophysical and socio-economic valued components.

The Proponent predicted the residual cumulative effects to change in Indigenous socio-economic conditions to be similar to residual effects of the Project, which the Proponent considers adverse in the



short term but positive in the long term and of medium magnitude. The socio-economic context in which residual effects to Indigenous health and socio-economic conditions will take place is characterized as below standard condition (e.g., lower than the provincial average for indicators such as unemployment rates, household incomes, and socio-economic determinants of health).

The Proponent was of the view that no cumulative changes were expected to surface water quality, groundwater quality, soil quality or chemical quality of country foods; chemical exposure levels were below objectives; and noise levels were not anticipated to affect public health and welfare.

The Proponent concluded that the residual cumulative effects to Indigenous health and socio-economic conditions were predicted to be the same as the Project effects and considered not significant.

Proponent Conclusions

The Proponent predicted that, following the implementation of mitigation measures, contributions of the Project to cumulative effects to fish and fish habitat and the current use of lands and resources for traditional purposes, physical and cultural heritage, and Indigenous peoples' health and socio-economic conditions would not be significant.

The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse cumulative environmental effects, as described under section 5 of CEAA 2012, are described in Section 8.3.3 of this chapter.

8.3.2 Views Expressed

Federal Authorities

Health Canada and Environment and Climate Change Canada indicated a lack of appropriate air dispersion modelling and monitoring of air contaminants that limits the evaluation of potential contributions from the Project towards cumulative effects to air quality in the Interlake Region in Manitoba. Health Canada and Environment and Climate Change Canada indicated the need for proactive management of air emissions along with the development of monitoring to inform adaptive management if necessary.

Indigenous Groups

Indigenous groups, including Black River First Nation, Bloodvein First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Pimicikamak Okimawin, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and Tataskweyak Cree Nation noted a strong opposition to the Project; stating that the extent of cumulative effects to their communities has already significantly altered baseline conditions and way of life and any incremental increase in effects from the Project would be unacceptable. Indigenous groups identified concerns about the Proponent's lack of consideration of various water control structures operating as a whole system which results in increased flooding in the region. When heavy rainfall events or snowmelt occurs and there is an increase in floodwaters in the

Assiniboine River entering into Manitoba, the Province of Manitoba operates the Portage Diversion to divert waters north into Lake Manitoba, rather than those waters continuing along the Assiniboine River into Winnipeg. By diverting those floodwaters into Lake Manitoba, cascading effects occur as water rises and the Province of Manitoba operates the FRWCS to allow water to pass through the Fairford River into Lake St. Martin. Likewise, water from Lake St. Martin flows through the Dauphin River and into Lake Winnipeg. In conjunction with other water inputs into Lake Winnipeg, water continues to flow north from Lake Winnipeg through the Nelson River. All of the Indigenous groups that are along these watercourses or utilize these areas for current use practices, are affected when the Province of Manitoba initially operates the Portage Diversion to divert waters into Lake Manitoba. These groups have stated that consideration of this integrated flood management system has not been adequately captured by the Proponent within its cumulative effects analysis. Furthermore, with this view in mind, Indigenous groups indicated that the Project would not benefit them, rather it would support further flooding of Lake Manitoba, Lake St. Martin, Lake Winnipeg and associated watercourses.

Berens River First Nation, Black River First Nation, Bloodvein First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Norway House Cree Nation, Pimicikamak Okimawin, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and Tataskweyak Cree Nation expressed concerns regarding the methodology used by the Proponent to carry out its cumulative effects assessment. Specifically, Indigenous groups were concerned with the approach, scope and conclusions made in the cumulative effects assessment, including the spatial and temporal boundaries used, the lack of appropriate baseline information and consideration of current context, inaccurate portrayal of uncertainties, failure to establish clear significance thresholds, and the improper reflection of Indigenous perspectives and input from Indigenous Knowledge. Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted that the Proponent's assessment of the Project's cumulative effects treated them as isolated events, separate from both past and potential future changes, and focused only on the residual effects directly linked to the Project's activities. Furthermore, the Proponent did not accurately portray the Project's potential interaction with other projects and activities as the Proponent used duration of project activities to determine the temporal boundary for the assessment, rather than considering the unique properties of each valued component.

Tataskweyak Cree Nation raised concerns about the lack of baseline assessments of past and current conditions. The Interlake Reserves Tribal Council, Lake St. Martin First Nation, Norway House Cree Nation, Sandy Bay Ojibway First Nation emphasized that the baseline conditions for cumulative effects assessment for Indigenous peoples must be understood as those prior to the FRWCS construction, as the Interlake Region has been significantly altered and negatively affected by Manitoba water management developments since at least 1961. Norway House Cree Nation noted that the Proponent did not provide a comprehensive description of the effects of the FRWCS on water levels and environmental conditions in Lake Manitoba, Lake St. Martin, the Fairford River and the Dauphin River. The Interlake Reserves Tribal Council, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Pinaymootang First Nation expressed concern that the Proponent did not provide an inclusive list of all potential projects and activities that involved upgrades on infrastructure. Poplar River First Nation was of the view that more of Manitoba's water control infrastructure should be included in the cumulative effects assessment, including the Shellmouth dam, floodway, all other dams leading into Lake Winnipeg and Lake Manitoba, and dams on



rivers downstream of Lake Manitoba. Bloodvein First Nation noted that the Lake Winnipegosis Reservoir could contribute to the cumulative effects from past and present operations of Manitoba's flood infrastructure.

Hollow Water First Nation, Lake St. Martin First Nation, Pimicikamak Okimawin expressed concerns about the Province of Manitoba increasing the capacity of the Portage Diversion. Lake St. Martin First Nation and Pinaymootang First Nation raised concerns about added annual nutrient runoff from the Assiniboine River Basin and the need to consider water quality data from the Portage Diversion.

Black River First Nation, Bloodvein First Nation, Fisher River Cree Nation, Norway House Cree Nation, and Peguis First Nation expressed concerns about the interactive effects of the Project and the Lake Winnipeg Regulation (LWR). The LWR has had measurable effects on storage and water quality, especially the increased conveyance of high flows, nutrients and the resultant worsening of algal blooms. Norway House Cree Nation stated that higher peak floods due to the LWR were not insignificant to downstream communities and land users in the context of already challenging conditions that were exacerbated by the existing water control system. Tataskweyak Cree Nation stated that the Proponent had not adequately assessed the cumulative effects and had not determined the added effect that the LWR would have on future loadings. Black River First Nation raised concerns about the interactive effects of the LMOC and LSMOC structures and the LWR.

Pimicikamak Okimawin noted that the existing flood control and hydroelectric systems have created extensive, long-term changes to the Nelson River watershed and Pimicikamak traditional territory.

Cumulative Effects to Fish and Fish Habitat

Berens River First Nation, the Interlake Reserves Tribal Council, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concerns regarding cumulative effects of rising water levels, increased pollution, and sedimentation loading as a result of multiple projects in the region, resulting in changes to fish and fish habitat.

Norway House Cree Nation and Pimicikamak Okimawin expressed concerns about the levels of uncertainty related to the potential contribution of nutrients and contaminants overflowing from the Assiniboine River into Lake Manitoba. Hollow Water First Nation, Poplar River First Nation were concerned about cumulative effects of water regulation on the spread of AIS and zebra mussels into Lake Winnipeg. Pinaymootang First Nation and Poplar River First Nation noted missing effects to fish health and mortality from the spread of AIS.

The Manitoba Métis Federation noted that there was no indication of how the reduced flooding would affect fish habitat such as wetlands and riparian zones. The Manitoba Métis Federation indicated that further detail regarding the fish ladder replacement at the FRWCS was needed to understand potential effects to fish passage.

Cumulative Effects to Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance

Bloodvein First Nation, Pinaymootang First Nation, and Sandy Bay Ojibway First Nation emphasized that members were affected by all infrastructure in the watershed including the Portage Diversion, the FRWCS, and the EOC. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation stressed that issues with the EOC remained unresolved. They expressed concerns that the Project's effects cannot be considered outside of the legacy of cumulative effects arising from flood-management infrastructure in the area.

Tataskweyak Cree Nation stated that the Proponent had not adequately assessed the cumulative effects and had not determined the added effect that LWR would have on future loadings. Black River First Nation raised concerns about the interactive effects of the LMOC and LSMOC structures and the LWR. Fisher River Cree Nation, Norway House Cree Nation and Pimicikamak Okimawin expressed concerns about the cumulative effects of flood control infrastructure (including the FRWCS and Portage Diversion) on wildlife (e.g., moose) and wildlife habitat over time. These groups noted that since it was not well understood how to help moose populations rebound, any additional effects in all regions were of concern. Lake St. Martin First Nation expressed concerns that wetlands would shrink and degrade overtime as a result of further regulating Lake Manitoba, Lake St. Martin, and Lake Pineimuta due to narrower operating regimes. Fisher River Cree Nation indicated that wetlands were mostly peatlands in their area, and peat mining from peatlands was a clear, community-specific concern that had to be included in the cumulative effects assessment.

Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation expressed concern that the Proponent did not adequately assess the historical and present effects of existing water control structures on species of concern for Indigenous groups such as eastern whip-poor-will, red-headed woodpecker, and bobolink.

Cumulative Effects to Indigenous Peoples' Health and Socio-economic Conditions

The Interlake Reserves Tribal Council, Lake St. Martin First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation identified that the integrated flood management system has had significant and adverse effects to Indigenous health and socio-economic conditions. Dakota Tipi First Nation expressed concerns regarding cumulative effects of the artificially high groundwater and surface water tables experienced due to the Portage Diversion, including effects to housing, limitations to using sewage tanks, and recreational swimming. Mispawistik Cree Nation noted that the cumulative effects assessment for Indigenous health disregarded key aspects of Indigenous health, and in general, demonstrated a significant lack of understanding of Indigenous issues, Indigenous experiences of colonialism, and effects of these on Indigenous health and well-being. Pinaymootang First Nation highlighted ongoing and severe mental health impacts stemming from prior flooding and flood control management operations in the RAA.

Sandy Bay Ojibway First Nation stated that the Proponent did not adequately capture the direct and indirect cumulative effects to Indigenous health and socio-economic conditions, including changes in fish distribution, plant health and abundance, characteristics of the land, and water quality.

Mitigation, Monitoring and Follow-up



Dakota Tipi First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted a lack of clarity on the effectiveness of proposed mitigation and reclamation measures and identified the need for monitoring and follow-up measures related to cumulative effects given the high levels of uncertainty and risk associated with the Proponent's effects predictions.

The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation noted a lack of Proponent engagement on plans for the EOC decommissioning, in conjunction with vegetation reclamation and wetland Environmental Management Plans. The groups stated that without substantive details on how the decommissioning would take place, it was unclear how the reclamation objectives would be achieved, magnifying concerns related to cumulative effects. Sagkeeng Anicinabe First Nation noted that while the proposed reclamation may return the land to some semblance of its original condition, it was unlikely to serve the same ecological functions, restore lost microhabitats, or have the same productivity as it did prior to the excavation of the EOC.

The Manitoba Métis Federation was concerned that peat may be colonized by invasive plant species due to the time delay between the excavation of the peat moss from the LSMOC/LMOC and the decommissioning of the EOC, and expressed the need to develop an invasive species management plan that minimizes the risks of invasive species colonization.

A summary of the comments provided by Indigenous groups, along with Proponent and/or Agency responses, is provided in Appendix C of this draft EA Report.

Public Groups

The RM of Grahamdale expressed concerns regarding cumulative effects due to the development and operations of the Province of Manitoba's integrated flood management system (including the Portage Diversion, FRWCS, and the lower Assiniboine dykes), including the lack of benefits provided by this system that have led to frequent periods of artificial flooding. The RM of Grahamdale raised concerns regarding further cumulative effects due to changes in river flow regimes and lake levels caused by the Project.

Trapline 18 identified concerns regarding ongoing lake regulation that has contributed to a decline in water quality, shoreline erosion, community flooding, loss of access, and loss of use of resources, and changes to the ability to trap and fish resulting in a loss of income to many Indigenous peoples. Trapline 18 was of the view that a regional cumulative effects assessment needs to be done.

Keewatinook Fishers of Lake Winnipeg shared concerns regarding damages caused by existing water control structures that have affected Lake Winnipeg, such as increased turbidity, decreased natural water filtration systems like wetlands, increased debris and algae, severely damaged fish habitat and fisheries.

8.3.3 Agency Analysis and Conclusions

The Agency recognizes that Indigenous groups have raised significant concerns about cumulative effects to the lands and waters for which they live, utilize resources from, and obtain their livelihoods. The Agency acknowledges that increased development and the Province of Manitoba's historic and continued management of water in the region has resulted in significant changes to Indigenous groups' ability to continue practicing traditional and cultural use activities. Given the significant extent of concerns raised and input shared by Indigenous groups, the Agency acknowledges that there is uncertainty in the Proponent's conclusions related to cumulative effects.

The Agency is of the view that the Proponent did not adequately determine temporal boundaries for the cumulative effects assessment or adequately examine physical activities that have been and will be carried out. While the Project is intended on operating in perpetuity, the Proponent only included reasonably foreseeable physical activities that are anticipated to occur within a relatively short period of time (the Project construction phase or the first years in the Project operations). This contributes to uncertainty in understanding the potential significance of cumulative effects of the Project in combination with other past, present, and reasonably foreseeable projects and activities. The LWR and non-provincial dykes located in the Project RAA were not included in the past or present physical activities. The replacement of the fish ladder at the FRWCS and maintenance and repairs of the Portage Diversion channel were included in the list of reasonably foreseeable future projects but were not assessed by the Proponent. In addition, the assessment did not explicitly examine past effects in the context of cumulative effects. Rather, the Proponent integrated the effects of past projects and activities into the baseline assessment. The Agency acknowledges that past projects and activities should be properly considered in the cumulative effects assessment to ensure that the potential for significant cumulative effects is understood.

The Agency is of the view that, after taking into account the proposed key mitigation measures, monitoring, and follow-up programs and considering the effects of the Project and its interactions with the effects of past, present, and reasonably foreseeable projects and activities identified in Table 12, the Project is likely to cause significant adverse cumulative environmental effects to Indigenous peoples' current use of lands and resources for traditional purposes, physical and cultural heritage, and structures, sites, and things of historical, archaeological, paleontological, or architectural significance. However, the Agency is of the view that the Project is not likely to cause significant adverse cumulative environmental effects to fish and fish habitat and Indigenous health and socio-economic conditions.

Fish and Fish Habitat

The Agency acknowledges that there would be overlap between project effects and effects of past, present, and foreseeable future projects and activities with fish and fish habitat. The Agency recognizes that fish species and populations that could be affected are currently highly disturbed and the mortality effects of the Project on fish would be cumulative to existing baseline disturbances. The Agency agrees with views expressed by the Indigenous groups that the Project would interact cumulatively with flood management infrastructure in the area, including effects related to the operation and decommissioning of the EOC. The Agency also agrees with Indigenous groups that the Project would interact cumulatively with the proposed removal and replacement of the fish ladder at the FRWCS and the Portage Diversion.

The Agency is of the view that the key mitigation measures identified in Chapter 7.1 (Fish and Fish Habitat) of this draft EA Report, and additional measures to mitigate and offset effects to fish and fish habitat that



will be developed as part of the *Fisheries Act* authorization process for the Project will adequately minimize the Project's contributions to cumulative effects to fish and fish habitat, and therefore, cumulative interactions of project effects with effects of future projects and activities would not threaten the viability of fish and fish habitat in the RAA.

Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Structures, Sites, and Things of Historical, Archaeological, Paleontological, or Architectural Significance

The Agency recognizes that the Project's residual effects to the ability of Indigenous groups to access resources and sites of importance, availability and quality of resources for current use, and the altered quality of experience may interact cumulatively with the effects of past, present, and reasonably foreseeable projects and activities to cause adverse environmental effects to the current use of lands and resources for traditional purposes by Indigenous peoples, to physical and cultural heritage, and to structures, sites, and things of historical, archaeological, paleontological, or architectural significance.

The Agency recognizes that the Interlake Region has been altered and adversely affected by water management developments in Manitoba since at least 1961. The Agency acknowledges that Indigenous groups identified that there would be significant cumulative adverse effects to current use of lands and resources for traditional purposes resulting from the Project and other past, present and reasonably foreseeable future projects and physical activities, namely the Portage Diversion, FRWCS, the EOC decommissioning, and the LWR. Effects from the integrated water management system include, but are not limited to, long-term disruptions to subsistence hunting and harvesting (and corresponding effects to the health of Indigenous diet, ability to maintain a reasonable livelihood, and culture, including sense of place and intergenerational knowledge transfer), alterations to the landscape and use thereof, adverse effects to Indigenous fisheries, and changes in water levels that have changed the presence and abundance of culturally important species.

The Agency is of the view that, with the implementation of the Proponent's proposed mitigation measures, monitoring, and follow-up programs and the key mitigation measures identified in Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purpose, Physical and Cultural Heritage, and Sites of Significance) of this EA Report, the Project's contributions to cumulative effects to current use, on physical and cultural heritage, and on structures, sites, and things of historical, archaeological, paleontological, or architectural significance will not be appropriately mitigated and cumulative effects would threaten the ability of Indigenous groups to practice traditional and cultural use activities within the RAA.

Indigenous Health and Socio-economic Conditions

The Agency acknowledges that the Project may contribute to cumulative effects to Indigenous peoples' health within the RAA through changes to the atmospheric environment, surface water and groundwater quality including drinking water, the acoustic environment, and quality of available country foods. The Agency recognizes that the Project may contribute to cumulative effects to Indigenous peoples' socio-economic conditions, including changes in the availability of lands and resources used for harvesting, increased demands on community services and local infrastructure, and changes to community well-being



and social cohesion. The Agency also acknowledges that Indigenous groups noted that the Manitoba flood management system and the impacts from the 2011 flood have had significant and adverse effects to Indigenous health, socio-economic, and cultural well-being.

The Agency is of the view that, with the implementation of the Proponent's proposed mitigation measures, monitoring, and follow-up programs and the key mitigation measures identified in Chapter 6.1 (Surface Water), Chapter 6.2 (Groundwater), Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), and Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report, the Project's contributions to cumulative effects to Indigenous peoples' health and socio-economic conditions would be adequately mitigated and cumulative effects within the RAA would not prohibit the harvest of country foods in the LAAs and RAA.

Key Mitigation Measures and Monitoring to Avoid Significant Effects and Follow-Up Program Requirements

The Agency considers the key mitigation, monitoring, and follow-up measures discussed in the following chapters of this EA Report to be appropriate to account for potential cumulative adverse environmental effects associated with the Project on fish and fish habitat; the current use of lands and resources for traditional purposes, Indigenous peoples' physical and cultural heritage; structures, sites, and things of historical, archaeological, paleontological, or architectural significance for Indigenous peoples; and the health and socio-economic conditions of Indigenous peoples: Chapter 7.1 (Fish and Fish Habitat), Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), and Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions). The Agency notes the effectiveness of the proposed mitigation for cumulative effects to the current use of lands and resources for traditional purposes, physical and cultural heritage, and structures, sites, and things of historical, archaeological, paleontological, or architectural significance for Indigenous peoples relies on the ongoing Proponent's consultation with Indigenous groups.

9 Impacts on Aboriginal and Treaty Rights

The federal government has a legal duty to consult and, where appropriate, accommodate Indigenous groups, including First Nations and Métis Peoples, when the Crown contemplates conduct that may adversely affect Aboriginal or treaty rights that are recognized and affirmed in section 35 rights of the *Constitution Act, 1982*. The Agency sought information from all potentially affected Indigenous groups about the nature of their Aboriginal and treaty rights protected under Section 35 of the *Constitution Act, 1982* (“section 35 rights”) and how the Project may affect the exercise of their rights. The Agency considered information from the Proponent and Indigenous groups about the potential impacts of the Project to understand the nature, scope, and extent of adverse impacts on rights. Where potential impacts on section 35 rights were identified, the Agency took into account appropriate mitigation measures before determining the severity of the potential impacts.

This Chapter summarizes how the Project may potentially impact section 35 rights. Appendix C summarizes issues of concern communicated to the Agency by Indigenous groups throughout the environmental assessment, up to the date this draft EA Report was issued.

The Agency acknowledges that each Indigenous group is unique in its exercise of rights and that impacts would vary by Indigenous group. For the purposes of this draft EA Report, a high-level summary of effects is presented; and where applicable, impacts on specific Indigenous groups were noted.

9.1 Existing Aboriginal or Treaty Rights

The Project is located in central Manitoba, within Treaty 2 Lands. Treaty 2 is a historic treaty spanning much of what is currently southwestern Manitoba. Additionally, given the Project’s potential effects to Lake Winnipeg, Lake St. Martin, and Lake Manitoba, the Project may also potentially affect the exercise of the rights of First Nation signatories to Treaties 1 and 5. Treaties 1 and 5 are historic treaties located adjacent to Treaty 2 territory and include significant portions of southeastern Manitoba, and central and northern Manitoba, respectively (see Figure 16). The impacts on rights assessment adopts the spatial boundaries established for the assessment of effects to Indigenous peoples’ current use of lands and resources for traditional purposes (see Chapter 7.4). The full extent of Treaties 1, 2, and 5 are not included in Figure 10, Chapter 7.4; rather, the figure focuses on the LAA, RAA and the portions of Treaties 1, 2, and 5 which overlap or are adjacent to the LAA and RAA where potential effects are assessed.

While Treaty 5 defines the right to hunt, fish, and trap throughout the treaty territory, Treaties 1 and 2 do not include specific provisions for hunting, fishing, and trapping. Nevertheless, the *Manitoba Natural Resources Transfer Act (NRTA) 1930*, secures the right of First Nations to hunt, fish, and trap for food on unoccupied Crown lands or other lands to which the First Nations have a right of access. Treaties 1, 2, and 5 First Nations have and continue to practice rights across the Province, not limited to their treaty area. All treaties in Manitoba exclude lands taken up for settlement or other purposes; First Nations cannot exercise



treaty rights in these areas unless right of access has been granted. Section 35 Aboriginal rights not only include hunting, fishing, and trapping, but also other uses of the lands and resources within the PDA including plant harvesting and the use of lands and resources for cultural purposes.

Métis locals in the RAA are represented by the Manitoba Métis Federation for consultation purposes and assert section 35 rights, including hunting, fishing, and trapping rights, throughout the Province of Manitoba, including the PDA. In 2012, the Government of Manitoba and the Manitoba Métis Federation signed a Métis Harvesting Agreement, which designated a Métis Natural Resource Harvesting Zone that includes Game Hunting Areas 16, 20 and 25, which are in the RAA. While the LSMOC is not located within a Métis recognized harvest zone, the LMOC is located within Game Hunting Area 25 of the Métis Natural Resource Harvesting Zone. Métis harvesters may harvest throughout the Métis Recognized Harvesting Zone on all unoccupied provincial Crown lands, including provincial parks, wherever First Nation members are allowed to harvest; and on any privately owned lands in Manitoba on which a Métis Harvester has been given permission by the owner or occupant, or Indian Reserve lands with permission of Band Council.⁵⁵

Organizations that represent Indigenous groups being consulted on this Project include the Interlake Reserves Tribal Council and Southern Chiefs Organization. Membership of these organizations has changed over the course of the EA and is listed below.

Overall, the Agency identified 28 Indigenous groups for which the Project may impact Aboriginal and treaty rights, including:

- Treaty 1 First Nations:
 - Brokenhead Ojibway Nation
 - Peguis First Nation
 - Sandy Bay Ojibway First Nation
- Treaty 2 First Nations:
 - Dauphin River First Nation
 - Ebb and Flow First Nation
 - Keeseekoowenin Ojibway First Nation
 - Lake Manitoba First Nation
 - Lake St. Martin First Nation
 - Little Saskatchewan First Nation (represented by the Interlake Reserves Tribal Council)
 - O-Chi-Chak-Ko-Sipi First Nation
 - Pinaymootang First Nation
 - Skownan First Nation

⁵⁵ Manitoba Métis Federation. (2018). *Recognized Areas for Harvesting*, 1:2,765,225 map. Retrieved February 8, 2024 from https://www.mmf.mb.ca/wcm-docs/docs/harvesters/rmha_map.pdf



- Treaty 5 First Nations:
 - Berens River First Nation
 - Black River First Nation (represented by Southern Chiefs Organization)
 - Bloodvein First Nation
 - Fisher River Cree Nation
 - Fox Lake Cree Nation
 - Hollow Water First Nation
 - Kinonjeoshtegon First Nation (represented by the Interlake Reserves Tribal Council)
 - Misipawistik Cree Nation
 - Norway House Cree Nation
 - Pimicikamak Okimawin
 - Poplar River First Nation
 - Sagkeeng First Nation
 - Tataskweyak Cree Nation
 - York Factory First Nation
- Manitoba Métis Federation
- Dakota Tipi First Nation (not a signatory to the numbered Treaties; however, Dakota Tipi First Nation's right to hunt and fish, and use and gather resources is recognized and affirmed by section 35 of *the Constitution Act, 1982*)

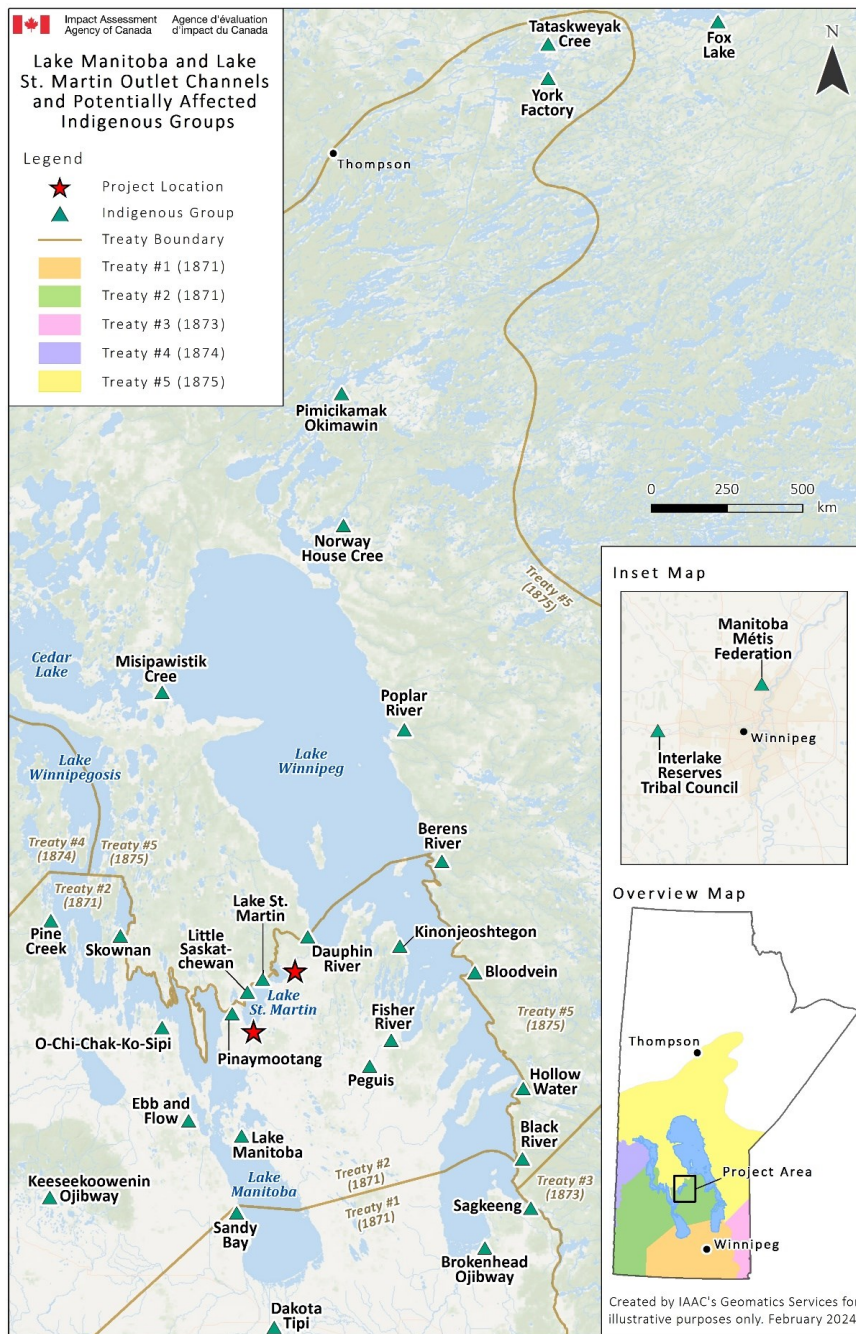
While initially contacted, some Indigenous groups have not participated in consultation and engagement activities regarding the Project. These groups are:

- Ebb and Flow First Nation
- Fox Lake Cree Nation
- Keeseekoowenin Ojibway First Nation
- O-Chi-Chak-Ko-Sipi First Nation
- Skownan First Nation

The Agency continues to inform these groups of key updates and opportunities to participate in the environmental assessment process.



Figure 16 Treaty Areas for Indigenous Groups Potentially Impacted by the Project



Source: Impact Assessment Agency of Canada, February 2024.

Figure Description: The Lake Manitoba and Lake St. Martin Outlet Channels Project's location relative to the locations of the Indigenous groups engaged on the Project. Indigenous groups' reserve and community locations are indicated by green triangles.



The Proponent provided funding for Rights Impact Assessments to seven Indigenous groups whom they considered to be the most affected: Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation. The Agency used the information from the Rights Impact Assessments of these seven Indigenous groups, information gathered by the Proponent, and information obtained through Agency consultation and technical advisory group meetings to inform the assessment of impacts on rights.

9.1.1 Context in Which Impacts on Rights Would Occur

Throughout the EA, Indigenous groups expressed concerns about the cumulative effects of historical and ongoing water control structures on their Aboriginal and Treaty rights. Indigenous groups, including Black River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Pimicikamak Okimawin, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and Tataskweyak Cree Nation expressed the perspective that various water control structures and other industrial and agricultural activities in the region have already significantly altered baseline conditions, their way of life and their ability to meaningfully practice their Aboriginal and Treaty rights. Indigenous groups identified significant concerns about the Proponent's lack of consideration of various water control structures operating as a whole system which results in increased flooding into the region.

Indigenous groups described how the Province of Manitoba operates the Portage Diversion to divert floodwaters north into Lake Manitoba, rather than those waters continuing along the Assiniboine River into Winnipeg. By diverting floodwaters into Lake Manitoba, cascading effects occur as water rises and the Province of Manitoba operates the FRWCS to allow water to pass through the Fairford River into Lake St. Martin. Similarly, water from Lake St. Martin flows through the Dauphin River and into Lake Winnipeg. In conjunction with other water inputs into Lake Winnipeg, water continues to flow north from Lake Winnipeg through the Nelson River. All of the Indigenous groups that are along these watercourses or utilize these areas for current use practices, are impacted when the Province of Manitoba operates the Portage Diversion to divert waters into Lake Manitoba (see Figure 15). The Project would serve to create a more direct link between Lake Manitoba, Lake St. Martin, and Lake Winnipeg.

The Agency considers that the current context and the state of the environment includes the cumulative effects of past and present activities, and that these factors are taken into consideration when assessing the impacts of the Project. The Agency did not conduct territory-wide assessments for each Indigenous group for this EA. Rather, the Agency considered cumulative effects within the scope of the EA, at the scale of RAA to inform the assessment of the potential impacts of the Project on the s. 35 rights of Indigenous peoples.

The Agency acknowledges that several Indigenous groups expressed the need for a regional cumulative effects assessment to understand the effects of existing water control structures as a whole system in the Province. The Agency did not undertake such a study on the various existing constraints and pathways of impacts on Indigenous groups as it considered such a regional-level assessment to be beyond the scope

of the Project-specific EA. Notwithstanding this limitation, the following assessment of the Project's impacts on the rights of Indigenous peoples considers the existing context, including historic and ongoing activities, within which Indigenous groups exercise their s. 35 rights. The Agency understands that each Indigenous group may be impacted differently by historic and ongoing water management, industrial and agricultural activities in the region, and that individual Indigenous groups have experienced different pressures that have hindered their ability to practice their unique rights and interests.

Members from Dauphin River First Nation, Ebb and Flow First Nation Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation were evacuated from their communities due to 2011 flooding events. The Agency acknowledges there remains direct and indirect legacy impacts from flooding events on communities who have been displaced. Several Indigenous groups both upstream and downstream of the Project have noted that effects from past provincial actions have still not been addressed, and the continued operation of provincial water management structures such as the Portage Diversion, the EOC and the FRWCS exacerbate the impacts on the communities' ability to practice s.35 rights in their traditional territories and disrupt their way of life. Indigenous groups expressed the view that the Province has not undertaken adequate consultation on the construction and operation of provincial water management structures, and this remains to be a cause for significant concern for several communities.

Indigenous groups located upstream of the Project, including along Lake Manitoba, such as Dakota Tipi First Nation, Ebb and Flow First Nation, Keeseekoowenin Ojibway First Nation, O-Chi-Chak-Ko-Sipi First Nation, Sandy Bay First Nation, and Skownan First Nation have been impacted by cumulative effects to Lake Manitoba. In particular, the Agency heard that continued operation of the Portage Diversion is an ongoing concern to several Indigenous groups as its operation is what triggers an increase in water flows and levels downstream. Dakota Tipi First Nation is located adjacent to the Portage Diversion and has indicated that the construction and operation of the Portage Diversion since 1965 has resulted in changes in the community's quality of life, due to changes to the water table affecting basic infrastructure.

Indigenous groups located directly adjacent to the Project along the Fairford River, Lake St. Martin, and Dauphin River include Dauphin River First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, and Pinaymootang First Nation. Fisher River Cree Nation, Kinonjeoshtegon First Nation, the Manitoba Métis Federation, and Peguis First Nation identified that the PDA contains preferred areas for the practice of s.35 rights. These Indigenous groups are likely to experience impacts more directly from project activities and have raised concerns about existing conditions in the area including increased water levels in Lake St. Martin as a result of the operation of the Portage Diversion, and water quality concerns due to pollution and runoff from industrial and agricultural activities. These Indigenous groups expressed that they have seen changes to the environment and effects to species of cultural importance and their habitat such as fish (including pickerel, jackfish, whitefish, sunfish, sauger, bass, catfish, carp, mariah, perch, sucker, and tullibee), terrestrial wildlife (including moose, elk, wolves, coyote, bears, deer, rabbits, muskrat, marten, mink, fox, lynx, wolverine, weasel, beaver, porcupine, snakes, frogs, partridge, ptarmigan, grouse, eagles, chickens, ducks, and geese), and plants (including 120 species of cultural importance). As a result, they have had to adapt their traditional practices to continue exercising their fishing, hunting, trapping, and gathering rights.

Indigenous groups that are located along Lake Winnipeg, such as Berens River First Nation, Black River First Nation, Bloodvein First Nation, Brokenhead Ojibway First Nation, Hollow Water First Nation, Misipawistik Cree Nation, Poplar River First Nation, and Sagkeeng Anicinabe First Nation, have been impacted by legacy water quality and flooding issues within Lake Winnipeg. These impacts include increased water levels in Lake Winnipeg and deterioration of water quality from various inputs including runoff from agricultural activities and runoff from the City of Winnipeg. It is anticipated that water would flow into Lake Winnipeg at a faster rate as a result of the Project, and while the Proponent estimated that the rise in water levels would be minimal with wind and wave action when there is a flood, these Indigenous groups remain concerned about the increase in water levels. Berens River First Nation, located directly across Lake Winnipeg from the LSMOC, may experience the effects of changing flow directions as a result of the Project.

Fox Lake Cree Nation, Pimicikamak Okimawin, Norway House Cree Nation, Tataskweyak Cree Nation, and York Factory Cree Nation, located along the Nelson River, have expressed concern regarding the current status of water flow and quality in the river as a result of water management and industrial activities upstream. In particular, Norway House Cree Nation raised concern regarding the historic and ongoing impacts of infrastructure related to hydroelectric projects on its s.35 rights.

9.2 Potential Adverse Impacts of the Project on Section 35 Rights

9.2.1 Hunting, Trapping, and Fishing Rights

The assessment of project impacts on hunting, trapping, and fishing rights includes consideration of the Project's residual and cumulative effects to the physical and biological conditions of resources. The assessment also considered pre-existing impacts, cultural factors, and socio-economic conditions that support the exercise of each right. Tables 13 to 17 provide the definition of the assessment criterion and limits used to assign the level of impact for each rating criterion.

Hunting and Trapping Rights

A brief summary of the potential interactions and pathways of the Project's effects to the physical and biological conditions that support the right to hunt and trap are outlined below. For a more comprehensive overview of the predicted effects of the Project on the terrestrial landscape, physical and cultural heritage and current use, see Chapters 6.3 and 7.4, respectively.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation described hunting and trapping to be core cultural practices for Indigenous groups. The Manitoba Métis Federation described how hunting is a Métis way of life, providing important sources of food and shaping childhoods. Hunting, trapping, and gathering are essential practices as a means of survival, but also maintain Indigenous culture.



Context in Which Impacts on Hunting and Trapping Rights Would Occur

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that Indigenous groups have seen dramatic changes over the past few decades to their ability to hunt and trap. Historic and ongoing flooding, reduced quality, and quantity of harvesting resources (e.g., wildlife species of cultural importance), and increased development has resulted in a loss of traditional territory and decreased opportunities to continue practicing these rights. The Interlake Reserves Tribal Council, Pinaymootang First Nation, and Sandy Bay Ojibway First Nation noted that the operation of existing water control structures that affect Lake Manitoba, Lake St. Martin, and Lake Winnipeg have already significantly impacted their ability to exercise hunting, trapping, and fishing rights. The Manitoba Métis Federation indicated that changes to the environment, such as water levels, have greatly impacted Métis trappers as species like beaver and muskrat depend on having enough water in their habitat to survive. The Manitoba Métis Federation emphasized that the privatization of land where Métis citizens hold rights has continued to reduce the amount of land available for Métis Nation citizens to access and exercise their rights.

Sagkeeng Anicinabe First Nation noted that a large amount of wildlife and traditional plant habitat has already been impacted by past projects resulting in depleted resources that support the practice of rights. The Manitoba Métis Federation described having to travel further to hunt due to declining moose populations in the southern part of Manitoba, where they used to harvest regularly.

Pathways of Impact from the Project on Hunting and Trapping Rights

Loss of Preferred Hunting and Trapping Areas and Change in Access

The Agency anticipates that the Project would result in the direct loss of preferred hunting and trapping areas due to project components and activities, including elevated water levels and shoreline inundation during operation. Pinaymootang First Nation and Little Saskatchewan First Nation expressed concerns regarding the potential impacts of project-related increases to water levels resulting in flooding of areas that are relied upon for hunting and trapping. The Manitoba Métis Federation indicated that Red River Métis would have their Aboriginal rights impacted by changes from the Project on water quality, water level, ability to hunt and trap, ability to collect and harvest plants and medicines for sustenance and cultural use, and synergistic effects as a result of contributions to cumulative effects and the cumulative loss of lands for which Métis rights can be exercised. Dauphin River First Nation, Fisher River Cree Nation, Lake St. Martin First Nation, Peguis First Nation, the Manitoba Métis Federation, and Tataskweyak Cree Nation expressed concerns about significant impacts on hunting and trapping rights from project-related effects to Captain's Point, Sandy Point, Birch Creek, and Buffalo Creek wetland complex along with changes in wetland drainage and water levels in Lake St. Martin, Fairford River, Dauphin River, and Lake Winnipeg and connected wetland and shoreline areas. These areas have significant cultural importance, interconnected with traditional land use, including habitat for wildlife, fish, migratory waterfowl, and plants of cultural and medicinal importance.

The Project is anticipated to change Indigenous groups' ability to access and navigate preferred hunting, trapping, and gathering areas due to barriers created by Project components. Indigenous groups identified

that construction and operation of the channel structures would impede the ability of hunters to travel to preferred hunting areas. Dauphin River First Nation, Fisher River Cree Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation specifically raised the concern regarding the impassability of the channels by foot or all-terrain-vehicle and noted that crossing locations may not be sufficient to ensure Indigenous peoples' perception of the impassability of the channels does not result in a significant barrier to practicing rights in the LAA. As the Proponent only proposed one crossing location for LSMOC, Indigenous groups with reserves on the eastern side of Lake St. Martin that frequent this area, or have any preferred hunting areas in close proximity to this channel, may have a higher impact to their right to hunt as a result of the barrier created by the LSMOC. The Interlake Reserves Tribal Council, Pinaymootang First Nation, Sandy Bay Ojibway First Nation, and Sagkeeng First Nation noted that hunting practices often follow the ambulatory movement of wildlife, and should wildlife cross the channel, inability to follow represents a direct barrier to the exercise of the right to hunt. These Indigenous groups identified the need for an additional crossing location over the LSMOC.

Indigenous groups noted concerns about Project related increased access by humans and predators resulting in decreased availability of wildlife through hunting and predation. The Proponent acknowledged concerns regarding increased access for hunting and trapping, particularly around the LSMOC due to it being more remote. The Proponent recognized that the permanence of Project infrastructure, including the channels, the new 24-kilovolt electrical distribution line, and the realignment of PR 239, may have long-term impacts on hunting and trapping activities. The Proponent noted that the channels would intersect traditional use trails and travelways and act as barriers to accessing traditional resources, which can only be crossed as specific locations. Resource users would be able to continue to travel in the area but crossing the channels would impose some restrictions on travel. Furthermore, the Proponent acknowledged that the linear features created by the channels, including the new distribution line and access roads, may increase access for hunting and trapping, potentially resulting in increased mortality risk to furbearers and ungulates. To address this concern, the Proponent plans to implement measures to limit unauthorized access to the LMOC and LSMOC and prevent trapping or harassment of wildlife by project employees, such as gates on access roads, signage, and having regular security patrols along the channels by Manitoba Natural Resources and Northern Development Conservation Officer Service throughout the life of the Project.

Changes to the Availability and Quality of Wildlife and Wildlife Habitat

The Project is anticipated to result in changes to Indigenous groups' ability to successfully hunt and trap through Project-related changes to wildlife and their habitat. Indigenous groups identified concerns about changes to wildlife distribution, migration patterns, population size, reproduction patterns, health, and habitat due to Project-related reduction and fragmentation of habitat, disruptions, and effects to surface water quality and quantity. The Manitoba Métis Federation indicated that hunting is an important harvesting right and any changes to wildlife populations or habitat could impact this right. Fisher River Cree Nation, Dauphin River First Nation, and the Misipawistik Cree Nation, noted that, moose, deer, and elk are hunted in the LAA and may be subject to disturbances such as noise and dust from Project construction. These disturbances could prompt the animals to move away from construction activities, increasing the effort and the travel distance required for Indigenous hunters to achieve a successful hunt and thereby hindering their

ability to exercise their hunting rights. The Manitoba Métis Federation expressed concerns about potential impacts on wildlife including birds, mammals, and small furbearers that could result from changing their habitat and migration routes. The Manitoba Métis Federation noted that reducing flooding in some areas, for example, could decrease the amount of available nesting areas for birds such as duck and geese, and swamps for moose. The Manitoba Métis Federation emphasized that many wildlife species, such as game birds and moose, are important to Métis culture and harvesting practices.

Impacts on hunting and trapping rights may vary for Indigenous groups based on their location and preferred areas where they practice rights. Lake St. Martin First Nation noted specific concern about disruptions and habitat fragmentation in the vicinity of Big Buffalo Lake Complex, an area within the PDA that was considered a "breadbasket" for hunting and plant gathering prior to the 2011 flood. Fisher River Cree Nation indicated that certain provincial Game Hunting Areas, notably 21 and 21A which surround Fisher River Cree Nation, are closed to all moose hunting. For Fisher River Cree Nation members who have relied on moose for meat and cultural uses, additional loss of moose habitat may further delay the recovery of the moose population, which could further impact their ability to successfully hunt. Dauphin River First Nation, Fisher River Cree Nation, and Peguis First Nation reported hunting and trapping areas in the LAA along Buffalo Creek and reported good wildlife habitat for many species of cultural importance, namely moose and deer. The Manitoba Métis Federation indicated their members mapped 12 hunting locations (including an area where Métis citizens reported hunting duck, goose, grouse, partridge, moose, elk, and deer), and one personal and three commercial trapping and snaring locations (including for beaver, coyote, fisher, fox, lynx, marten, muskrat, squirrel, weasel, and wolf) within their study area⁵⁶, which encompasses Lake St. Martin and portions of Lake Manitoba and Lake Winnipeg. The Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Norway House Cree Nation, Pimicikamak Okimawin, Fisher River Cree Nation, Brokenhead Ojibway First Nation, the Manitoba Métis Federation, Hollow Water First Nation, Poplar River First Nation, Pinaymootang First Nation, Misipawistik Cree Nation, Sandy Bay Ojibway First Nation, Sagkeeng First Nation, Peguis First Nation, Tataskweyak Cree Nation, and Lake St. Martin First Nation raised concerns regarding the Project's potential contribution to ongoing flooding in the region from existing water control structures and to increases in water levels that may cause the erosion of lake shoreline, which in turn could result in the loss of homes and in a decline in the value and number of areas available for hunting, fishing and camping.

The Proponent indicated that the Project is anticipated to result in a change in the availability of traditional resources for current use through the loss of traditionally harvested wildlife – either directly, or indirectly, through the loss of the habitat that supports them. This can affect the distribution and abundance of wildlife in the LAA, which can result in changes to traditional hunting and trapping within the LAA. The Proponent acknowledged that construction activities (e.g., access, channel excavation) may result in temporary sensory disturbance (e.g., construction noise) and nuisance effects (e.g., traffic) displacing big game, such as moose, elk, and deer and reducing the hunting success rates in proximity to the outlet channels. In addition, Indigenous land and resource users in the LAA may experience changes in access during

⁵⁶ Manitoba Métis Federation. (2021). *Métis Knowledge, Land Use, and Occupancy Study for the Lake St. Martin and Lake Manitoba Permanent Outlet Channels Project*. Retrieved February 8, 2024 from https://www.mmf.mb.ca/wcm-docs/docs/departments-energy/mmf_lakest.martin_mkluos_29.06.2021.pdf



construction, including delays and detours. The Proponent indicated that due to the flood protection provided by the Project, overall Project-related changes are expected to be positive for birds and wildlife habitat and access to these resources. However, the Proponent acknowledged that the Project has the potential to cause adverse effects to traditional hunting and trapping that require mitigation and monitoring to manage effectively. Wildlife species that are commonly hunted and trapped by Indigenous groups would be monitored through the Wildlife Monitoring Plan, which includes components such as mammal movement monitoring using remote trail cameras and winter track surveys, and wildlife mortality reporting. The Proponent noted that while the physical presence of the channels could act as a barrier to wildlife movement and affect resource harvesting through the loss of use and alteration of the LAA, resource harvesting would be able to continue near the Project ROW.

The Proponent concluded that residual effects of the Project on the availability of traditional resources for current use are predicted to be adverse due to a loss of habitat for harvested resources, but low in magnitude as it is anticipated that current land and resource use practices would be able to continue with minor alteration of behaviour by Indigenous groups. Effects to hunting and trapping are anticipated to be long-term, regular, and continuous due to the presence of project infrastructure and to the irreversible loss of land.

Assessment of Impact on Hunting and Trapping Rights

The Agency acknowledges that historic and ongoing flooding, reduced quality and quantity of harvesting resources (e.g., wildlife species of cultural importance), and that increased development have resulted in a loss of traditional territory and decreased opportunities to hunt and trap. The Agency is of the view that the Project is likely to cause significant adverse environmental effects to Indigenous peoples' current use due to residual effects to access for current use, the availability and quality of resources, and quality of experience (see Chapter 7.4 for additional details), after taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs. Effects to current use directly impact Indigenous groups' hunting and trapping rights. The Agency understands that the Project may result in impacts on Indigenous groups' ability to practice hunting and trapping rights in their preferred manner through changes to access to preferred hunting and trapping areas, and changes to wildlife and wildlife habitat. The Project would result in the direct loss of wildlife habitat in the LAA, in changes to wildlife movement and availability, and in Indigenous peoples' access due to the barrier created by the channels. Project components and resulting habitat fragmentation would change the availability and movement of species used for hunting, which would in turn reduce hunting opportunities and access to preferred hunting areas and methods for a long-term duration (longer than one generation). The Agency notes that wetland offsetting and compensation as per Manitoba's *The Water Rights Act* would only require compensation for 0.1 hectares of the 768.5 hectares of wetlands removed for the construction of the LSMOC. Uncertainty exists in the effectiveness of offsetting for the loss of wetlands in mitigating potential effects to species of cultural importance that rely on wetlands, such as moose, beaver, muskrat, otter, and wetland dependent birds. Higher magnitude effects to wildlife movement would be anticipated intermittently during periods of high flows when the WCS gates open and the channels begin diverting floodwaters. The Agency understands that the Project is intended to reduce flooding along Lake Manitoba and Lake St. Martin and that the Proponent predicted that flood protection provided by the Project would have positive effects to hunting and trapping areas. Changes to Indigenous groups ability to hunt and trap would be potentially



reversible with adequate mitigation measures, such as revegetation with species of value to culturally important wildlife and effective engagement with Indigenous groups, including community-specific access management plans. The Agency notes that maintaining unimpeded access to preferred sites and the availability and quality of resources for current use, including species of cultural importance, is critical to enable the continued exercise of hunting and trapping rights.

The Agency recognizes that the severity of project impacts on hunting and trapping rights would vary by Indigenous group; see Tables 14 to 17 for the Agency's analysis related to severity of impacts on rights. The Agency notes the importance of the implementation of the mitigation, follow-up, and monitoring measures identified in this report. Of particular note, key mitigation measures described in Chapter 6.3 (Terrestrial Landscape), Chapter 7.2 (Migratory Birds), Chapter 7.3 (Species at Risk), and Chapter 7.4 (Current Use and Physical and Cultural Heritage) are important to support Indigenous groups' continued ability to practice hunting and trapping rights, such as purposeful inclusion of and sufficient support provided to Indigenous groups to participate in wildlife, vegetation, and revegetation monitoring; and the development of community-specific access management plans to support Indigenous groups' ability to navigate through the area.

Fishing Rights

A brief summary of the potential interactions and pathways of the project's effects to the physical and biological conditions that support the right to fish are outlined below. For a more comprehensive overview of the predicted effects of the Project on surface water, groundwater, and fish and fish habitat, see Chapters 6.1, 6.2, and 7.1, respectively. Tables 13 to 17 provide the definition of the assessment criterion and limits used to assign the level of impact for each rating criterion.

Context in Which Impacts on Fishing Rights Would Occur

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that their ability to practice their fishing rights within the RAA is already severely impacted and continues to decline. Over the years, Indigenous groups surrounding Lake Manitoba, Lake St. Martin, and Lake Winnipeg have seen considerable changes in watercourses, including several floods that have resulted in changes to the level, flow, and velocities of waterbodies and watercourses in the RAA. Fluctuating water levels and decreased water quantity have and continue to affect access to culturally important rivers and lakes, affect subsistence and commercial fisheries, and create social and health issues such as flooding of houses and mold growth.

Additionally, water quality in the RAA has been affected by sedimentation and run-off, including agricultural and non-agricultural pollution. The Manitoba Métis Federation observed a decline in water quality throughout the area encompassing Lake Manitoba, Lake St. Martin, and Lake Winnipeg from pollution from various anthropogenic sources (e.g., sewage from urban centres, farming runoff) as development has increased.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation noted that



Indigenous groups rely on fish and fishing for food security, and cultural and economic livelihoods. Indigenous groups' ability to practice their fishing rights have been considerably modified over the years due to declines in water quality and fluctuating water levels, as well as direct impacts on fish habitat, declines in fish quantities, and barriers to accessing fishing areas. The Manitoba Métis Federation indicated they have observed and experienced changes to fish and fishing in Lake Manitoba and Lake Winnipeg over time, including changes to fish populations, water quality, and their ability to harvest.

Fisher River Cree Nation noted that changes to currents and fish species in Lake Winnipeg have occurred over the past several decades. At the 2024 TAG Meeting, participants indicated that water quality in Lake Winnipeg and downstream along the Nelson River has been severely impacted by pollution from run off and other inputs into Lake Winnipeg. Dauphin River First Nation noted the reduced confidence in the water quality and use for drinking, swimming, and fishing.

Pathways of Impact from the Project on Fishing Rights

Loss of Preferred Fishing Areas and Change in Access

Indigenous groups identified concerns regarding changes to shoreline access from reserve lands for fishing purposes along Lake Manitoba, Lake St. Martin, and Lake Winnipeg due to project-related changes to water levels. Additionally, Indigenous groups noted that the Project would cause changes to the ability to safely access preferred fishing areas in the RAA and decrease the efficacy of fishing due to project-related changes in water currents that affect ice-depth patterns, especially during priority fishing times (e.g., the first fall ice and last spring ice according to Lake St. Martin First Nation). Lake St. Martin and the Dauphin River are known whitefish and pickerel spawning grounds, and Indigenous groups have noted concern about fluctuating water levels from the Project affecting fisheries. The Manitoba Métis Federation mapped 32 fishing locations within the RAA, including fishing for jackfish/northern pike, pickerel, perch, suckers, sauger, yellow perch, lake whitefish, and burbot.

The Proponent indicated that the Project would only operate to manage flooding conditions when water levels on Lake Manitoba exceed the top of the target range of 247.65 metres (812.5 feet) (in accordance with the Operating Guidelines); outside of this, conditions would remain as currently experienced. Seasonal fluctuations in lake levels are still expected to occur, thus the effects to lake shorelines and associated wetlands and other habitat would be expected to remain relatively unchanged. More stable and lower water levels during operation in the post-Project environment should improve shoreline access for fishing purposes. Changes to Lake Winnipeg would be limited mainly to areas close to the LSMOC outlet. Lake Winnipeg water levels are managed under the Lake Winnipeg Regulation. During Project operation to manage flooding there would be more flow entering Lake Winnipeg earlier, but changes in lake levels would be within past water level extents and virtually imperceptible among wind and wave action.

The Proponent indicated that when the channels are operated during the winter months it would be at reduced flow rates and water levels on Lake St. Martin would be more stable during operation; therefore, ice thicknesses in the lake should not change. The Proponent anticipated that there would be no loss of access to winter fishing areas, with the possible exception of the LMOC outlet in Birch Bay and the LSMOC inlet in Lake St. Martin north basin.



Changes to the Availability and Quality of Fish and Fish Habitat

The Agency anticipates that the Project would result in changes to the ability to fish and fishing success through Project-related residual effects to fish and fish habitat, as described in Chapter 7.1 (Fish and Fish Habitat). The Project may permanently alter or destroy fish habitat, modify fish passage, and increase fish mortality in the PDA and LAA during construction and operation, resulting in potential changes to fish behaviour and spawning success. Numerous Indigenous groups, including Berens River First Nation, Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, and Peguis First Nation, are concerned that changes to water quality, water levels, and fish habitat, distribution, and spawning success would occur from increased suspended sediments introduced by sediment outflows from the channels and reduction of lake levels during operations. This would impede subsistence fishing activities making the practice of the right more difficult. In addition, the Manitoba Métis Federation raised concerns that the spread of zebra mussels across waterbodies could be exacerbated by the Project.

The Proponent noted that the Project would alter stream flows and lake levels to alleviate flooding of communities along Lake Manitoba and Lake St. Martin and, therefore, would have negative effects to fish and fish habitat during construction and operation. Residual effects to fish and fish habitat are expected to be negligible or low in magnitude, but medium-term to long-term in duration because they are likely to occur each time the WCS gates are opened. The Proponent noted that fish passage would be altered, but the Project is not expected to measurably affect movements or substantially increase the risk of AIS dispersal. The Proponent predicted that, after the implementation of mitigation, no noticeable long-term residual effects to fish abundance are expected and therefore there should be no effects to traditionally harvested fish species.

Assessment of Impact on Fishing Rights

The Agency acknowledges that historic and ongoing flooding, increased development, pollution, and other factors that contributed to declining water quality and quantity of waterbodies in the RAA have resulted in changes to the availability and quality of fish and fish habitat and decreased opportunities to fish. The Project is anticipated to have adverse residual effects to fish and fish habitat (see Chapter 7.1 for additional details), thus adverse impacts on Indigenous groups' abilities to continue their fishing practices. Furthermore, after taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs, the Agency is of the view that the Project is likely to cause significant adverse environmental effects to Indigenous peoples' current use of lands for traditional purposes due to residual effects to access for current use, the availability and quality of resources, and quality of experience (see Chapter 7.4 for additional details).

The Agency notes that the Project would result in the deposition of sediment into areas of Lake St. Martin and Lake Winnipeg, that would result in significant changes to fish spawning and habitats in those lakes. In addition, fluctuations in water levels of the north basin of Lake St. Martin would affect fish spawning and habitat areas located within shoreline and nearby wetland areas. Changes in fish movement (fish out of Lake Manitoba to Lake St. Martin and out of Lake St. Martin to Lake Winnipeg through the channels) are unavoidable and cannot be completely mitigated. The Agency concludes that residual effects to fish habitat



may result in changes to fish movement and reductions in fish abundance, which would in turn adversely affect Indigenous peoples' ability to fish.

The Agency acknowledges that as a flood mitigation project, the Project's purpose is to move water and thus would unavoidably result in changes to fish and fish habitat. The Agency understands that the Proponent would be required to offset for any harmful alteration, disruption, or destruction of fish and fish habitat as a part of the *Fisheries Act* authorization required for the Project. While this offsetting may offset potential effects to fish and fish habitat, offsetting is likely to not occur within the LAA. This could in turn result in an increased effort and travel distance required by Indigenous peoples to successfully fish. As the Project would be operating in perpetuity, the Project would result in long-term, irreversible impacts on Indigenous groups' ability to successfully practice fishing rights.

The Agency recognizes that the severity of project impacts on fishing rights would vary by Indigenous group; see Tables 14 to 17 for the Agency's analysis related to severity of impacts on rights. The Agency notes the importance of the implementation of the Proponent's proposed mitigation, follow-up, and monitoring measures and the key mitigation measures discussed in Chapter 6.1 (Groundwater), Chapter 6.2 (Surface Water), Chapter 7.1 (Fish and Fish Habitat), and Chapter 7.4 (Current Use and Physical and Cultural Heritage) of this draft EA Report. Some of these measures are particularly critical to support Indigenous peoples' continued ability to practice fishing rights, such as inclusion of Indigenous groups in monitoring, not impeding fish passage, avoidance of fish stranding, maintaining water depth and baseflow within the channels, and implementing a fish habitat offsetting plan that is compliant with an authorization under the *Fisheries Act*.

9.2.2 Right to Continued Way of Life

As supported under section 35 of the *Constitution Act*, 1982, Aboriginal rights include a range of cultural, social, political, and economic rights. Indigenous groups identified "way of life" rights as rights in respect of cultural continuity, the opportunity to derive a reasonable livelihood from rights-based activities and practices, and stewardship or governance of lands, waters, and resources within their traditional territories. The Agency understands the right to a reasonable livelihood as something that is synonymous with the assessment of effects to Indigenous peoples' health and socio-economic conditions. Potential effects of the environment on Indigenous peoples' health and socio-economic conditions related to maintaining a reasonable livelihood are described in Chapter 7.5 (Indigenous Peoples' Health and Socio-Economic Conditions). The assessment of impacts on cultural continuity and stewardship are below. Tables 13 to 17 provide the definition of the assessment criterion and limits used to assign the level of impact for each rating criterion.

The Agency acknowledges that the evaluation of potential adverse impacts on rights should consider the interconnected nature of Indigenous harvesting, cultural, and stewardship aspects, even when these are individually assessed. Lake St. Martin First Nation indicated that cultural teachings depend on the possibility of participation in harvesting and cultural practices across their territories and in turn, these practices serve as a means of transmitting knowledge to future generations, enabling them to acquire the skills and knowledge necessary for their continuation.



Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation see the adverse effects of the Project on the land and ecosystems as challenging their whole way of life and health as communities. These Indigenous groups note that they are actively working to maintain community cohesion and ensure future generations can live on and take care of the land and its resources.

A brief summary of the potential interactions and pathways of the Project's effects to the physical and biological conditions that support way of life rights are outlined below. For a more comprehensive overview of the predicted effects of the Project on Indigenous peoples' current use and physical and cultural heritage, and health and socio-economic conditions, see Chapters 7.4 and 7.5, respectively.

Cultural Continuity

Indigenous groups identified that cultural continuity is the persistence of their culture and land-based way of life through cultural practices for safeguarding cultural identity and language, maintaining spiritual connections to the land and sense of place, promoting community well-being, and transferring knowledge. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation noted that the endurance of their cultural values, knowledge, practices, teaching, languages, and ceremony through processes of historical transformation is critical to Indigenous groups' mental health and wellness.

Context in Which Impacts on Cultural Continuity Would Occur

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that changes over time in Indigenous groups' traditional territory and cultural context have resulted in a decline in the conditions required for the full expression of cultural continuity as it pertains to knowledge transmission, cultural heritage, ceremonies, and sense of place. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, and Pinaymootang First Nation indicated that effects to the lands and resources utilized for traditional practices negatively impacts the ability to pass Indigenous Knowledge of the area on to younger generations, which affects the transmission of cultural values language, norms, and protocols. The Manitoba Métis Federation indicated that the harvesting of plants and natural materials provides harvesters a cultural connection to the land as well as opportunities for intergenerational knowledge transfer. Lake Manitoba First Nation indicated that the effects to plants, medicines, and wildlife not only impact Indigenous groups' ability to consume and utilize the resources but are also inextricably linked to their social and cultural values.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, and Pinaymootang First Nation described the impacts of recent flood events as being detrimental to the abundance and accessibility of plants and medicines. Lake Manitoba First Nation noted that cumulative impacts over time were affecting key medicines such as tobacco and sweetgrass. Further to the flooding events, Lake Manitoba First Nation members noted increased private property, effects from agricultural production and cattle ranging, effects from forestry practices, and changes to the climate as contributing to a decrease in plants and medicines. Kinonjeoshtegon First Nation and Lake



Manitoba First Nation identified that accessing medicinal plants has become more difficult throughout their traditional territory due to past flooding and infrastructure developments that continue to damage vegetation.

Dauphin River First Nation, Kinonjeoshtegon First Nation, the Manitoba Métis Federation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that the loss of lands due to flooding, the changing landscape, and construction of new infrastructure has negatively affected community members' sense of place and their enjoyment of their traditional lands and waters. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, and Pinaymootang First Nation described how historical flooding and displacement caused enduring effects to their social and economic wellbeing and identity resulting from disconnection from community, land, and way of life. The Manitoba Métis Federation described how past flooding events throughout the Lake Manitoba, Lake St. Martin, and Lake Winnipeg areas have created lasting changes to the lands and waters where Métis Nation citizens live and harvest. Sagkeeng Anicinabe First Nation noted that water holds a sacred place in Anicinabe culture, yet the extensive development of water infrastructure in the region since 1961 has led to considerable cumulative impacts on the water and lands in the RAA, and decisions regarding hydro development projects have often excluded meaningful participation from Indigenous groups. This exclusion has shifted the environmental baseline and resulted in the loss of critical areas that Sagkeeng Anicinabe members depend on for fishing, hunting, gathering, and cultural practices.

Dauphin River First Nation identified that important teaching sites for intergenerational knowledge transmission have been lost over time, and places that were traditionally good for hunting and gathering have been less productive as a result of flooding. Peguis First Nation described how flooding and water management practices have impacted community gardens, thus impacting the ability of younger generations to learn to tend to them, which has disrupted knowledge transfer. Kinonjeoshtegon First Nation noted that they maintain burial sites on the shores of Lake Winnipeg, which are being eroded due to fluctuations in water levels. For them, these sites indicate ancestral ties, continuity of use, and deep cultural connections to the area. The Manitoba Métis Federation reported that remaining cultural sites and connections are very important because so much of the Manitoba Métis Homeland and cultural sites have already been taken up by development and urbanization.

Pathways of Impact from the Project on Cultural Continuity

Effects to the Availability and Quality of Resources

The Agency anticipates that the Project would result in declines in the availability and quality of resources for current use, reduced access to lands and waters, and changes to Indigenous groups' quality of experience, as described in Chapter 7.4 (Current Use and Physical and Cultural Heritage) and above in Section 9.2.1 (Hunting, Trapping and Fishing Rights). The Project would affect the availability of culturally important plant, fish, and wildlife species and sites and areas relied upon for the exercise of cultural continuity rights. Project components would create barriers on Indigenous peoples' ability to access preferred sites for harvesting, hunting, trapping, and fishing, which are critical to maintaining cultural continuity rights through the persistence of Indigenous groups' culture and land-based ways of life.



Furthermore, the Project would affect Indigenous groups' quality of experience, resulting in changes to cultural traditions, sense of place, mental well-being, and ability to transfer knowledge.

The Proponent indicated that potential impacts on plant harvesting could occur as a result of project effects to vegetation and wetlands, including through: vegetation clearing, which may change landscape, community, and plant species diversity in the PDA and LAA; fragmentation of native plant communities; increased contaminant concentrations in the LAA; the introduction and spread of invasive plants; and the direct or indirect loss or alteration of wetland and riparian areas and functions. The Proponent predicted that, with the implementation of mitigation measures, the magnitude of effects to native plant communities would be low and changes to landscape and community diversity would not be anticipated. The Proponent noted that the main purpose of the Project is to reduce flooding, which should improve growth conditions and access to plants around the lake during these times, but the channels would intersect traditional use trails and travelways acting as barriers to accessing traditional resources. Crossing of the LSMOC would be limited to the WCS and potentially one additional crossing location. The Proponent noted that the Project would reduce the magnitude and duration of overland flooding during future flood events, which would alleviate most of the identified concerns, particularly with respect to plants and medicines. The Proponent noted that Indigenous groups would be provided with opportunities to harvest resources in the PDA prior to construction. Additionally, during construction, efforts would be made to retain treed areas where feasible, revegetate with native species, and apply weed control.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation noted concerns about changing vegetation compositions, introduction of invasive species, fluctuating water levels, flooding and inundation, and water table saturation resulting in changes to the sufficiency and availability of plant foods and medicinal resources, the degradation and loss of habitat suitable for supporting plant foods and medicines on lands adjacent to the Project, and changes to the ability to access preferred harvesting locations.

Lake St. Martin First Nation and Pinaymootang First Nation indicated that there is an abundance of medicinal and other culturally important plants in the LAA. Dauphin River First Nation indicated that the Project would disturb or destroy numerous areas that are documented as significant for gathering berries and medicinal plants, including a preferred location for harvesting Seneca root in the vicinity of the access road. Little Saskatchewan First Nation noted that Project-related inundation of lands adjoining the south basin of Lake St. Martin would further degrade and remove habitat for plants harvested for food and medicines. Similarly, vegetation clearing may result in the removal of important vegetation necessary for future generations to practice their right to gather plants and medicines. Peguis First Nation indicated that areas with high value medicines that are considered sacred to them would be impacted by the access road. The Manitoba Métis Federation mapped four plant-harvesting locations within their study area, including for roots, chaga, tamarack, and firewood.

York Factory First Nation highlighted concerns that the Project would affect plant availability and access to country food in York Landing, which is located on Split Lake on the Nelson River downstream of the Project. York Factory First Nation noted that the Proponent projected that water levels on Split Lake would be more than five millimetres above baseline conditions for as long as 527 days following the opening of



WCS gates. Alteration of water levels on Split Lake would impact York Factory First Nation's access to and the health of aquatic and shoreline plants, including medicines and country foods.

Changes to Tangible and Intangible Cultural Heritage

The Project is anticipated to diminish the value and effectiveness of Indigenous Knowledge for safe and effective exercise of rights due to Project-related changes to water levels and patterns, loss of sites and resources of significance, and changes to wildlife and fish behaviours, such as movement and spawning areas. Kinonjeoshtegon First Nation noted that Project effects to the environment would result in impaired or inaccurate knowledge transmission as the environment for which the knowledge is applicable would be modified.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation identified that project effects to wildlife habitat, mortality, and movement may adversely impact their ability to hunt certain species such as moose and elk. This would result in meat not being shared among family and Elders and limit opportunities to teach children how to hunt these species. Furthermore, changes to fish and fish habitat would result in reduction of fishing activities in the RAA and could therefore affect the cultural and spiritual relationship between Indigenous groups and fish. The Manitoba Métis Federation identified that when they catch more fish than they need, it is common practice for some fishers to share with Elders and other Métis family and friends, which in turn helps maintain connections between community members and friends and supports cultural and social practices. The Manitoba Métis Federation further described how fishing techniques are borne from a unique knowledge of the waters and fishing conditions from years of use or are passed down by family members and would be impacted by any changes to fish quality or populations.

Dauphin River First Nation identified that real and perceived risks from changes to water quality would result in impacts on patterns of use of key cultural areas (notably Lake St. Martin, Dauphin River, Lake Winnipeg, and areas nearby).

Effects to Physical and Cultural Heritage and Sites of Significance

The Agency anticipates that the Project would cause effects to physical and cultural heritage and sites of significance, including areas used for inter- and intra-generational transfer of knowledge and skills, gathering and ceremonial places, and multiple sacred and spiritual sites, as described in Chapter 7.4 (Current Use and Physical and Cultural Heritage). Maintaining and protecting tangible cultural heritage, which includes physically maintaining and culturally managing heritage resources, is a critical aspect of cultural continuity.

Dauphin River First Nation, the Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation specifically identified a regionally significant complex settlement site (or "village site") that would be lost due to the construction of the Project that is described as irreplaceable and deeply important. The Proponent acknowledges that the Project would require excavation of a regionally significant cultural heritage site (or village site) located near

Watchorn Bay. The Proponent indicated that knowledge of the heritage site would be preserved through archaeological excavation and the cultural heritage belongings would be relocated to provincial facilities in Winnipeg. The Interlake Reserves Tribal Council, Sagkeeng Anicinabe First Nation, and Sandy Bay Ojibway First Nation contend that excavation is not a form of mitigation, and that the loss of this site is considered unacceptable.

In addition to the physical and cultural heritage resources and sites of cultural and historical significance identified by the Proponent, the Project could affect unidentified sites of physical, cultural, and historic significance to Indigenous groups. These sites may be associated with the cultural activities of Indigenous groups, such as plant gathering, fishing, hunting, trapping, ceremonial activities, campsites, current and historic travel ways, potential gravesites, and archaeological and historical artifacts.

Within the PDA, Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, and Pinaymootang First Nation described areas used for the inter- and intragenerational transfer of knowledge and skills (including how and where to hunt, fish, and collect and use medicinal plants) and for gathering. Additionally, within the PDA, Dauphin River First Nation identified a gathering place where members attended bible camp, hunting and fishing trails (including skidoo trails), and resting places along traveling trails. Within the LAA and RAA, Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, and Pinaymootang First Nation described campsites, cabins, primary houses, boat launches, water routes, harvesting trails and areas, celebration and ceremonial areas (including annual treaty celebration, sweat lodges, areas for baptisms, religious gatherings), multiple sacred and spiritual places, burial sites, eagle nests, and swimming areas. Lake St. Martin First Nation has historical connections to heritage sites and resources throughout its traditional territory. The Narrows is a sacred area linked to Lake St. Martin First Nation's ancestral history, part of seasonal travel, and used for camping. Nearby in the RAA there are sacred caves tied to specific stories and place names. These sites, alongside burial grounds, have already been disturbed and are in a delicate state that demands care.

Stewardship

Multiple Indigenous groups claim stewardship or governance rights over resources within their traditional territories. Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that they have an inherent right to decide how lands and waters within their territory will be used.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Little Saskatchewan First Nation, and Pinaymootang First Nation indicated that their stewardship responsibility is linked to ensuring the requisite abundance of, and access to, resources to support rights-based practices. It is in this way that the continuation of their way of life – its culture, ability to derive a reasonable livelihood from its territorial waters and lands, and stewardship of its territory – are mutually reinforcing.

Context in Which Impacts on Stewardship Would Occur

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, and Pinaymootang First Nation indicated that their ability to exercise stewardship and co-management rights on their traditional territory has diminished over time as a result of the federal and



provincial governments assuming control of their traditional territory. Within this context, Dauphin River First Nation noted that the development and operation of existing water control structures has been particularly problematic for their stewardship of water, fish, and terrestrial values in their homelands, particularly along the Dauphin River, Lake St. Martin, and Lake Winnipeg. Lake Manitoba First Nation indicated that they have been impacted by flooding and water management regimes and have not been equal participants in decision-making around water management approaches.

Dauphin River First Nation and Kinonjeoshtegon First Nation indicated that historically, they had control over their lands and the cultural resources within their territory. Today, there are barriers to Indigenous groups managing the remaining resources and cultural heritage. Kinonjeoshtegon First Nation noted that Treaties have not been honoured in the way originally intended to ensure signatories have ongoing access to continue to live off the land, manage the way waters are used, and protect the health of the lands and water for the future.

Pathways of Impact from the Project on Stewardship

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation indicated that the primary potential Project interaction with their right to exercise stewardship over lands, waters, and resources within their traditional territory in order to ensure the continued practice of treaty rights and way of life is the historic and continued exclusion of their leadership and community from having a decision-making role with respect to Project approval and the terms of Project operation and management. Peguis First Nation further identified the lack of Free, Prior, and Informed Consent⁵⁷ sought for this Project, and changes to their ability to decide on current and future use of the area due to ongoing impacts from the Project.

Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation noted that as the Proponent would be the exclusive owner and operator of the Project, this limits the ability of Indigenous groups to make future decisions regarding land and water use, and access, in the RAA. The Proponent indicated that the issue of stewardship would be beyond the scope of the environmental review of the Project. The Proponent noted that matters of provincial water management regimes or provincial and federal licensing and approval processes are not within their care or control. The Proponent indicated that the right to steward lands and resources within traditional territories is a matter that First Nations should more properly seek to resolve with the Government of Manitoba and the Government of Canada.

Kinonjeoshtegon First Nation and Little Saskatchewan First Nation expressed a desire to be engaged in co-management and stewardship processes should the Project be approved. Kinonjeoshtegon First Nation

⁵⁷ References to “free, prior and informed consent” are found throughout the *United Nations Declaration on the Rights of Indigenous Peoples Act* (<https://laws-lois.justice.gc.ca/eng/acts/U-2.2/>). They emphasize the importance of recognizing and upholding the rights of Indigenous peoples and ensuring that there is effective and meaningful participation of Indigenous peoples in decisions that affect them, their communities, and territories.



and Little Saskatchewan First Nation indicated that involvement in co-management processes relates directly to the ability of these Indigenous groups to exercise decision-making powers over their lands and territories. Furthermore, they contend that without co-management they remain excluded from the processes necessary to maintain ecological conditions within their traditional territories to support their way of life. Kinonjeoshtegon First Nation identified that a critical component of a co-management and stewardship model is transparency and information sharing. Lake Manitoba First Nation, Lake St. Martin First Nation, Peguis First Nation, and Pinaymootang First Nation expressed concerns about the lack of decision-making authority provided to Indigenous groups for this Project and how it would impact their future use and connection to the area, including involvement in monitoring initiatives and decisions surrounding water flows. Lake St. Martin First Nation further indicated that regulating water in their traditional territory affects food and fish spawning, in turn impacting their livelihoods and future generations.

Dauphin River First Nation identified that lack of access to the PDA, or only allowing access following permission from the Proponent, undermines their stewardship rights and provides little opportunity for their members to ensure that the underlying conditions for rights-based practices remain intact.

Assessment of the Level of Impact to Way of Life Rights

The Agency acknowledges Indigenous groups have witnessed changes over time that have resulted in a cumulative decline in the conditions required for the full expression of cultural continuity and their ability to exercise stewardship over the lands and resources within their traditional territories. The Agency recognizes that the development and operation of existing water control structures has been particularly impactful on their stewardship of water, fish, and terrestrial values.

The Agency is of the view that the Project is likely to cause significant adverse environmental effects to Indigenous peoples' current use and physical and cultural heritage due to residual effects to access for current use, the availability and quality of resources, quality of experience, and physical and cultural heritage and sites of significance (see Chapter 7.4 for additional details), after taking into account the implementation of proposed key mitigation measures, monitoring, and follow-up programs. Effects to current use, physical and cultural heritage, and sites of significance directly impact Indigenous groups' way of life rights. The Agency understands that the Project would likely affect the cultural and spiritual relationship between Indigenous groups and surrounding lands and resources, consequently resulting in changes in sense, experience, or enjoyment of cultural practices and spiritual places. The Project is likely to cause changes in access, loss of areas of significance, and changes to the availability and quality of resources that support traditional practices. Such changes would accelerate the loss of inter-generational teaching of language or traditional practices through changes to the way in which Indigenous groups can practice their rights.

The Agency recognizes that, should unidentified sites of physical, cultural, and historic significance to Indigenous groups overlap with project infrastructure in the PDA, these sites could be permanently lost or damaged once construction begins. The Agency understands that the Proponent, in consultation with Indigenous groups and Manitoba's Historic Resources Branch, would develop procedures to record, analyze, and mitigate effects to documented sites that cannot be avoided or any undocumented sites that may be discovered during project construction and operation. The Agency also recommends that the Proponent work with Indigenous monitors during construction to monitor for chance finds of sites of

significance, notify Indigenous groups of any chance finds of physical and cultural significance, and, if requested, create opportunities for ceremonies to be conducted by Indigenous groups prior to construction.

Participation of Indigenous groups in the development and implementation of monitoring programs and subsequent decisions about mitigations and adaptive management measures is critical to supporting stewardship rights. As per the key mitigation measures in Chapter 7.4 (Current Use and Physical and Cultural Heritage), the Agency is recommending the Proponent undertake a collaborative process to determine, in consultation with Indigenous groups, the scope, purpose, objectives, and details of the participation of Indigenous monitors, and procedures for the Proponent to receive and respond to feedback from Indigenous monitors. Further, the Agency recommends the Proponent consult with Indigenous groups on the *Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines*⁵⁸ and assess the need for periodic updates to ensure that the intent of the Project is being carried out in a manner that is consistent with Indigenous groups' rights and interests.

Manitoba's *Water Management Strategy*⁵⁹ acknowledges that more direct and collaborative work with Indigenous governments and rightsholders is essential, and this is a central commitment in Manitoba's water management strategy framework.

Given that the Project's purpose is to reduce effects of flood events, the Agency recognizes that interference with the natural flow of water cannot be avoided. Key mitigations identified in Chapters 6.1 and 6.2 (surface water and groundwater, respectively), are critical to minimize environmental effects to water caused by the Project. The Agency understands that project activities would disturb and disrupt waterbodies, which could have important consequences for how Indigenous peoples practice their rights, given the overarching importance that water represents for Indigenous groups. The Agency notes that the Proponent would engage with Indigenous groups throughout the life of the Project on the perceived effects to their communities. The Agency recognizes that the severity of project impacts on cultural continuity and stewardship would vary by Indigenous group; see Tables 14 to 17 for the Agency's analysis related to severity of impacts on rights.

9.3 Issues to be Addressed During the Regulatory Approval Phase

Should the Project proceed, federal authorities with regulatory requirements would continue consultation with Indigenous groups after the environmental assessment decision is issued. Specifically, relevant federal authorities would consult with Indigenous groups prior to making decisions related to *Fisheries Act*

⁵⁸ Government of Manitoba. (2022). *Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines. Draft as of June 16, 2022*. Retrieved February 8, 2024, from https://www.manitoba.ca/mti/wms/lmblsmoutlets/pdf/operating_guidelines_final_june2022.pdf.

⁵⁹ Government of Manitoba. (2022). *Manitoba's Water Management Strategy*. Retrieved February 8, 2024, from https://manitoba.ca/sd/pubs/water/water_mgmt_strategy2022.pdf.

authorizations and *Canadian Navigable Waters Act* approval(s), as appropriate, if authorizations or approvals are required. Comments from Indigenous groups received during the environmental assessment will be shared directly with federal authorities to inform their decision-making. As applicable, the decisions by federal authorities would take into account the outcomes of ongoing consultation with Indigenous groups and the consultation record resulting from the environmental assessment.

The Agency recognizes that the Project is subject to approvals under provincial legislation and that associated provincial regulations, guidelines, and policies provide for the protection of relevant aspects of both the natural and human environments. Consultation by the Province of Manitoba, as applicable, on those authorizations will also create opportunities for Indigenous groups to have their concerns addressed. The provincial Crown also has a duty to consult Indigenous groups, as appropriate, prior to making decisions.

9.4 Agency Conclusions Regarding Impacts on Section 35 Rights

Effects from the Project are often not limited to impacting a single category of rights, and therefore there is the potential to have multiple cascading effects that disrupt Indigenous groups' ability to practice hunting, trapping, fishing, and way of life rights.

The Agency supports the views expressed by Indigenous groups that the context of historical flooding in the region must be considered in characterizing impacts on rights. The Agency recognizes that multiple flooding events have permanently altered the landscape and Indigenous groups' ability to exercise their rights in the RAA has been significantly altered over the past several decades. Throughout consultation and within TAG meetings, Indigenous groups shared stories with the Agency about the traumatizing and lasting effects from the 2011 flood. The Agency recognizes that the 2011 flood caused serious damage to housing and infrastructure and led to people evacuating and relocating from First Nation communities in Manitoba; communities evacuated included Dauphin River First Nation, Ebb and Flow First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation and the community that was relocated included Lake St. Martin First Nation.⁶⁰ Indigenous groups together with Indigenous Services Canada and the Province of Manitoba, have since been rebuilding and working to return those displaced. The Agency notes that it is understood that evacuation is over within the six communities listed above; however, lasting effects and trauma can still be felt due to the displacement. In the 2024 TAG Meeting, Indigenous groups clearly expressed the need for the effects from the 2011 flood to be addressed prior to moving forward with any new developments.

The Agency acknowledges that the intent of the Project is to reduce any further cumulative effects associated with flood events for Lake Manitoba and Lake St. Martin, especially for flood events with

⁶⁰ Indigenous Services Canada. (2022). *Archived – 2011 Manitoba flood: status of community rebuilding and numbers of displaced persons*. Retrieved February 8, 2024, from <https://www.sac-isc.gc.ca/eng/1392046654954/1535122238673>.



considerably high-water levels such as those that were experienced in the 2011 flood. The Agency further acknowledges that flood events are becoming more common due to climate change and mitigating the potential effects associated with these floods within the region is particularly important due to the large amount of Indigenous peoples that have been seriously impacted and had immeasurable damage to their lives from previous flood events. The Agency is of the view that given current conditions, the Project would serve to reduce flooding within Lake Manitoba and Lake St. Martin once constructed. However, the Agency notes that constructing the channels in this landscape would nevertheless cause residual effects to biophysical conditions supporting rights, along with direct impacts on Indigenous groups’ ability to practice rights.

The Agency also acknowledges that Indigenous groups, including Black River First Nation, Bloodvein First Nation, Fisher River Cree Nation, Hollow Water First Nation, the Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Pimicikamak Okimawin, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, and Tataskweyak Cree Nation noted a strong opposition to the Project; stating that their rights have already been significantly impacted and any incremental impact from the Project would be unacceptable. Particularly, the Indigenous groups for which the Project is intended to benefit (those located where the Project would reduce flooding) including Dauphin River First Nation, Little Saskatchewan First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, and Pinaymootang First Nation, noted that the Project would not alleviate flooding, only reduce the negative effects that have and continue to occur due to the Province of Manitoba’s use of existing flood management infrastructure. The Agency acknowledges that the Province of Manitoba operates the Portage Diversion to divert floodwaters from the Assiniboine River into Lake Manitoba, and the FRWCS to divert floodwaters from Lake Manitoba through the Fairford River into Lake St. Martin. Indigenous groups noted that the Province of Manitoba’s operation of water control structures cause cascading effects throughout the system.

The Agency notes that the Project may impact rights of Indigenous groups to different degrees depending on factors such as the location of their reserves, preferred areas for practicing rights, and consideration of Indigenous Knowledge and input shared by Indigenous groups.

9.4.1 Agency Conclusions

The tables below outline the Agency’s understanding of what would constitute a low, moderate, or high impact on rights (Table 13), and provide a summary of the Agency’s conclusions related to the historical context and cumulative impacts, likelihood, geographical extent, frequency, duration, and reversibility of impacts to hunting, trapping, fishing, cultural continuity, and stewardship (Tables 14 to 17).

Table 13 Degree of Severity for Adverse Impacts on Rights of Indigenous Peoples

Low	Impacts are likely to cause minimal constraints on the ability to exercise rights in a meaningful way relative to historical opportunities. Factors influencing a finding of low level of severity include: a resilient context, localized or site-specific spatial extent, low magnitude, partially or fully reversible, short in duration, and/or low to moderate likelihood.
------------	---



	Mitigation should allow for the practice of the right to continue in the same or similar manner.
Moderate	Impacts are likely to cause moderate constraints on the ability to exercise rights in a meaningful way relative to historical opportunities. Factors influencing a finding of moderate level of severity include: a moderately sensitive context, localized or site-specific spatial extent, moderate magnitude, partially reversible, medium-term in duration, and/or moderate to high likelihood. Mitigation may not fully ameliorate impact but should enable the Indigenous community to continue exercising its rights as before, or in a modified way.
High	Impacts are likely to surpass the levels where the right can be exercised in a meaningful way relative to historical opportunities. Factors influencing a finding of high level of severity include: a highly sensitive context, large geographic scale of impact, high magnitude, reduced reversibility, longer-term in duration, and/or high likelihood. Mitigation is unable to fully address impacts such that the practice of the right is substantively diminished or lost.
<i>Definitions informed by Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation's Rights Impact Assessments</i>	

Table 14 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups located along the Fairford River, Lake St. Martin, and Dauphin River and that have identified preferred use of directly affected areas, including Dauphin River First Nation, Fisher River Cree Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Little Saskatchewan First Nation, Lake St. Martin First Nation, Peguis First Nation, Pinaymootang First Nation, and the Manitoba Métis Federation

Criteria	Values			
<p>Historical Context and Cumulative Impacts: Identification and understanding of the degree to which the existing exercise of rights may be vulnerable to Project effects when the effects are added to, and interact with, the baseline conditions, including existing cumulative effects from other sources.</p>	<p>Highly sensitive Historic and ongoing flooding of Lake St. Martin and adjacent watercourses has heavily impacted Indigenous groups located along the Fairford River, Lake St. Martin, Dauphin River and those that utilize these areas for practicing rights. In 2011, severe flooding forced the evacuation of numerous communities; many of which were not able to return to their homes for several years. Many Indigenous peoples remain impacted by the lasting trauma of this event and have dealt with immeasurable health, social, economic, and environmental impacts from the upheaval of their lives. In addition to flooding, these Indigenous groups have faced increased development resulting in a loss of traditional territory, barriers to accessing areas, declines in water quality, fluctuating water levels, effects to health, and reduced quality and quantity of harvesting resources (e.g. wildlife species of cultural importance) which has greatly impacted their ability to practice hunting, trapping, and fishing rights. Indigenous groups have witnessed changes over time in their traditional territory and cultural context that have resulted in a decline in the conditions required for the full expression of cultural continuity as it pertains to knowledge transmission, cultural heritage, ceremonies, and sense of place. Indigenous groups' ability to exercise stewardship has diminished over time as a result of governments controlling resources within their traditional territory. The development and operation of water control structures has been particularly impactful on their stewardship of water, fish, and terrestrial values. The Agency is of the view that the Project would create a more direct connection for water flow between Lake Manitoba, Lake St. Martin, and Lake Winnipeg, which would reduce the effects of flooding for the Indigenous groups surrounding Lake St. Martin.</p>			
	Hunting, Trapping	Fishing	Cultural Continuity	Stewardship
<p>Likelihood: An estimation of how probable it is that the impact would occur.</p>	<p>Potentially moderate Project activities would have a moderate likelihood of disturbing and disrupting wildlife and wildlife habitat and changing Indigenous groups' ability to access preferred hunting and trapping areas.</p>	<p>Potentially moderate to high Project activities would have a high likelihood of disturbing and disrupting fish and fish habitats and changing Indigenous groups' ability to access preferred fishing areas.</p>	<p>Potentially moderate to high Project activities would have a high likelihood of disturbing and disrupting the continued practice of cultural and spiritual traditions, specifically when species of cultural importance are affected, or sites or resources of significance are removed or disturbed.</p>	<p>Potentially low to moderate The Project would modify areas that support the stewardship of the land. Project activities would disturb and disrupt waterbodies, which could have important consequences for how the Indigenous groups' members practice their rights, given the overarching importance that water represents for Indigenous groups.</p>
<p>Geographic extent: Includes the consideration of the geographic extent of the impacts in relation to the geographic</p>	<p>Potentially moderate Effects anticipated to extend into the LAA. The Project would result in the direct loss of wildlife habitat in the PDA and changes to wildlife</p>	<p>Potentially moderate to high Effects anticipated to extend into the RAA. As a flood mitigation project, the Project would unavoidably result in changes to fish and fish</p>	<p>Potentially moderate Effects anticipated to extend into the LAA. The Project would result in the loss of culturally important sites in the PDA and change</p>	<p>Potentially low to moderate Effects anticipated to extend into the LAA. As a flood mitigation project, water quantity and quality would unavoidably be affected and</p>

Criteria	Values			
extent of the right, as practiced.	movement and availability, and Indigenous peoples' access due to the barrier created by the channels.	habitats throughout Lake Manitoba, Lake St. Martin, and Lake Winnipeg.	access to sites of significance throughout the LAA.	thus would result in changes in how Indigenous groups are able to manage water resources in the area.
<p>Frequency, duration and reversibility: Includes the consideration of how often the impact may occur within a given period of time, the length of time that an impact may be discernible, and whether the exercise of rights is expected to recover from the impact.</p>	<p>Potentially moderate to high Project components and resulting habitat fragmentation would change the availability and movement of wildlife species, which would reduce hunting and trapping opportunities and access to preferred hunting and trapping areas and methods for a long-term duration. The frequency of the disturbance would be intermittent, and changes are potentially reversible with adequate mitigations.</p>	<p>Potentially moderate to high Project effects to fish and fish habitat would have a long-term duration, because disturbance would occur each time the WCS gates open for flood operation. The frequency of the disturbance would be intermittent. Reversibility is low.</p>	<p>Potentially high Project effects to cultural continuity would be long term. Use and sense of connection to a portion of their traditional territory has the potential to change permanently. The effect is irreversible because the loss of heritage structures and access would be permanent.</p>	<p>Potentially low The effect on how the Indigenous groups perceive the change to their ability to be stewards of the land would be one time upon construction of the Project. Depending on the perceived benefit from flood reduction and the effectiveness of ongoing engagement and monitoring with Indigenous groups, the effects could be reversible.</p>
<p>Overall conclusions on impacts on rights for Indigenous groups located along the Fairford River, Lake St. Martin, and Dauphin River and that have identified preferred use of directly affected areas.</p>	<p>Moderate Highly sensitive context, moderate likelihood, moderate geographic scale of impact, long-term in duration, intermittent frequency, and partially reversible. Mitigation may not fully ameliorate impact but should enable Indigenous groups to continue exercising rights in a modified way.</p>	<p>Moderate to high Highly sensitive context, moderate to high likelihood, large geographic scale of impact, long-term duration, intermittent frequency, and low reversibility. Mitigation is unable to fully address impacts.</p>	<p>Moderate to high Highly sensitive context, moderate to high likelihood, moderate geographic scale of impact, long-term duration, permanent, and irreversible. Mitigation would not likely fully address impacts but should enable Indigenous groups to continue exercising cultural practices in a modified way.</p>	<p>Low to moderate Highly sensitive context, moderate likelihood, localized spatial extent, one-time change upon construction of the Project, and potentially reversible. Depending on the flood reduction benefit and effectiveness of mitigations, Indigenous groups should be able to continue exercising stewardship in a similar manner.</p>

Table 15 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups upstream of the Project and surrounding Lake Manitoba, including Dakota Tipi First Nation, Ebb and Flow First Nation, Keeseekoowenin Ojibway First Nation, O-Chi-Chak-Ko-Sipi First Nation, Pine Creek First Nation, Sandy Bay Ojibway First Nation, and Skownan First Nation

Criteria	Values			
Historical Context and Cumulative Impacts: Identification and understanding of the degree to which the existing exercise of rights may be vulnerable to Project effects when the effects are added to, and interact with, the baseline conditions, including existing cumulative effects from other sources.	Highly sensitive Historic and ongoing flooding of Lake Manitoba has heavily impacted Indigenous groups surrounding this lake, including the severe flooding in 2011 which forced some communities to evacuate. Many Indigenous peoples remain impacted by the lasting trauma of this event and have dealt with immeasurable health, social, economic, and environmental impacts from the upheaval of their lives. In addition to flooding, these Indigenous groups have faced increased development resulting in a loss of traditional territory, barriers to accessing areas, declines in water quality and fluctuating water levels in Lake Manitoba, and reduced quality and quantity of harvesting resources (e.g. wildlife species of cultural importance) which has greatly impacted their ability to practice hunting, trapping, and fishing rights. Indigenous groups have witnessed changes over time in their traditional territory and cultural context that have resulted in a decline in the conditions required for the full expression of cultural continuity as it pertains to knowledge transmission, cultural heritage, ceremonies, and sense of place. Indigenous groups' ability to exercise stewardship has diminished over time as a result of governments controlling resources within their traditional territory. The development and operation of water control structures has been particularly impactful on their stewardship of water, fish, and terrestrial values. The Agency is of the view that the Project would create a more direct connection for water flow between Lake Manitoba, Lake St. Martin, and Lake Winnipeg, which would reduce the effects of flooding for the Indigenous groups surrounding Lake Manitoba.			
	Hunting, Trapping	Fishing	Cultural Continuity	Stewardship
Likelihood: An estimation of how probable it is that the impact would occur.	Potentially low Project activities would have a low likelihood of disturbing and disrupting wildlife and wildlife habitat and changing Indigenous groups' ability to access hunting and trapping areas surrounding Lake Manitoba and further upstream of the Project. The Project is intended to reduce flooding on Lake Manitoba when in operation.	Potentially moderate Project activities would have a moderate likelihood of disturbing and disrupting fish and fish habitats and changing Indigenous groups' ability to access preferred fishing areas. The LMOC construction and operation would affect fish and fish habitat within Lake Manitoba.	Potentially low Project activities would have a low likelihood of disturbing and disrupting the continued practice of cultural and spiritual traditions upstream of the Project. Potential impacts are limited to effects to Lake Manitoba from changes to water and fish and impacts from the physical presence of the LMOC.	Potentially low The Project would have a low likelihood of modifying areas that support the stewardship of the land upstream of the Project. The Project is intended to reduce flooding on Lake Manitoba.
Geographic extent: Includes the consideration of the geographic extent of the impacts in relation	Potentially low Impacts mainly limited to the PDA. Project impacts on hunting and trapping upstream of the Project are not anticipated to occur post-	Potentially low to moderate Impacts anticipated to extend into the RAA but are unlikely to extend beyond Lake Manitoba. The Project	Potentially low The Project would result in the loss of culturally important sites in the PDA; access to sites and areas of importance in areas upstream of the Project should	Potentially low As a flood mitigation project, water quantity and quality would be affected and thus could result in changes in how Indigenous groups are

Criteria	Values			
to the geographic extent of the right, as practiced.	construction of the LMOC channel crossings and once revegetation occurs.	would result in changes to water and fish and fish habitats within Lake Manitoba.	be able to resume upon construction of the LMOC channel crossings.	able to manage water resources in the area. However, impacts on stewardship are unlikely to extend upstream of the Project.
Frequency, duration and reversibility: Includes the consideration of how often the impact may occur within a given period of time, the length of time that an impact may be discernible, and whether the exercise of rights is expected to recover from the impact.	Potentially low to moderate Project effects are anticipated to be short-term as access to preferred hunting areas around Lake Manitoba and upstream should be restored upon construction of crossings along the LMOC. The frequency of the disturbance would be intermittent, and changes are likely reversible with adequate mitigations.	Potentially moderate to high Project effects to fish and fish habitat in Lake Manitoba would have a long-term duration, disturbance would occur each time the WCS gates open for flood operation. The frequency of the disturbance would be intermittent. Reversibility is low.	Potentially low to moderate Project effects that do occur to cultural continuity would range from short to long term. Use and sense of connection to a portion of their traditional territory has the potential to change permanently. While the loss of heritage structures is permanent, access surrounding the LMOC should return upon construction of the channel crossings.	Potentially low The Project would result in a one time change to Indigenous groups' ability to govern water resources upon construction of the Project. The Project is intended to reduce flooding on Lake Manitoba. If ongoing engagement and monitoring with Indigenous groups is effective, impacts could be reversible.
Overall conclusions on impacts on rights for Indigenous groups upstream of the Project, including adjacent to Lake Manitoba	Low Highly sensitive context, low likelihood, localized spatial extent, short in duration, intermittent frequency, and partially reversible. Mitigation should allow for the practice of the right to continue in the same or similar manner.	Moderate Highly sensitive context, moderate likelihood, localized spatial extent, long-term duration, intermittent frequency, and low reversibility. Mitigation may not fully ameliorate impact but should enable Indigenous groups to continue exercising rights in a modified way.	Low Highly sensitive context, low likelihood, localized spatial extent, short to long-term duration, and partially reversible. Mitigation may not fully ameliorate impact but should enable Indigenous groups to continue exercising cultural practices in the same or similar manner.	Low Highly sensitive context, low likelihood, localized spatial extent, one-time change upon construction of the Project, and permanent. Depending on the effectiveness of mitigations and continued engagement on the Project's operations guidelines, Indigenous groups should be able to continue exercising stewardship in the same or similar manner.

Table 16 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups surrounding Lake Winnipeg, including Berens River First Nation, Black River First Nation, Bloodvein First Nation, Brokenhead Ojibway First Nation, Hollow Water First Nation, Misipawistik Cree Nation, Poplar River First Nation, and Sagkeeng Anicinabe First Nation

Criteria	Values			
<p>Historical Context and Cumulative Impacts: Identification and understanding of the degree to which the existing exercise of rights may be vulnerable to Project effects when the effects are added to, and interact with, the baseline conditions, including existing cumulative effects from other sources.</p>	<p>Highly sensitive Historic and ongoing flooding of Lake Winnipeg through various inputs has heavily impacted Indigenous groups surrounding this lake. Lake Winnipeg has particularly been affected by development of hydroelectric dams, and various sources of pollution that have resulted in changes in water quality and quantity over time. Indigenous groups identified that they no longer have confidence swimming, drinking, and even consuming fish from Lake Winnipeg. Indigenous groups surrounding Lake Winnipeg have also faced increased development resulting in a loss of traditional territory, barriers to accessing areas, effects to health, and reduced quality and quantity of harvesting resources (e.g. wildlife species of cultural importance) which has greatly impacted their ability to practice hunting, trapping, and fishing rights. Indigenous groups have witnessed changes over time in their traditional territory and cultural context that have resulted in a decline in the conditions required for the full expression of cultural continuity as it pertains to knowledge transmission, cultural heritage, ceremonies, and sense of place. Indigenous groups' ability to exercise stewardship has diminished over time as a result of governments controlling resources within their traditional territory. The development and operation of water control structures such as hydroelectric dams on Lake Winnipeg have been particularly impactful on their stewardship of water, fish, and terrestrial values. The Agency is of the view that the Project would create a more direct connection for water flow between Lake Manitoba, Lake St. Martin, and Lake Winnipeg, which would direct water into Lake Winnipeg at a faster rate and would increase overall water levels marginally.</p>			
	Hunting, Trapping	Fishing	Cultural Continuity	Stewardship
<p>Likelihood: An estimation of how probable it is that the impact would occur.</p>	<p>Potentially low to moderate Project activities would have a low to moderate likelihood of disturbing and disrupting wildlife and wildlife habitat around Lake Winnipeg. Given the lack of crossing locations along the LSMOC, Indigenous groups ability to access preferred hunting and trapping areas could be impacted.</p>	<p>Potentially moderate Project activities would have a moderate likelihood of disturbing and disrupting fish and fish habitats and changing Indigenous groups' ability to access preferred fishing areas due to the deposition of sediment and effects to fish within Sturgeon Bay of Lake Winnipeg.</p>	<p>Potentially moderate Project activities would have a moderate likelihood of disturbing and disrupting the continued practice of cultural and spiritual traditions for areas and resources surrounding Lake Winnipeg. It is anticipated that water would flow into Lake Winnipeg at a faster rate as a result of the Project. Indigenous groups remain concerned about the potential increase in water levels.</p>	<p>Potentially low to moderate Project activities could disturb and disrupt Lake Winnipeg, which could have important consequences for how the Indigenous groups' members practice their rights, given the overarching importance that water represents for Indigenous groups.</p>
<p>Geographic extent: Includes the consideration of the geographic extent of</p>	<p>Potentially low to moderate Effects anticipated to extend into the LAA. The Project</p>	<p>Potentially moderate Impacts anticipated to extend into the RAA. As a flood mitigation project, the</p>	<p>Potentially low to moderate Effects anticipated to extend into the LAA. The Project would result in the loss of</p>	<p>Potentially low to moderate Effects anticipated to extend into the LAA. As a flood mitigation project, water</p>

Criteria	Values			
the impacts in relation to the geographic extent of the right, as practiced.	would result in the direct loss of wildlife habitat in the PDA and changes to wildlife movement and availability, and Indigenous peoples' access due to the barrier created by the LSMOC.	Project would unavoidably result in changes to fish and fish habitats within Lake Winnipeg; however, effects are not anticipated to extend outside of Sturgeon Bay.	culturally important sites in the PDA and change access to sites of significance throughout the LAA.	quantity and quality would unavoidably be affected and thus would result in changes in how Indigenous groups are able to manage water resources in the area.
Frequency, duration and reversibility: Includes the consideration of how often the impact may occur within a given period of time, the length of time that an impact may be discernible, and whether the exercise of rights is expected to recover from the impact.	Potentially moderate Project components and resulting habitat fragmentation could change the availability and movement of species used for hunting, which would reduce hunting opportunities and access to preferred hunting areas and methods for a long-term duration in areas surrounding Sturgeon Bay on Lake Winnipeg. The frequency of the disturbance would be intermittent, and changes are potentially reversible with adequate mitigations.	Potentially moderate Project effects to fish and fish habitat would have a long-term duration, because disturbance would occur each time the WCS gates open for flood operation. The frequency of the disturbance would be intermittent. Reversibility is low.	Potentially moderate Project effects to cultural continuity would be long term. Use and sense of connection to a portion of their traditional territory has the potential to change permanently in areas surrounding Sturgeon Bay on Lake Winnipeg. The effect is irreversible because the loss of heritage structures and access would be permanent.	Potentially low The Project would result in a one time change to Indigenous groups' ability to govern water resources upon construction of the Project. It is anticipated that water would flow into Lake Winnipeg at a faster rate as a result of the Project. If ongoing engagement and monitoring with Indigenous groups is effective, impacts could be reversible.
Overall conclusions on impacts on rights for Indigenous groups surrounding Lake Winnipeg	Low to moderate Highly sensitive context, low to moderate likelihood, localized spatial extent, long-term in duration, intermittent frequency, and partially reversible. Mitigation may not fully ameliorate impact but should enable Indigenous groups to continue exercising rights in a modified way.	Moderate Highly sensitive context, moderate likelihood, moderate geographic scale of impact, long-term duration, intermittent frequency, and low reversibility. Mitigation would not likely fully address impacts but should enable Indigenous groups to continue exercising rights in a modified way.	Moderate Highly sensitive context, moderate likelihood, localized spatial extent, long-term duration, permanent, and irreversible. Mitigation would not likely fully address impacts but should enable Indigenous groups to continue exercising cultural practices in a modified way.	Low Highly sensitive context, low likelihood, localized spatial extent, one-time change upon construction of the Project, and permanent. Depending on the effectiveness of mitigations and continued engagement on the Project's operations guidelines, Indigenous groups should be able to continue exercising stewardship in a similar manner.

Table 17 Severity of Potential Impacts of the Project on the Exercise of Rights for Indigenous groups located along the Nelson River and Split Lake, including Fox Lake Cree Nation, Pimicikamak Okimawin, Norway House Cree Nation, Tataskweyak Cree Nation, and York Factory Cree Nation

Criteria	Values			
Historical Context and Cumulative Impacts: Identification and understanding of the degree to which the existing exercise of rights may be vulnerable to Project effects when the effects are added to, and interact with, the baseline conditions, including existing cumulative effects from other sources.	Highly sensitive Historic and ongoing flooding of Lake Winnipeg has resulted in flooding along the Nelson River, including into Cross Lake and Split Lake. Indigenous groups along the Nelson River have faced changing water quality that have resulted in a loss in confidence in these waterbodies for drinking, swimming, and fishing. These Indigenous groups have also faced increased development resulting in a loss of traditional territory, barriers to accessing areas, fluctuating water levels, effects to health, and reduced quality and quantity of harvesting resources (e.g. wildlife species of cultural importance) which has greatly impacted their ability to practice rights. Indigenous groups have witnessed changes over time in their traditional territory and cultural context that have resulted in a decline in the conditions required for the full expression of cultural continuity as it pertains to knowledge transmission, cultural heritage, ceremonies, and sense of place. Indigenous groups' ability to exercise stewardship has diminished over time as a result of governments controlling resources within their traditional territory. The development and operation of water control structures has been particularly impactful on their stewardship of water, fish, and terrestrial values. The Agency is of the view that Project effects would not extend downstream of Lake Winnipeg.			
	Hunting, Trapping	Fishing	Cultural Continuity	Stewardship
Likelihood: An estimation of how probable it is that the impact would occur.	Potentially low Project activities would have a low likelihood of disturbing and disrupting wildlife and wildlife habitat and changing Indigenous groups' ability to access preferred hunting and trapping areas downstream of Lake Winnipeg.	Potentially low Project activities would have a low likelihood of affecting fish and fish habitats and changing Indigenous groups' ability to access preferred fishing areas downstream of Lake Winnipeg.	Potentially low Project activities would have a low likelihood of disturbing and disrupting the continued practice of cultural and spiritual traditions downstream of Lake Winnipeg.	Potentially low Project activities would have a low likelihood of impacting the stewardship of lands and resources downstream of Lake Winnipeg.
Geographic extent, frequency, duration, and reversibility: Includes the consideration of the geographic extent of the impacts, how often the impact may occur, the length of time that an impact may be discernible, and	Potentially low to moderate Project effects not anticipated to extend downstream of Lake Winnipeg; however, Indigenous groups may still utilize areas affected by the Project for hunting and trapping.	Potentially low to moderate Project effects not anticipated to extend downstream of Lake Winnipeg; however, Indigenous groups may still utilize areas affected by the Project for fishing, particularly around Lake Winnipeg for which impacts	Potentially low to moderate Project effects not anticipated to extend downstream of Lake Winnipeg; however, Indigenous groups may still utilize areas affected by the Project for practicing aspects of cultural continuity.	Potentially low Project effects not anticipated to extend downstream of Lake Winnipeg; however, Indigenous groups may still feel a change in their ability to steward resources due to the operation of the Project.

Criteria	Values			
whether the exercise of rights is expected to recover from the impact		on fishing rights are anticipated to be moderate.		
Overall conclusions on impacts on rights for Indigenous groups located along the Nelson River	Low Highly sensitive context, low likelihood, effects not anticipated to extend downstream of Lake Winnipeg. Mitigation should allow for the practice of the right to continue in the same or similar manner.	Low Highly sensitive context, low likelihood, effects not anticipated to extend downstream of Lake Winnipeg. Mitigation should allow for the practice of the right to continue in the same or similar manner.	Low Highly sensitive context, low likelihood, effects not anticipated to extend downstream of Lake Winnipeg. Mitigation should enable Indigenous groups to continue exercising cultural practices in the same or similar manner.	Low Highly sensitive context, low likelihood, effects not anticipated to extend downstream of Lake Winnipeg, Indigenous groups should be able to continue exercising stewardship in the same or a similar manner.

Should the Project proceed, the Agency acknowledges that the Project is likely to cause changes to the exercise of Aboriginal and treaty rights. These include:

- Moderate severity of impacts on the right to hunt and trap, moderate to high severity impacts on the right to fish, moderate to high severity impacts on cultural continuity, and low to moderate impacts on stewardship for Indigenous groups that would be most directly impacted, including those surrounding the Fairford River, Dauphin River, Lake St. Martin, or that have identified preferred use of directly affected areas (Dauphin River First Nation, Fisher River First Nation, Kinonjeoshtegon First Nation, Little Saskatchewan First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, the Manitoba Métis Federation, Peguis First Nation, and Pinaymootang First Nation).
- Low severity of impacts on the right to hunt and trap, moderate severity impacts on the right to fish, low severity impacts on cultural continuity, and low impacts on stewardship for Indigenous groups upstream of the Project, including adjacent to Lake Manitoba (Dakota Tipi First Nation, Ebb and Flow First Nation, Keeseekoowenin Ojibway First Nation, O-Chi-Chak-Ko-Sipi First Nation, Pine Creek First Nation, Sandy Bay Ojibway First Nation, and Skownan First Nation).
- Low to moderate severity of impacts on the right to hunt and trap, moderate severity impacts on the right to fish, moderate severity impacts on cultural continuity, and low impacts on stewardship for Indigenous groups surrounding Lake Winnipeg (Berens River First Nation, Black River First Nation, Bloodvein First Nation, Brokenhead Ojibway First Nation, Hollow Water First Nation, Misipawistik Cree Nation, Poplar River First Nation, and Sagkeeng Anicinabe First Nation).
- Low severity of impacts on the right to hunt, trap, fish, and low severity impacts to cultural continuity and stewardship for Indigenous groups along the Nelson River and Split Lake (Fox Lake Cree Nation, Pimicikamak Okimawin, Norway House Cree Nation, Tataskweyak Cree Nation, and York Factory Cree Nation).

The Agency notes the importance of the Proponent's ongoing and meaningful consultation to continue to understand and address the Project's real and perceived impacts on rights. The Proponent committed to continued engagement with Indigenous groups to reflect on and respond to concerns, issues and insights of consequence to the Project and Indigenous groups' interests throughout the life of the Project. The Agency recommends that the Proponent develop and implement a survey program for impacts on rights to be conducted within five years post-construction to provide insight regarding the impacts on Indigenous groups, efficacy of mitigation measures and whether additional mitigation measures would be required.

The Proponent developed the EAC as a mechanism for ongoing engagement. However, Indigenous groups have raised and continue to raise concerns about the structure, function, transparency, and decision-making authority of the EAC. The Agency acknowledges many Indigenous groups have refused to participate in the EAC due to the concerns raised. Thus, this committee has limitations on the ability to adequately engage with Indigenous groups moving forward. Therefore, the Agency is recommending, as a part of the EAC, that the Proponent revisit the terms of reference in consultation with each Indigenous group and modify it based on any input received, provide Indigenous groups with the support needed to lead meetings, and submit annual reports to the Agency and Indigenous groups with the recommendations that come out of the EAC and with the Proponent's response regarding the implementation of such recommendations.



The Agency recognizes that key mitigation measures for effects to Indigenous peoples' current use, physical and cultural heritage, sites of significance, and health and socio-economic conditions are important to help support the continued practice of rights. See Chapter 7.4 (Current Use and Physical and Cultural Heritage) and Chapter 7.5 (Health and Socio-economic Conditions) for additional details. Some of the critical mitigation measures include: the development of community-specific communication and engagement plans; implementation of cultural awareness training for Project personnel that includes Indigenous groups' cultural protocols; opportunities for in-community training sessions to Indigenous groups on how to deal with flooding scenarios and appropriate flood mitigation supplies and tools provided to them.

10 Conclusions and Recommendations of the Agency

In preparing this EA Report, the Agency considered: the Proponent's EIS, its responses to information requests and clarification questions, the views of federal authorities, Indigenous groups, and the public, measures that would be implemented to mitigate project effects, and follow-up and monitoring measures.

The environmental effects of the Project and their significance have been determined using assessment methods and analytical tools that reflect current accepted practices of environmental and socio-economic assessment, including consideration of potential accidents and malfunctions and cumulative environmental effects.

The Agency concludes that the Project is likely to cause direct and cumulative significant adverse environmental effects, as defined in section 5 of CEAA 2012, on the current use of lands and resources for traditional purposes by Indigenous peoples, on physical and cultural heritage, and on structures, sites, and things of historical, archaeological, paleontological, or architectural significance despite the implementation of mitigation measures, monitoring, and follow-up programs.

The Agency is of the view that the Project is likely to cause impacts to the exercise of Aboriginal and treaty rights, including moderate to high severity of impacts to fishing rights and cultural continuity of those Indigenous groups that are more directly impacted by the Project. The Agency acknowledges that despite the Project's intended purpose of reducing flooding, Indigenous groups feel that this Project would enable the continued flooding of the region and remain in opposition to the Project. The Agency notes the importance of the Proponent's ongoing and meaningful consultation to continue to understand and address the Project's real and perceived impacts on rights. Furthermore, the Agency concludes that the Project is not likely to cause significant, adverse effects to other components of the environment under federal jurisdiction, taking into account the implementation of mitigation measures.

The Agency identified key mitigation measures, monitoring, and follow-up programs, for consideration by the Minister of Environment and Climate Change during his decision regarding the significance of any adverse environmental effects that may result from the Project. If the Minister determines that the Project is likely to cause significant adverse environmental effects, the Minister will refer to the Governor in Council the question of whether these effects are justified in the circumstances. If the Governor in Council determines that these effects are justified in the circumstances, the Minister of Environment and Climate Change will set the conditions for carrying out the Project in his Decision Statement under CEAA 2012. The conditions set out by the Minister of Environment and Climate Change would be enforceable.

In addition, it is the Agency's expectation that, for the Project to be carried out in a precautionary manner, all the Proponent's commitments, including mitigation measures, monitoring, and follow-up programs, as outlined in the EIS and its supporting documents, would be implemented as proposed. Further, it is expected that the Proponent will continue to engage, inform, and communicate with Indigenous groups throughout the life of the Project, should it be permitted to proceed.

Appendices

Appendix A: Environmental Effects Rating Criteria

Table 18 General Definitions of Criteria Used to Assess Residual Environmental Effects to Valued Components

Rating Criteria	Definition	Rating
Relevant to all Valued Components		
Direction	The relative change compared to existing conditions.	<p>Neutral – no measurable change on the valued component (valued component).</p> <p>Adverse – net loss (adverse or undesirable change) on the valued component.</p> <p>Positive – net benefit (or desirable change) on the valued component.</p>
Magnitude*	The degree of change in a valued component (valued component) relative to baseline conditions.	<p>Negligible – defined by valued component.</p> <p>Low – defined by valued component.</p> <p>Moderate – defined by valued component.</p> <p>High – defined by valued component.</p>
Geographic Extent**	The geographic or spatial area within which the residual effect is expected to occur.	<p>PDA – residual effects are restricted to the project area.</p> <p>LAA – residual effects extend into the local assessment area.</p> <p>RAA – residual effects interact with those of other projects in the regional assessment area.</p>
Timing	Consideration of the periods of time during which a residual effect is expected to occur (e.g., species breeding season, Indigenous spiritual and cultural practices).	<p>No sensitivity – residual effect does not occur during critical life stage or timing does not affect the valued component.</p> <p>Moderate Sensitivity – residual effect may occur during a lower sensitive period of a critical life stage or during a lower sensitivity timing period; for many species this is the start or end of the critical period.</p> <p>High Sensitivity – residual effect occurs during a critical life stage or during a higher sensitivity timing period.</p>
Duration*	The period of time required until the valued component returns to its existing (baseline) condition,	<p>Short Term – defined by valued component.</p> <p>Medium Term – defined by valued component.</p>

Rating Criteria	Definition	Rating
	or the residual effect can no longer be measured or otherwise perceived.	Long Term – defined by valued component.
Frequency	How often the residual environmental effect would occur during a project phase or activity in a specified time period.	<p>Infrequent – residual effect occurs once or seldom during the life of the Project.</p> <p>Intermittent – residual effect occurs occasionally and without any predictable pattern during the life of the Project.</p> <p>Continuous – residual effect occurs at regular and frequent intervals during the Project phase in which they occur or over the life of the Project.</p>
Reversibility*	Whether the residual effect on the valued component can be returned to its previous condition or other target (e.g., a reclamation target) once the activity or component causing the disturbance ceases.	<p>Reversible (short-term) – defined by valued component.</p> <p>Reversible (long-term) – defined by valued component.</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p>
Ecological and Socio-Economic Context	The current degree of anthropogenic disturbance and/or ecological sensitivity in the area in which the residual effect would occur	<p>Ecological</p> <p>Undisturbed – valued component/area is relatively undisturbed or not adversely affected by human activity.</p> <p>Disturbed – valued component/area is substantially disturbed by human activity and development.</p> <p>Social</p> <p>Resilient – valued component is able to accommodate changes in land base or disturbances to environmental conditions and/or is of high capacity to adapt to or recover from change.</p> <p>Not Resilient – valued component is unable to accommodate changes in land base or disturbances to environmental conditions and/or is of low capacity to adapt to or recover from change.</p> <p>Below standard condition – community condition, as measured by social determinants of health, economic health, and quality and availability of infrastructure and services is demonstrably lower than provincial average.</p> <p>Standard condition – Community condition, as measured by social determinants of health, economic health, and quality and availability of infrastructure and services is similar to the provincial average.</p>

Rating Criteria	Definition	Rating
Significance	The significance of the residual effect is determined by the combination of the levels assigned to each of the criteria above for each component and using thresholds of significance defined for each valued component.	<p>Significant – despite mitigation, offsetting and environmental protection measures in place, the Project is likely to result in significant adverse environmental effects to the valued component.</p> <p>Not significant – with mitigation, offsetting and environmental protection measures in place, the Project is not likely to result in significant adverse environmental effects to the valued component.</p>

* Definitions by valued component are provided in Table 19.

** The LAA and RAA vary by valued component; valued component specific figures depicting the spatial extent of the LAAs and RAAs are provided in the respective valued component chapters.

Table 19 Definitions for Criteria That Vary by Valued Component Used to Assess Residual Environmental Effects

Fish and Fish Habitat	
Magnitude	<p><u>Change in Fish Habitat Quality or Quantity, Fish Passage, or Fish Health or Mortality</u></p> <p>Negligible – no measurable change in habitat quantity or quality, fish passage, or fish health or mortality from pre-Project baseline conditions.</p> <p>Low – a measurable change in habitat quantity or quality, fish passage, or fish health or mortality but that is <10 percent different from pre-Project baseline conditions.</p> <p>Moderate – a measurable change in habitat quantity or quality, fish passage, or fish health or mortality that is >10 percent but <20 percent different from pre-Project baseline conditions.</p> <p>High – a measurable change in habitat quantity or quality, fish passage, or fish health or mortality that is >20 percent different from pre-Project baseline conditions.</p>
Duration	<p><u>Change in Fish Habitat Quality or Quantity, Fish Passage, or Fish Health or Mortality</u></p> <p>Short-Term – the potential effect results from short-term events or activities such as the time required to complete a discrete component during construction, maintenance, or rehabilitation activities (i.e., several months to one year).</p> <p>Medium-Term – the potential effect is likely to persist until the completion of construction and rehabilitation activities (i.e., > 1 year to 6 years).</p> <p>Long-Term – the potential effect is likely to persist beyond the completion of construction and rehabilitation activities into the operations and maintenance phase of the Project (i.e., >6 years).</p>
Reversibility	<p><u>Change in Fish Habitat Quality or Quantity, Fish Passage, or Fish Health or Mortality</u></p> <p>Reversible (short-term) – the potential effect is readily reversible over a relatively short period (<5 years).</p> <p>Reversible (long-term) – the potential effect is potentially reversible but over a long period (>5 years)</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p>
Migratory Birds	
Magnitude	<p><u>Change in Habitat</u></p> <p>Negligible – no measurable change in migratory bird habitat from pre-Project baseline conditions.</p> <p>Low – Project has an effect on less than 10 percent of migratory bird habitat within the LAA.</p> <p>Moderate – Project has an effect on 10 to 20 percent of migratory bird habitat within the LAA.</p> <p>High – Project has an effect on >20 percent of migratory bird habitat within the LAA.</p> <p><u>Change in Movement and Mortality Risk</u></p>

	<p>Negligible – no measurable change in migratory bird abundance and distribution from pre-Project baseline conditions.</p> <p>Low – measurable change in the abundance and distribution of migratory birds in the LAA is unlikely, although temporary local shifts in distributions might occur.</p> <p>Moderate – a measurable change in the abundance and distribution of migratory birds in the LAA is possible, but a measurable change in the abundance of wildlife in the RAA is unlikely.</p> <p>High – a measurable change in the abundance and distribution of migratory birds in the RAA is possible.</p>
Duration	<p>Short-Term – the potential effect results from short-term events or activities such as the time required to complete a discrete component during construction, maintenance, or rehabilitation activities (i.e., several months to one year).</p> <p>Medium-Term – the potential effect is likely to persist until the completion of construction and rehabilitation activities (i.e., > 1 year to 10 years).</p> <p>Long-Term – the potential effect is likely to persist beyond the completion of construction and rehabilitation activities into the operations and maintenance phase of the Project (i.e., >10 years).</p>
Reversibility	<p>Reversible (short-term) – the potential effect is readily reversible over a relatively short period (<6 years).</p> <p>Reversible (long-term) – the potential effect is potentially reversible but over a long period (>6 years)</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p>
Species at Risk	
Magnitude	<p><u>Change in Habitat</u></p> <p>Negligible – no measurable change in species at risk habitat from pre-Project baseline conditions.</p> <p>Low – Project has an effect on less than 5 percent of species at risk habitat within the LAA.</p> <p>Moderate – Project has an effect on 5 to 10 percent of species at risk habitat within the LAA.</p> <p>High – Project has an effect >10 percent of species at risk habitat within the LAA.</p> <p><u>Change in Movement and Mortality Risk</u></p> <p>Negligible – no measurable change in species at risk abundance and distribution from pre-Project baseline conditions.</p> <p>Low – measurable change in the abundance of species at risk in the LAA is unlikely, although temporary local shifts in distributions might occur.</p> <p>Moderate – a measurable change in the abundance and distribution of species at risk in the LAA is possible, but a measurable change in the abundance of wildlife in the RAA is unlikely.</p> <p>High – a measurable change in the abundance and distribution of species at risk in the RAA is possible.</p>

Duration	<p>Short-Term – the potential effect results from short-term events or activities such as the time required to complete a discrete component during construction, maintenance, or rehabilitation activities (i.e., several months to one year).</p> <p>Medium-Term – the potential effect is likely to persist until the completion of construction and rehabilitation activities (i.e., > 1 year to 10 years).</p> <p>Long-Term – the potential effect is likely to persist beyond the completion of construction and rehabilitation activities into the operations and maintenance phase of the Project (i.e., >10 years).</p>
Reversibility	<p>Reversible (short-term) – the potential effect is readily reversible over a relatively short period (<6 years).</p> <p>Reversible (long-term) – the potential effect is potentially reversible but over a long period (> 6 years)</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p>
Federal Lands	
Magnitude	<p><u>Atmospheric Environment (Air Quality)</u></p> <p>Negligible – estimated Project emissions are less than 10 percent of estimated regional emissions.</p> <p>Low – estimated Project emissions are between 10 percent and 25 percent of estimated regional emissions.</p> <p>Moderate – estimated Project emissions are between 25 percent and 100 percent of estimated regional emissions.</p> <p>High – estimated Project emissions are more than 100 percent of estimated regional emissions.</p>
Duration	<p>Short-term – residual effect restricted to less than the duration of the construction phase.</p> <p>Medium-term – residual effect extends through the construction phase partially into the operations and maintenance phase.</p> <p>Long-term – residual effect extends throughout the operations and maintenance phase of the Project.</p>
Reversibility	<p>Reversible (short-term) – the residual effect is likely to be reversed after the construction phase.</p> <p>Reversible (long-term) – the residual effect is likely to be reversed after construction but during the operations and maintenance phase of the Project.</p> <p>Irreversible – project-specific residual effects are permanent and irreversible.</p>
	<p>Impacts to federal lands may also include impacts to surface water, groundwater, fish and fish habitat, migratory birds, species at risk, and impacts to Indigenous peoples. See rating criteria for each valued component in Table 2 for impacts to federal lands related to surface water, groundwater, fish and fish habitat, migratory birds, species at risk, impacts to Indigenous peoples, and cumulative effects.</p>
Indigenous Peoples: current use of lands and resources for traditional purposes	

<p>Magnitude</p>	<p>Low – minor change in land and resource use and capacity from existing conditions and current use is able to continue at current levels. Minor alteration of behaviour is required to continue current traditional land and resource use practices.</p> <p>Moderate – a measurable change in land and resource use and capacity from existing conditions that would reduce the ability to access or use resources and sites for traditional purposes, including: some restrictions on current practices. some alteration of behaviour is required to continue current practice in preferred ways or at preferred use locations.</p> <p>High – a measurable change in land and resource use and capacity from existing conditions such that current use cannot continue or cannot continue without: substantial changes to current practices; substantial restrictions on the ability to continue current practices in preferred ways or at preferred use locations.</p>
<p>Duration</p>	<p>Short-Term – the potential effect results from short-term events or activities such as the time required to complete a discrete component during construction, maintenance, or rehabilitation activities (i.e., a timeframe of several months up to one year).</p> <p>Medium-Term – the potential effect is likely to persist until the completion of construction and rehabilitation activities (i.e., > 1 year to 5 years).</p> <p>Long-Term – the potential effect is likely to persist beyond the completion of construction and rehabilitation activities into the operations and maintenance phase of the Project (i.e., a timeframe of greater than 5 years).</p>
<p>Reversibility</p>	<p>Reversible (short-term) – the potential effect is readily reversible over a relatively short period (<5 years).</p> <p>Reversible (long-term) – the potential effect is potentially reversible but over a long period (>5 years)</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p>
<p>Indigenous Peoples: health and socio-economic conditions</p>	
<p>Magnitude</p>	<p>Indigenous Peoples' Health</p> <p>Negligible – no measurable change from existing conditions and no alteration of behavior is required to continue current traditional land and resource use practices.</p> <p>Low – a measurable change from existing conditions but is below environmental and/or regulatory criteria, does not represent an unacceptable change to public health and TLRU is able to continue at current levels. No alteration of behavior is required to continue current traditional land and resource use practices.</p> <p>Moderate – a measurable change from existing conditions that is above environmental and/or regulatory criteria but does not affect Indigenous health, TLRU is able to continue at a reduced level or with: some restrictions on current practices; and</p>

	<p>some alteration of behavior is required to continue current practice in preferred ways or at preferred use locations.</p> <p>High – a measurable change from existing conditions that is above environmental and/or regulatory criteria and represents potentially unacceptable change to public health, and TLRU cannot continue or cannot continue without:</p> <p>substantial changes to current practices; and</p> <p>substantial restrictions on the ability to continue current practices in preferred ways or at preferred use locations.</p> <p><u>Indigenous Peoples’ Socio-Economic Conditions</u></p> <p>Negligible – no measurable change in:</p> <p>land or resource use and capacity;</p> <p>use or, access to, or interference with infrastructure; and</p> <p>local employment, goods and service, and economic activity from baseline conditions.</p> <p>Low – a small, measurable change in:</p> <p>land and resource use and capacity but activities and production can take place at or near similar levels as under baseline conditions;</p> <p>use of, access to, or interference with infrastructure and services but on a scale that is within the current available capacity and will not affect the quality of the service provided; and</p> <p>local employment, goods and services, and economic activity.</p> <p>Moderate – measurable change in:</p> <p>land and resource use and capacity from baseline conditions, and</p> <p>use of, access to, or interference with infrastructure and services that nears the available capacity or may affect the quality of services provided but is unlikely to pose a substantial risk or benefit to the economy.</p> <p>High – measurable change in:</p> <p>land and resource use and capacity, such that activities and production cannot take place at similar levels as under baseline conditions; and</p> <p>use of, access to or interference with infrastructure and services that meets or exceeds the available capacity or degrades the quality of service provided on a scale that is substantial compared to current economic conditions and if negative, represents a management challenge.</p>
Duration	<p>Short-Term – the potential effect results from short-term events or activities such as the time required to complete a discrete component during construction, maintenance, or rehabilitation activities (i.e., a timeframe of several months up to one year).</p>

	<p>Medium-Term – the potential effect is likely to persist until the completion of construction and rehabilitation activities (i.e., > 3 to 5 years).</p> <p>Long-Term – the potential effect is likely to persist beyond the completion of construction and rehabilitation activities into the operations and maintenance phase of the Project (i.e., a timeframe of greater than 10 years).</p>
Reversibility	<p><u>Indigenous Peoples' Health Conditions</u></p> <p>Reversible (short-term) – the potential effect is readily reversible over a relatively short period (<5 years).</p> <p>Reversible (long-term) – the potential effect is potentially reversible but over a long period (>5 years).</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p> <p><u>Indigenous Peoples' Socio-Economic Conditions</u></p> <p>Reversible (short-term) – the potential effect is readily reversible over a relatively short period (<5 years).</p> <p>Reversible (long-term) – the potential effect is potentially reversible but over a long period (>5 years).</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p>
Indigenous Peoples: physical and cultural heritage and structures, sites, and things of historical, archaeological, paleontological, or architectural significance	
Magnitude	<p>Negligible – no measurable change from existing conditions and no alteration in access to or use of an element of natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance.</p> <p>Low – the effects do not much alter characteristics of the unique nature of an element of natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance. Or, access to or use of an element of the natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance would not be altered for users.</p> <p>Moderate – the effects would alter some characteristics of the unique nature of an element of natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance, but would not compromise its integrity. Or, access to or use of an element of the natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance would be altered but would not be compromised for users.</p> <p>High – the effects would lead to the loss of characteristics of the unique nature of an element of natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance, such that its integrity would be compromised. Or, the effect would prevent users from accessing or using an element of the natural or cultural heritage <u>or</u> a structure, site or thing of historical, archeological, paleontological or architectural significance.</p>
Duration	<p>Short-Term – the potential effect results from short-term events or activities such as the time required to complete a discrete component during construction, maintenance, or rehabilitation activities that alter characteristics of the unique nature of an element of natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance, or disrupt access to or use of an</p>

	<p>element of the natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance.</p> <p>Long-Term – the potential effect is permanent. Characteristics of the unique nature of an element of the natural or cultural heritage <u>or</u> of a structure, site or thing of historical, archeological, paleontological or architectural significance are irreversibly removed. Or, access to or use of an element of the natural or cultural heritage <u>or</u> a structure, site or thing of historical, archeological, paleontological or architectural significance is irreversibly removed.</p>
Reversibility	<p>Reversible (short-term) – the potential effect is readily reversible over a relatively short period (<5 years).</p> <p>Reversible (long-term) – the potential effect is potentially reversible but over a long period (>5 years).</p> <p>Irreversible – project-specific potential effects are permanent and irreversible.</p>

Appendix B: Species at Risk

Species			Status		
Common Name	Scientific Name	Observed or Potential Location	SARA	COSEWIC	SARA Recovery Strategy
Mammals (4)					
American badger ⁶¹	<i>Taxidea taxus taxus</i>	RAA	Special Concern, Schedule 1	Special Concern	No
Little brown myotis	<i>Myotis lucifugus</i>	RAA	Endangered, Schedule 1	Endangered	Yes
Northern myotis	<i>Myotis septentrionalis</i>	RAA	Endangered, Schedule 1	Endangered	Yes
Wolverine ¹	<i>Gulo gulo</i>	RAA	Special Concern, Schedule 1	Special Concern	No
Amphibians & Reptiles (3)					
Northern leopard frog	<i>Lithobates pipiens</i>	PDA	Special Concern, Schedule 1	Special Concern	No
Snapping turtle ⁶²	<i>Chelydra serpentina</i>	PDA	Special Concern, Schedule 1	Special Concern	No
Eastern tiger salamander	<i>Ambystoma tigrinum</i>	N/A	Endangered, Schedule 1	Endangered	No
Migratory Birds (14)					

⁶¹ American badger and wolverine were not detected in the LAA or RAA by the Proponent and the Project would be outside of their known habitat range, therefore potential effects were expected to be negligible or low.

⁶² Snapping turtle was not observed during baseline wildlife surveys nor were there any known occurrences of the species in the RAA, therefore potential effects were expected to be negligible or low.

Species			Status		
Common Name	Scientific Name	Observed or Potential Location	SARA	COSEWIC	SARA Recovery Strategy
Bank swallow	<i>Riparia riparia</i>	RAA, LAA	Threatened, Schedule 1	Threatened	Yes
Barn swallow	<i>Hirundo rustica</i>	PDA	Threatened, Schedule 1	Special Concern	No
Bobolink	<i>Dolichonyx oryzivorus</i>	RAA, LAA	Threatened, Schedule 1	Special Concern	No
Common nighthawk	<i>Chordeiles minor</i>	PDA	Special Concern, Schedule 1	Special Concern	Yes
Eastern whip-poor-will	<i>Antrostomus vociferus</i>	RAA, LAA	Threatened, Schedule 1	Special Concern	Yes
Eastern wood-pewee	<i>Contopus virens</i>	PDA	Special Concern, Schedule 1	Special Concern	No
Evening grosbeak	<i>Coccothraustes vespertinus</i>	RAA, LAA	Special Concern, Schedule 1	Special Concern	No
Golden-winged warbler	<i>Vermivora chrysoptera</i>	RAA	Threatened, Schedule 1	Threatened	Yes
Horned grebe	<i>Podiceps auritus</i>	RAA	Special Concern, Schedule 1	Special Concern	No
Least bittern	<i>Ixobrychus exilis</i>	RAA, LAA	Threatened, Schedule 1	Threatened	Yes (proposed)
Olive-sided flycatcher	<i>Contopus cooperi</i>	RAA, LAA	Special Concern, Schedule 1	Special Concern	Yes
Piping plover	<i>Charadrius melodus circumcinctus</i>	RAA	Endangered, Schedule 1	Endangered	Yes
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	RAA, LAA	Endangered, Schedule 1	Endangered	Yes
Yellow rail	<i>Coturnicops noveboracensis</i>	PDA	Special Concern, Schedule 1	Special Concern	No
Non-migratory birds (2)					

Species			Status		
Common Name	Scientific Name	Observed or Potential Location	SARA	COSEWIC	SARA Recovery Strategy
Short-eared Owl	<i>Asio flammeus</i>	RAA, LAA	Special Concern, Schedule 1	Threatened	No
Rusty blackbird	<i>Euphagus carolinus</i>	RAA	Special Concern, Schedule 1	Special Concern	No
Invertebrates ⁶³ (3)					
Yellow-banded bumble bee	<i>Bombus terricola</i>	LAA	Special Concern, Schedule 1	Special Concern	No
Gypsy cuckoo bumble bee	<i>Bombus bohemicus</i>	LAA	Endangered, Schedule 1	Endangered	No
Transverse Lady Beetle	<i>Coccinella transversoguttata</i>	LAA	Special Concern, Schedule 1	Special Concern	No
Aquatic Species (5)					
Mapleleaf mussel	<i>Quadrula quadrula</i>	RAA, LAA	Threatened, Schedule 1	Threatened	No
Lake sturgeon ⁶⁴	<i>Acipenser fluvescens</i>	RAA, LAA	Population Specific	Population Specific	No
Bigmouth buffalo	<i>Ictiobus cyprinellus</i>	RAA, LAA	Special Concern, Schedule 1	Special Concern	No
Silver chub	<i>Macrhybopsis storeriana</i>	RAA, LAA	Special Concern, Schedule 1	Non Active	No

⁶³ All three invertebrate species are habitat generalists and have broad distributions throughout Canada, therefore Project effects were expected to be negligible or low

⁶⁴ Lake sturgeon designation was de-activated in May 2005 to allow designation of separate populations: 1) Saskatchewan- Nelson River populations: SARA -Not on Schedule 1 (Under consideration for addition), COSEWIC- Endangered; 2) Southern Hudson Bay-James Bay populations: SARA- Special Concern, COSEWIC- Special Concern; 3) Western Hudson Bay populations: SARA- Not on Schedule 1 (Under consideration for addition), COSEWIC- Endangered

Species			Status		
Common Name	Scientific Name	Observed or Potential Location	SARA	COSEWIC	SARA Recovery Strategy
Shortjaw cisco	<i>Coregonus zenithicus</i>	RAA, LAA	Threatened, Schedule 2	Threatened	No
Plants (8)					
Rough agalinis	<i>Agalinis aspera</i>	PDA	Endangered, Schedule 1	Endangered	No
Gattinger's agalinis	<i>Agalinis gattingeri</i>	PDA	Endangered, Schedule 1	Endangered	Yes
Small white lady's-slipper	<i>Cypripedium candidum</i>	PDA	Threatened, Schedule 1	Threatened	Yes
Black ash	<i>Fraxinus nigra</i>	PDA	Not on Schedule 1, under consideration for addition	Threatened	No
Western prairie fringed orchid	<i>Platanthera praeclara</i>	PDA	Endangered, Schedule 1	Endangered	Yes
Riddell's (Houghton's) goldenrod	<i>Solidago riddellii</i>	PDA	Special Concern, Schedule 1	Special Concern	No
Western silvery aster	<i>Symphotrichum sericeum</i>	PDA	Threatened, Schedule 1	Threatened	Yes
Western (Fascicled) ironweed	<i>Vernonia fasciculata</i>	PDA	Endangered, Schedule 1	Endangered	Yes

Appendix C: Summary of the Crown Consultation with Indigenous Groups

Appendix C contains a summary of the issues of concern identified by Indigenous groups throughout the environmental assessment, along with Manitoba Transportation and Infrastructure’s (the Proponent) and the Impact Assessment Agency of Canada’s (the Agency) responses.

#	Indigenous Group	Comment or Concern	Summary of Proponent’s Response	Agency Response
A	Accidents and Malfunctions			
A1	Fisher River Cree Nation, Misipawistik Cree Nation, Peguis First Nation	Clarify mitigation measures that will be implemented during construction and operations to contain or avoid a breach to the carbonate bedrock aquifer.	<p>The Proponent stated that maintaining the sustainability of the aquifer is a key objective through each stage of the Project design. The location and design of the Lake Manitoba Outlet Channel (LMOC) and Lake St. Martin Outlet Channel (LSMOC) would maintain flow of groundwater towards the surface over the life of the Project, including during wet and drought conditions, avoiding conditions that could lead to groundwater under the direct influence of surface water due to the Project.</p> <p>The Proponent committed to actively depressurize the bedrock aquifer, the LMOC channel excavation, and would construct the LSMOC to control basal heave sites and depressurize the bedrock aquifer around the water control structure (WCS) and drop structure.</p> <p>The Proponent stated that, should a breach to the carbonate bedrock aquifer occur, a reverse drain would be installed at the breach location which would act as</p>	<p>The Agency understands that the Proponent would implement mitigations to prevent a breach to the aquifer, and that if a breach were to occur, the Proponent is committed to installing a reverse drain at the location of the breach.</p> <p>The Agency is satisfied with the Proponent’s response and is of the view that the Proponent’s proposed mitigation measures are appropriate to limit the likelihood of a breach to the carbonate bedrock aquifer and mitigate potential adverse environmental effects if a breach were to occur.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>a filter between the channel and the aquifer.</p>	
A2	<p>Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>Concern regarding the sufficiency and accuracy of flood modelling scenarios.</p>	<p>The Proponent indicated that the LMOC and LSMOC are designed to accommodate a design flood event. The LMOC and LSMOC can accommodate a 1 in 1,000-year flood without risk of failure.</p> <p>The Proponent indicated that the MIKE 21 model of Lake St. Martin was used to assess water levels, consider climate change scenarios, discharges, and flow velocities in the Lake St. Martin Narrows, as well as potential effects of erosion, transport, and deposition of sediment in Lake St. Martin under flood conditions. The MIKE 21 model achieved a good fit to measured north basin and south basin water levels for the 1995 and 2011 flood events and results of the model verification simulations (2017 and 2022 flood events) indicate that the simulated north basin water levels match well with measured data. The MIKE 21 model of Lake St. Martin was shown to underpredict head losses and peak south basin water levels for the verification simulations (2017 and 2022 flood events).</p> <p>The Proponent also stated that bathymetric surveys and substrate typing of the Lake St. Martin Narrows would be conducted in summer 2023 to provide detailed baseline conditions. Monitoring and subsequent follow-up surveys during construction and operation of the channels will also be conducted.</p>	<p>The Agency is satisfied with the Proponent's response and is of the view that, taking into account project design considerations, mitigation, monitoring, and follow-up measures proposed by the Proponent, the likelihood of potential accidents and malfunctions occurring would be low.</p> <p>The Agency recognizes that the LMOC and LSMOC are designed to accommodate a design flood event, and that the channels can accommodate a 1 in 1,000-year flood without risk of failure of major Project components. If a containment dyke breach were to occur, the Agency understands that the procedures under Manitoba Infrastructure's Manitoba Flood Coordination Plan would be implemented during a flood event, including procedures for public notification of flooding and evacuation requirements.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
A3	Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Request that Indigenous groups be informed and engaged regarding accidents and malfunctions, and any associated adverse effects to the environment and Aboriginal and treaty rights. Request that Indigenous groups be provided with summary reports of follow-up programs and the opportunity to participate.	The Proponent has undertaken a project-specific Indigenous consultation and engagement process for the proposed Project. Indigenous groups would be invited to participate on an Environmental Advisory Committee (EAC) for the Project, which would facilitate the participation of interested Indigenous groups in environmental aspects of ongoing project activities, including the development and implementation of follow-up and monitoring plans. The Proponent committed to following emergency response procedures as per the Manitoba Flood Coordination Plan and the Manitoba Emergency Plan which documents measures for prevention and mitigation, preparedness, response, and recovery for emergency situations.	The Agency is of the view that continued Proponent-led consultation with Indigenous groups will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to concerns as they arise throughout the life of the Project. The Agency recommends, for consideration in the Minister's Decision Statement, that the Proponent develop a plan for accidents and malfunctions describing the means of communication, notification procedures, and urgent and long-term communication requirements for possible emergency events, including notification to the affected Indigenous group, and that summary reports following accident or malfunction events be made available to Indigenous groups.
A4	Pinaymootang First Nation, Sandy Bay Ojibway First Nation, Sagkeeng Anicinabe First Nation	Request that Indigenous groups have the opportunity to review protocols for evaluating the suitability of proposed operating rules.	Operating Guidelines were developed for the LMOC and LSMOC based on defined high-water events and forecasted conditions. The Proponent indicated that Indigenous groups would be invited to participate on an EAC for the Project, which would facilitate the participation of interested Indigenous groups in environmental aspects of ongoing project activities.	The Agency recognizes that the Proponent will develop a project-specific Operations & Maintenance Manual for the WCSs to ensure maintenance needs for the Project are addressed during the operation and maintenance phase. The Operations and Maintenance Manual will adhere to Canadian Dam Association Dam Safety Guidelines. The Agency is of the view that continued Proponent-led consultation with Indigenous groups will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
				issues and solutions to concerns as they arise throughout the life of the Project.
A5	Little Saskatchewan First Nation	Request to list all sensitive sites identified in the accidents and malfunctions assessment and describe how these locations were considered in developing contingency plans for worst-case scenarios.	<p>The Environmental Protection Plan provides mapbooks with an inventory of all known Environmentally Sensitive Sites that occur within the Project Development Area (PDA). Environmentally Sensitive Sites are locations, features, areas, activities, or facilities that were identified during the environmental assessment process to be ecologically, socially, economically, culturally, or spiritually important or sensitive to disturbance and require protection during construction of the Project.</p> <p>Mapbooks have been developed for the Project to present the location and spatial extent of Environmentally Sensitive Sites. Each map will have a corresponding summary of relevant mitigation measures to address the potential environmental effects at each of the Environmentally Sensitive Sites. The mapping is an iterative process and will be updated and finalized prior to construction.</p>	<p>The Agency is of the view that continued Proponent-led consultation with Indigenous groups will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to concerns as they arise throughout the life of the Project.</p> <p>The Agency is of the view that most accidents and malfunctions, particularly those that could potentially result in serious environmental effects, are unlikely to occur and, with proper preparation, response, and mitigation measures, could be managed and addressed sufficiently.</p>
A6	Black River First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Little Saskatchewan	Concerns regarding contingency plans for the protection of physical and cultural heritage sites from a channel breach or other catastrophic Project failure.	The Proponent committed to continuing to work with Indigenous groups to develop heritage protocols for the construction phase, and developing a heritage training program to enable construction staff to identify chance heritage finds during construction. The Proponent indicated that heritage sensitive areas, known heritage sites within the PDA, and culturally important areas – as defined in the Heritage Resources Protection Plan	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures adequately address this concern. The Agency agrees with the Proponent's commitment to minimize the likelihood of a catastrophic Project failure by adhering to their Project Environmental Requirements, Environmental Management Plans, Construction Environmental Management Program, and

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	First Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation		<p>(HRPP) – would be classified as an ESS, and that the Environmental Protection Plan would outline specific contractor protocols to follow when working within the Environmentally Sensitive Sites. The Proponent indicated that the Access Management Plan includes provisions to limit public access during construction.</p> <p>The Proponent stated that the purpose of the Project is to reduce flooding. The Proponent indicated that a containment dyke breach could result in adverse effects to heritage resources. The effects to physical and cultural heritage would be similar during a flood event in the absence of the Project. The Proponent stated that if known heritage resources are affected by a breach, or new heritage resources are uncovered because of a breach, pertinent information will be provided to Manitoba Sport, Culture and Heritage, Historic Resources Branch (HRB) and mitigation measures identified by HRB will be followed.</p>	the Canadian Dam Association Dam Safety Guidelines.
A7	Interlake Reserves Tribal Council	Concerns regarding effects to the health and well-being of Indigenous groups due to the lack of emergency response measures for potential accidents and malfunctions and effects of the environment on	The Proponent committed to following the Manitoba Emergency Plan, which documents measures for prevention and mitigation, preparedness, response, and recovery for emergency situations. Emergency response measures for fires will be implemented as described in the Manitoba Wildland Urban Interface Fire Coordination Plan, which provides procedures for notification of fires, and roles and responsibilities/action plans for preparation, alert, response, and recovery.	The Agency is satisfied with the Proponent's response and is of the view that, taking into account project design considerations and the mitigation, monitoring, and follow-up measures proposed by the Proponent, the likelihood of potential accident and malfunction scenarios occurring would be low. The Agency recognizes that the LMOC and LSMOC are designed to accommodate a design flood event, and that the channels can accommodate a 1 in 1,000 year flood without risk of failure of major Project

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
		the project, such as wildfires and flooding.	In the event of a flood, either due to extreme hydrologic conditions or a containment dyke breach or overtopping, the Proponent committed to following emergency response procedures as per the Manitoba Flood Coordination Plan, which includes procedures for public notification of flooding, evacuation requirements, and roles and responsibilities/action plans for preparation, alert, response, and recovery.	<p>components. If a containment dyke breach were to occur, the Agency understands that the procedures under Manitoba Infrastructure's Manitoba Flood Coordination Plan would be implemented during a flood event, including procedures for public notification of flooding and evacuation requirements.</p> <p>The Agency is also of the view that continued Proponent-led consultation with Indigenous groups will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to concerns as they arise throughout the life of the Project.</p>
B	Alternative Means of Carrying Out the Project			
B1	Berens River First Nation, Fisher River Cree Nation, Lake St. Martin First Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin	Request to provide justification for the Project, including costs and benefits.	The Proponent indicated that the purpose of the Project is to develop a permanent flood control management system for Lake Manitoba and Lake St. Martin. Given the flat topography in much of Manitoba, the Province is susceptible to flooding; especially in the spring, when surface water flows are typically at their peak. Over the last hundred years there have been at least six major floods that have caused damage in the region around the Assiniboine River; the most recent being in 1976, 1995, 2011 and 2014. The Proponent indicated that additional flood protection for Lake Manitoba and Lake St. Martin is beneficial to the Province and citizens of Manitoba, as well as the Government of Canada, with associated environmental and social benefits.	The Agency is satisfied that the Proponent provided rationale for carrying out the Project. The Agency accepts that the intention of the Project is to reduce flooding along Lake Manitoba, Lake St. Martin, and Lake Winnipeg.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
B2	Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation	Concerns regarding the lack of engagement with Indigenous groups or integration of Indigenous Knowledge regarding the selection and evaluation of alternatives for project activities and components.	The Proponent indicated that pre-project engagement occurred with several Indigenous groups that were displaced due to the floods of 2011. The Proponent has considered comments submitted as part of the EA process and has committed to ongoing engagement with Indigenous groups through the establishment of an EAC.	<p>The Agency is satisfied with the Proponent's assessment of alternative means of carrying out the Project for the purposes of CEAA 2012.</p> <p>The Agency is of the view that continued Proponent-led consultation will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to concerns as they arise throughout the life of the Project.</p>
C	Cumulative Effects			
C1	Berens River First Nation, Bloodvein First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake	Concerns regarding the cumulative effects of multiple projects in the region on water levels, water quality, and erosion, and	Indigenous groups engaged on the Project have identified concerns related to cumulative effects to the Proponent. The Project assessment aims to reduce or eliminate project-related effects so that residual effects do not contribute to cumulative effects from past and ongoing activities within the region.	<p>The Agency acknowledges that there would be overlap between project effects and the effects of past, present and reasonably foreseeable projects and physical activities on project valued components.</p> <p>The Agency is of the view that the Proponent's proposed mitigation</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Reserves Tribal Council, Lake St. Martin First Nation, Manitoba Métis Federation, Mispawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation	subsequent effects to fish and fish habitat, wetlands, riparian ecosystems, vegetation, wildlife, including species at risk and species of cultural importance.	<p>The Proponent is committed to ongoing consultation and engagement with Indigenous groups. Information obtained through the Indigenous engagement and consultation program has informed the assessment of cumulative effects to Indigenous valued components in the Project and was integrated into cumulative assessment of biophysical components where appropriate.</p> <p>As a result of input received from Indigenous groups, meetings were held to discuss proposed mitigation, monitoring and offsetting measures.</p>	<p>measures, monitoring, and follow-up programs and the key mitigation measures identified by the Agency would minimize the Project's contributions to cumulative effects to valued components.</p> <p>The Agency developed key mitigation measures, follow-up, and monitoring programs, informed by consultation with federal authorities, Indigenous groups, the public and members of the technical advisory group (TAG), to address outstanding concerns.</p> <p>The Agency recognizes that some uncertainty remains regarding the extent and magnitude of cumulative effects to fish and fish habitat. The Agency understands that the Proponent committed to providing additional information regarding project effects and mitigation measures for fish and fish habitat to Fisheries and Oceans Canada through the <i>Fisheries Act</i> authorization process.</p>
C2	Berens River First Nation, Black River First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little	Concerns regarding potential adverse cumulative effects to physical and cultural heritage sites and traditional lands which have been depleted due to multiple projects within the region.	<p>The Proponent recognizes that people living and/or using the land and water in the vicinity of the proposed Project have experienced effects from past or ongoing activities and projects.</p> <p>The Proponent acknowledged that Project effects would result in the long-term loss of availability of traditional use resources or access to lands currently used for traditional practices, the permanent loss of traditional use sites and areas, and diminished value or importance of cultural sites and areas in the PDA and local</p>	<p>The Agency agrees with the views expressed by the Indigenous groups, that the Project cannot be assessed independently of the legacy of cumulative effects related to flood management infrastructure in the area. The Agency recognizes that multiple flooding events have not only permanently altered the landscape but caused the displacement of Indigenous communities for years. The Agency acknowledges Indigenous groups have witnessed changes over time that have resulted in a decline of physical and</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, York Factory First Nation		<p>assessment area (LAA) that diminish the general quality of experience on the lands. However, these effects are not anticipated to critically reduce or eliminate availability and access to lands, resources, and cultural sites and areas, and would be mitigated by the implementation of the proposed HRPP.</p> <p>With the use of mitigation measures – such as revegetation with native species, pre-construction surveys for dens and nests, and the use of setbacks – the direct and indirect loss of habitat for harvested species is expected to be relatively small compared to the remaining habitat available in the regional assessment area (RAA), and the habitat reclaimed by reducing the effects of flooding.</p>	<p>cultural heritage sites and traditional lands.</p> <p>The Agency recognizes that some uncertainty remains regarding the extent and magnitude of cumulative effects to potential adverse cumulative effects to physical and cultural heritage sites and traditional lands. The Agency is of the view that it is not always clear how the Proponent has considered Indigenous knowledge and views in the assessment of cumulative effects to physical and cultural heritage sites and traditional lands.</p> <p>The Agency notes that the effectiveness of the proposed mitigation for cumulative effects to the current use of lands and resources for traditional purposes and the physical and cultural heritage of Indigenous groups relies on the Proponent's ongoing and meaningful consultation with Indigenous groups. The Agency is of the view that continued Proponent-led consultation with Indigenous groups will be critical for validating the cumulative effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to concerns as they arise throughout the life of the Project.</p>
C3	Berens River First Nation, Dakota Tipi First Nation, Fisher River Cree	Concerns regarding the approach and conclusions made in the cumulative	The Proponent was of the view that its definitions of spatial and temporal boundaries for the assessment of cumulative effects to Indigenous valued components used are sufficient to	The Agency acknowledges that Indigenous groups expressed concerns regarding the methodology used by the Proponent to carry out its cumulative effects assessment, specifically, the

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation</p>	<p>effects assessment, the spatial and temporal boundaries, the lack of appropriate baseline information, and the improper reflection of Indigenous Knowledge).</p>	<p>accurately characterize the anticipated extent of potential cumulative effects. The Proponent was also of the view that its definitions for low, moderate, and high magnitude residual effects to Indigenous valued components used are sufficient to accurately characterize the anticipated magnitude of cumulative effects to Indigenous valued components.</p> <p>The Proponent indicated that cumulative effects of past activities have been incorporated into the baseline conditions in carrying out the Project environmental assessment and the responsibility for the Project is to maintain current conditions and look for opportunities to improve conditions where feasible, from a Project perspective.</p> <p>The Proponent is committed to ongoing consultation and engagement with Indigenous groups. Information obtained through the Indigenous engagement and consultation program has informed the assessment of cumulative effects to Indigenous valued components as well as integrated into cumulative assessment of other biophysical valued components where appropriate.</p>	<p>approach, scope and conclusions made including the spatial and temporal boundaries for Indigenous valued components used, the lack of appropriate baseline information, and the improper reflection of Indigenous perspectives to support significance determinations.</p> <p>The Agency is of the view that the Proponent did not adequately determine temporal boundaries for the cumulative effects assessment or adequately examine physical activities that have been and will be carried out. The Agency acknowledges that past projects and activities should be properly considered in the cumulative effects assessment to ensure that the potential for significant cumulative effects is understood.</p> <p>The Agency notes that it is not always clear how the Proponent has considered Indigenous knowledge and views in the cumulative effects assessment. The limitations of the Proponent's approach to scoping cumulative effects increased the level of uncertainty in the assessment.</p>
C4	<p>Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Manitoba</p>	<p>Request for clarity on proposed mitigation and reclamation measures, and the need for monitoring and follow-up</p>	<p>The primary responsibility of the Project assessment is to try to reduce or eliminate project-related effects so that residual effects do not contribute to any effects from those past or existing projects and activities. A large portion of these measures is described in the plans that</p>	<p>The Agency is of the view that continued Proponent-led consultation with Indigenous groups will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to concerns as they arise throughout the life of the Project.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Métis Federation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	measures related to cumulative effects.	comprise the Environmental Management Program. As part of its ongoing engagement and consultation process, drafts of the various Environmental Management Program plans were sent to Indigenous groups for review and feedback. As a result of input received from Indigenous groups, meetings were held to discuss proposed mitigation, monitoring, and offsetting measures. Further meetings to discuss the Environmental Management Program plans are included in all high-level work plans developed for Indigenous groups with funding agreements. Environmental Management Program feedback received to date, as well as input received during the continued environmental assessment process, has and will inform continued improvement to the Environmental Management Program.	The Agency recognizes the importance of utilizing Indigenous Knowledge and information gathered from nation-to-nation consultation to inform the need for additional mitigation and adaptive management measures for any unanticipated effects that arise. The Agency recommends additional mitigation measures, for inclusion in the Minister's Decision Statement, to address gaps or uncertainty in the cumulative effects assessment. Key mitigation measures identified by the Agency incorporate feedback received from the federal authorities, Indigenous groups, the public and members of the TAG.
C5	Berens River First Nation, Black River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake St. Martin First	Concerns regarding cumulative effects to water quality in Lake St. Martin and Lake Winnipeg due to climate change, past flooding events (including impacts to the regional ecosystems and Indigenous groups), and existing project	The purpose of the Project is to mitigate flooding originating from both currently managed and unmanaged sources, and the various regional adverse effects associated with flooding on Lake Manitoba and Lake St. Martin, including the Indigenous groups that live in and use the region. The Proponent indicated that management of the regional watershed to address flooding would be accomplished by the Province of Manitoba through the planned coordination of operational parameters of multiple existing flood physical works infrastructures. The outcome of such coordination is to reduce peak water elevations and hence to	The Agency agrees with views expressed by Indigenous groups that the Project cannot be assessed independently of the legacy of cumulative effects related to water control infrastructure in the area. The Agency acknowledges that increased development and the Province of Manitoba's historic and continued management of water in the region has resulted in significant changes to Indigenous groups' ability to continue their way of life. The Agency recognizes that multiple flooding events have not only permanently altered the landscape and impacted the regional ecosystems but

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Mispawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation	infrastructure in the region.	<p>reduce adverse effects of flooding in the regional watershed. Thus, the existing flood physical works infrastructures are part of the existing baseline conditions against which the Project effects are assessed. The cumulative effects contributions of these other physical works are implicit in the cumulative effects assessment.</p> <p>The standards and environmental conditions associated with the foreseeable future projects and physical activities are adequate to limit or negate interacting or cumulative effects. The Fairford River Water Control Structure and Portage Diversion both have their own set of operating guidelines that will not change with the LMOC and LSMOC Project which considered operation of the other infrastructure in the modelling. The proposed Portage Diversion channel enhancements will not expand on the capacity of the structure, and therefore will not increase the volume of water into Lake Manitoba. As such, there are no incremental effects anticipated that may act cumulatively.</p>	<p>caused the displacement of Indigenous communities for years.</p> <p>The Agency understands that, based on updated water balance models and engineering designs, the Proponent has indicated that the Project would result in negligible changes to elevations and flows in Lake Winnipeg and that no measurable changes are anticipated to the predicted effects to Indigenous groups as a result.</p> <p>The Agency acknowledges that there is uncertainty given the nature of the parameters and concerns from Indigenous groups about downstream effects to Lake Winnipeg, and that mitigations to address these concerns are difficult to develop. However, the Agency accepts that the intention of the Project is to reduce flooding along Lake Manitoba, Lake St. Martin, and Lake Winnipeg, including on federal lands.</p>
D	Current Use			
D1	Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St.	Concerns regarding restricted access to harvesting areas and areas of cultural and spiritual importance due to	The Proponent identified that Project effects would result in changes to water bodies and affect Indigenous groups' ability to traverse them, thereby restricting access. Indigenous resource users will be able to continue to travel in the area, but crossing the outlet channels will only be possible at specific crossing locations	The Agency anticipates that the Project's residual adverse effects to access for current use will be high in magnitude, and long-term, and irreversible. The Agency understands that post-construction, some access would be restored where construction activities cease; however, access will be permanently modified by

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	the Project. Request for clarity on if and how land users including Indigenous groups will be notified of access restrictions and related mitigation measures.	which will be identified as site-specific mitigations are developed. During the winter, there may be changes to how ice forms near the water inlet on Lake St. Martin and near the outlet in Lake Winnipeg. This may affect the ability of Indigenous groups to travel safely on ice with recreational vehicles. The Proponent proposed various mitigations for effects to access, including restricting public access to the PDA through the use of fencing and signage at access points.	the outlet channels as they will act as a barrier that can only be crossed at specific locations. The LMOC would have crossing locations at sufficient intervals to allow for reasonable resumption of access. However, the Proponent has only committed to a single crossing over the LSMOC at the WCS which greatly limits the ability of Indigenous groups that utilize this area to access either side of the outlet channel. The Agency notes the importance of consulting with Indigenous groups on the identification of areas where the channels can be crossed and having appropriate signage along the channels to aid in navigating crossing locations. The Agency also identified the need to develop individual Indigenous group specific communication and engagement plans that would include access management.
D2	Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First	Concerns regarding project-effects to the availability and quality of traditional resources such as wildlife, fish, and plant species of cultural importance.	The Proponent indicated that the purpose of the Project is to reduce existing adverse effects created by periodic regional flooding, which can affect availability of traditional resources for current use through changes to vegetation, fish and fish habitat, and wildlife. The Proponent predicted that the Project effects to current use will result in the long-term loss of availability of traditional use resources. With the use of mitigation measures – such as revegetation with native species, pre-construction surveys for dens and nests, and the use of setbacks – the direct and indirect loss of	The Agency is of the view that the adverse residual effects to resource availability and quality for current use would be of high magnitude as a result of adverse residual effects to species of cultural importance and their habitat, including wildlife, fish, and vegetation. The Agency notes that some residual effects would be reversible given that some areas would be revegetated and restored to conditions suitable for cultural practices to resume. However, altered behaviours of wildlife and Indigenous peoples due to the disturbances will likely not be able to return to baseline conditions.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, York Factory First Nation		<p>habitat for harvested species is expected to be relatively small compared to the remaining habitat available in the RAA, and the habitat reclaimed by reducing the effects of flooding. Residual effects to wildlife will not pose a threat to the long-term persistence and viability of species in the RAA. Therefore, the Proponent predicted that the species relied on for traditional hunting and trapping by Indigenous groups will continue to be available and accessible within the RAA.</p> <p>The Proponent developed a Wildlife Monitoring Plan to monitor species of cultural importance and a Revegetation Management Plan to support the restoration to natural conditions. The Proponent is also working with Fisheries and Oceans Canada to develop and implement offsetting for effects to fish and fish habitat.</p>	<p>The Agency noted that additional mitigations would be necessary to reduce effects to the availability and quality of resources for current use, such as: ensuring adequate support is provided to enable the participation of Indigenous groups in monitoring programs, consultation with Indigenous groups in revegetation planning, and ongoing engagement throughout the life of the Project.</p> <p>A follow-up program for effects to current use involving the continued gathering and consideration of Indigenous knowledge and the incorporation of monitoring results is critical for verifying Project effects and for implementing adaptive management measures as required.</p>
D3	Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation,	Concerns regarding the disruption of Indigenous knowledge transmission and opportunities to practice and teach important cultural activities, which in turn affects Indigenous groups sense of place, community, and	The Proponent predicted that the Project effects will result in the long-term loss of availability of traditional use resources or access to lands currently used for traditional practices, the permanent loss of traditional use sites and areas, and diminished value or importance of cultural sites and areas in the PDA and LAA that diminish the general quality of experience on the lands. However, these effects are not anticipated to critically reduce or eliminate availability and access to lands, resources, and cultural sites and areas.	The Agency is of the view that residual adverse effects to the quality of experience would be high in magnitude due to the large footprint of the Project, changes in aesthetics and access, increased mortality risk and alteration of behaviour of culturally important species, and changes to Indigenous peoples' cultural and spiritual connection with the land, sense of place, and intergenerational knowledge transfer from the loss or alteration of sites of importance and modification of behaviours due to changes to the environment. The Agency notes that

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sandy Bay Ojibway First Nation	connection to the land.	The Proponent noted that effects to both known and previously undiscovered heritage resources would be mitigated by the implementation of the proposed Heritage Resource Protection Plan and adherence to Manitoba's <i>Heritage Resources Act</i> (1986), including the implementation of mitigations (such as detailed recording and mapping of spiritual or cultural sites).	Indigenous peoples' quality of experience relies heavily on their ability to access areas for current use and the availability and quality of resources for current use. The Agency recognizes that change to Indigenous peoples' experiences due to the Project would be dependent on each individual and emphasizes the importance of continued engagement with Indigenous groups throughout the life of the Project to better understand how land users are experiencing changes and implementation of additional mitigations to address these experiential effects.
D4	Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding Project effects to culturally significant species and habitats. Request that the Proponent work with Indigenous groups to identify mitigations for effects to species of cultural importance, such as the identification and designation of Moose Recovery Zones.	The Proponent indicated that the direct and indirect loss of habitat for harvested species is expected to be relatively small compared to the remaining habitat available in the RAA, and the habitat reclaimed by reducing the effects of flooding. Residual effects to wildlife will not pose a threat to the long-term persistence and viability of species in the RAA. Therefore, the Proponent predicted that the species relied on for traditional hunting and trapping by Indigenous groups will continue to be available and accessible within the RAA. Indirect effects to moose are anticipated during construction due to sensory disturbance, with the potential for moose to avoid otherwise suitable habitats within 500 metres or more of the Projects rights-of-way. However, during operation, the Proponent did not anticipate the channels to be a barrier to moose movement. The	The Agency anticipates the residual adverse effects to the availability and quality of resources for current use to be high in magnitude. The Agency notes that some effects would be reversible given that some areas would be revegetated and restored to conditions suitable for cultural practices to resume. However, altered behaviours of wildlife and Indigenous peoples due to the disturbances will likely not be able to return to baseline conditions. Due to their critically low populations, moose may be affected to a greater degree by the Project related effects. The Agency is of the view that the loss of moose habitat and changes to moose behaviour and movement could adversely affect the ability of Indigenous groups to harvest moose in preferred locations and require significant effort to continue practicing in the same way as without the Project.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			Proponent concluded that the Project is not expected to threaten the viability of moose in the RAA. Key specific mitigation measures that may also serve to avoid or reduce effects to traditionally harvested species are identified in the Wildlife Monitoring Plan, Access Management Plan, Revegetation Management Plan, Wetland Compensation Plan, and Environmental Protection Plan.	The Agency notes the importance of providing adequate support for involvement of Indigenous groups in monitoring of effects to vegetation, wildlife, and fish and the implementation of adaptive management measures where needed.
E	Effects of the Environment			
E1	Brokenhead Ojibway Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Manitoba Métis Federation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding potential effects of climate change and their inclusion in scenarios in models, and the adequacy of the flood and erosion models.	<p>The Proponent stated that climate change predictions were based primarily on a climate study done for the Manitoba-Minnesota Transmission Project (Manitoba Hydro 2015), which used 15 global climate models. The Proponent conducted a climate change sensitivity analysis for the Project that considered climate projections and a flood frequency analysis for Lake Manitoba and Lake St. Martin. The Proponent updated the assessment of changes to water levels in Lake Winnipeg and downstream waterbodies to consider climate change scenarios. The Proponent indicated that the MIKE 21 model of Lake St. Martin was used to assess water levels, discharges, and flow velocities in the Narrows, as well as potential effects to erosion, transport, and deposition of sediment in Lake St. Martin under flood conditions.</p> <p>The Proponent indicated that effects of a channel breach due to flooding would be representative of flooding without the Project. Dam safety assessments were</p>	The Agency acknowledges that climate change may result in floods of a higher frequency and magnitude. The Agency recognizes that the channels may operate more frequently than was predicted in the original EIS. The Agency is satisfied with the Proponent's response and is of the view that the Project is designed to manage the design flood volume and has additional capacity to divert and store water.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>completed for both channels and concluded that the consequence of failure for each is significant. A channel breach during a flood event could result in erosion and sediment deposition, affecting vegetation, wildlife fish and fish habitat, infrastructure, and health and socio-economic conditions.</p>	
E2	Hollow Water First Nation	<p>Concerns regarding potential effects of wildfires on fuel storage and flammable materials associated with the Project.</p>	<p>The Proponent indicated that fuel storage areas for construction and operation will be established using Environmental Management Plans. All fuel handling and storage will comply with Storage and Handling of Petroleum Products and Allied Products Regulation 188/2001 under the <i>Dangerous Goods Handling and Transportation Act</i> C.C.S.M. c. D12. Additionally, all fuel storage containers and tank vehicles will be inspected daily for leaks and spillage. Damaged or leaking fuel storage containers will be promptly removed from site.</p> <p>Open fires are prohibited from April 1 to November 15 annually. In the event that burning is required during that period, an application for a burning permit will be submitted for approval to Manitoba Sustainable Development. All conditions imposed by the burning permit will be adhered to. No activity will be conducted which may cause a fire to spread. Similarly, burning, or smoldering matter will not be placed where it may cause a fire to spread. In the event that a wildfire is identified where construction activities are taking place, all reasonable attempts shall be made to extinguish the wildfire. All</p>	<p>The Agency is of the view that the Proponent adequately characterized the likelihood and magnitude of potential fire hazards on the Project and designed the Project to account for effects of the environment on the Project.</p> <p>The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures adequately address this concern.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			available equipment, services and labor shall be made available at the disposal of an officer for the purposes of wildfire protection operations.	
E3	Dakota Tipi First Nation, Interlake Reserves Tribal Council, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding the Project's ability to withstand high magnitude flood events as a result of climate change. Request for clarity on the risk of erosion and overtopping during higher magnitude flood events.	<p>The Proponent indicated that the LMOC and LSMOC are designed to accommodate a design flood event. The Inflow Design Flood capacity for the Project is a 1 in 1,000-year event, which is the most severe inflow flood that the structure and facilities are designed to accommodate. The LMOC and LSMOC can accommodate a 1 in 1,000-year flood without risk of failure of major Project components but with a decreased safety factor against erosion. The Inflow Design Flood is greater than expected increased flows associated with climate change.</p> <p>A channel breach, due to flooding, could result in short-term changes to sediment transport dynamics and water quality. The extent of the inundation would depend on the volume of water in the channel at the time and the location of the breach. Failure of the LMOC could result in flooding along the channel and low-lying areas near Lake Manitoba and Lake St. Martin. Failure of the LSMOC could result in water flowing into Lake Winnipeg, the Big Buffalo Creek bog, and the Dauphin River.</p>	<p>The Agency is satisfied that the Proponent accounted for the effects of climate change in surface water modelling scenarios. The Agency recognizes that the LMOC and LSMOC are designed to accommodate a design flood event, and that the channels can accommodate a 1 in 1,000-year flood without risk of failure of major Project components including WCS – but with a decreased safety factor against erosion.</p> <p>The Agency is of the view that the Project is designed to manage the design flood volume and has additional capacity to divert and store water.</p>
E4	Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree	Concerns regarding the Proponent's lack of consideration of the potential	The Proponent indicated that the long-term groundwater pressure will remain upwards (i.e., towards the surface) under the foreseeable future conditions including droughts, based on a review of the long-	The Agency is satisfied that the Proponent accounted for the effects of climate change in modelling scenarios. The Agency recommends, for consideration in the Minister's Decision Statement, that the

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>effects of climate change and the sufficiency of models used to assess climate change. Request for clarity on how drought conditions would affect water management and wetland mitigation.</p>	<p>term water pressure data at a well west of the LMOC. The Proponent indicated that drought was considered in quantitative estimates of groundwater discharge to surface water within the Buffalo Creek complex, by including a drought year and a wet year in the analysis. The Proponent indicated that drought conditions were considered in the analysis of effects of surface water infiltration to the bedrock aquifer during LSMOC operation, and that springs remain flowing artesian during drought conditions based on observations from monitoring in 2021.</p> <p>The Proponent expected that drought conditions would typically correspond to periods of extended non-operation of the channels. The Proponent stated that drought is not anticipated to substantially affect the Project, except where it results in higher likelihood for wildfires.</p> <p>The Proponent stated that climate change predictions for the Project were based primarily on a climate study done for the Manitoba-Minnesota Transmission Project (Manitoba Hydro 2015), which used 15 global climate models. The Proponent updated the assessment of changes to water levels in Lake Winnipeg and downstream waterbodies to consider climate change scenarios. The Proponent indicated that the MIKE 21 model of Lake St. Martin was used to assess water levels, discharges, and flow velocities in the Narrows, as well as potential effects to erosion, transport and deposition of sediment in Lake St Martin under flood</p>	<p>Proponent develop and implement, in consultation with Indigenous groups and relevant authorities, monitoring of surface water and groundwater in wetlands in upgradient and downgradient areas from the outlet channels, and plans for wetland compensation and offsetting.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			conditions. The MIKE 21 model achieves a good fit to measured north basin and south basin water levels for the 1995 and 2011 flood events.	
E5	Berens River First Nation, Fisher River Cree Nation, Peguis First Nation, Poplar River First Nation, Sandy Bay Ojibway First Nation	Concerns regarding the potential for elevated water levels due to the Project and the effects of wind events on lake levels during flood events, particularly for Lake Winnipeg.	<p>The Proponent stated that a two-dimensional model of Lake Winnipeg using MIKE 21 modeling software was developed to simulate multiple wind events on Lake Winnipeg. Wind has the potential to affect sediment transport dynamics. Based on the model, the Proponent concluded that engineered jetties would be required at the LSMOC outlet to minimize sediment and debris accumulation during non-operation of the channel.</p> <p>The Proponent indicated that, based on the updated water balance model and engineering designs, the Project would result in negligible measurable changes to elevations and flows in Lake Winnipeg and downstream waterbodies. For Lake Manitoba and Lake St. Martin, the Proponent committed to monitoring of water levels, wind speeds, and wind direction on these lakes.</p>	<p>The Agency recognizes that the Proponent has committed to monitoring of water levels, wind speeds, and wind direction on Lake Manitoba and Lake St. Martin. The Agency notes that the Proponent has indicated that the Project would result in negligible measurable changes to water elevations in Lake Winnipeg.</p> <p>The Agency acknowledges that there is some uncertainty given the nature of the parameters and concerns from Indigenous groups regarding downstream effects to Lake Winnipeg, and that mitigations to address these concerns are difficult to develop.</p>
E6	Fisher River Cree Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns that ice jams in the channels could cause over-topping. Clarify mitigations in place to prevent and manage ice jams.	The Proponent indicated that winter operation of the channels to maintain or reduce water levels in Lake Manitoba and Lake St. Martin may cause ice jams or the formation of frazil ice. However, the Proponent predicted that the likelihood of a fully breached dyke would be low. The Proponent indicated that operational measures (i.e., controlled winter flow releases using the WCS gates to limit	The Agency is satisfied with the Proponent's response and its assessment of effects of the environment on the Project and is of the view that the Proponent's proposed mitigation measures would adequately address potential effects of ice jams on the Project. The Agency recognizes that the Proponent would consider implementation of further contingency measures through

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>channel flow while maintaining baseflow to provide suitable habitat for fish) and regular ice condition monitoring would promote the formation of stable ice cover in the channels and reduce the volume of frazil ice. If an ice jam is at risk of causing a containment dyke overtopping, the blockage could be removed within the LMOC. Due to the large spatial extent, removing a hanging dam would not be possible for the LSMOC, and flows in the channel would be maintained to prevent further growth of the ice dam.</p> <p>In the event that an ice jam with overtopping were to occur despite these measures, the Proponent indicated that the event would have small volumes and be short in duration compared to a natural flood event. The flooding would be limited to low lying areas, and due to the predicted timing during winter and early spring, frozen soils would limit erosion.</p>	<p>adaptive management such as incorporating locations for controlled breaches and raising containment dykes, as needed.</p>
F	Federal Lands			
F1	Fisher River Cree Nation	Concern regarding potential effects to Crown lands, specifically Fisher River Cree Nation's Conservation Areas Initiative.	The Proponent completed an assessment of potential Project effects to federal lands and undertook engagement with Indigenous groups to determine the current state of the environment on federal lands. The Proponent predicted that residual Project effects to federal lands would be minimal (i.e., changes to fish and fish habitat, and wetlands), would not occur (i.e., changes to the atmospheric environment, groundwater, wildlife, current use of land and resources by Indigenous groups, physical and cultural heritage, and	The Agency recognizes that there is some uncertainty regarding downstream effects to Lake Winnipeg (on which a portion Fisher River Cree Nation's Conservation Areas Initiative is located), however, the Agency accepts that the intention of the Project is to reduce flooding along Lake Manitoba, Lake St. Martin, and Lake Winnipeg, including on federal lands.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			health and socio-economic conditions of Indigenous peoples), or would be beneficial (i.e., surface water, vegetation, and migratory birds).	
F2	Berens River First Nation, Dauphin River First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concern of flooding frequency on federal lands during Project operations. Request for additional information on mitigation measures to reduce the risk of flooding events on reserve lands for future flood scenarios.	The Proponent indicated that the Project is intended to reduce flooding and inundation of low-lying areas. The Proponent predicted that changes to surface water on federal lands would provide a benefit to federal lands in the same manner as non-federal lands. The Proponent indicated that the LMOC and LSMOC are designed to accommodate a design flood event and can accommodate a one in 1,000-year flood without risk of failure of major Project components but with a decreased safety factor against erosion.	The Agency accepts that the intention of the Project is to reduce flooding along Lake Manitoba, Lake St. Martin, and Lake Winnipeg, including on federal lands. The Agency recognizes that the Proponent will develop an Operations & Maintenance Manual for the Project. The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures adequately address this concern.
G	Fish and Fish Habitat			
G1	Berens River First Nation, Black River First Nation, Bloodvein First Nation, Brokenhead Ojibway Nation,	Concern regarding potential effects to fish and fish habitat related to erosion, sedimentation, and changing flow	The Proponent acknowledged that changes to sediment patterns and water quality would be expected to be confined to areas downstream of the outlet channels. The Proponent indicated that a detailed Sediment Management Plan and Aquatics Effects Monitoring Plan would be	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop a monitoring program, in consultation with Indigenous groups and relevant authorities, to monitor sediment transport and deposition effects to fish and fish habitat during construction

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Dakota Tipi First Nation, Dauphin River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak</p>	<p>conditions, including consideration of spawning habitat and fish health.</p>	<p>developed during the permitting phase, in consultation with federal and provincial authorities and Indigenous groups and implement adaptive management for sediment movement and deposition based on outcomes of real-time turbidity monitoring. The Proponent indicated that commissioning of the outlet channels will comply with the Fisheries and Oceans Canada's Restricted Activity Timing Windows, to avoid potential sediment effects to fish and fish habitat. The Proponent committed to conducting Project activities in accordance with the Canadian Council of Ministers of the Environment (CCME) <i>Canadian Environmental Quality Guidelines for the Protection of Aquatic Life, Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOG) Tier III Guidelines</i> for freshwater aquatic life, Fisheries and Oceans Canada's Measures to Protect Fish and Fish Habitat, adhering to Manitoba Restricted Activity Timing Windows of the Protection of Fish and Fish Habitat, and Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat.</p>	<p>and operation of the Project, and mitigate and manage any discharges that would be deleterious to fish or fish habitat in accordance with the pollution prevention dispositions of the <i>Fisheries Act</i>, CCME <i>Canadian Environmental Quality Guidelines for the Protection of Aquatic Life</i>, and MWQSOG <i>Tier III Guidelines</i>.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	First Nation, York Factory First Nation			
G2	Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Clarify how potential changes to project design will impact fish and fish habitat.	The inlet and outlet excavation details were updated, and the Proponent indicated that lake excavation would occur behind isolation for control of sediment, and execution of in-water works would be undertaken in accordance based on <i>the Fisheries Act</i> Authorization. Additionally, in order to manage the downstream effects of sediment, the initial commissioning phase will not commence until the revegetation of target erodible areas becomes established and will include controlled releases of flow to manage downstream sediment levels to comply with the <i>CCME Canadian Environmental Quality Guidelines for the Protection of Aquatic Life</i> , <i>MWQSOG Tier III Guidelines</i> for freshwater aquatic life.	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation, follow-up and monitoring measures would adequately address potential effects of the updated project design to fish and fish habitat. The Agency understands that the Proponent will be required to comply with the pollution provisions of the <i>Fisheries Act</i> , <i>CCME Canadian Environmental Quality Guidelines for the Protection of Aquatic Life</i> , and <i>MWQSOG Tier III Guidelines</i> .
G3	Brokenhead Ojibway Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan	Request that proper mitigation and monitoring methods are applied to aquatic invasive species.	The Proponent indicated that aquatic invasive species exist within the RAA, and based on provincial distribution records, zebra mussels have been recorded in Lake Manitoba, less than 100 kilometres from Lake St. Martin. The Proponent expected that zebra mussels may colonize Lake St. Martin prior to commissioning of the channels, and as such, the Project may contribute to the incremental spread of aquatic invasive species. The	The Agency is satisfied with the Proponent's response and is of the view that potential project-related effects to aquatic invasive species spread have been adequately considered. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent implement mitigation measures during all phases of the Project, to avoid the introduction or propagation of aquatic pathogens or invasive species in the RAA.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, York Factory First Nation		Proponent committed to complying with provincial regulations in Manitoba's <i>The Water Protection Act</i> to prevent transmission, with routine inspections and cleaning of equipment that has previously been in contact with an aquatic ecosystem. Manitoba Natural Resources and Northern Development would be notified in the event that aquatic invasive species are discovered during inspections.	
G4	Norway House Cree Nation, Pimicikamak Okimawin, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Clarity on the potential establishment and health of aquatic vegetation along the channels and effects to fish and fish habitat due to establishment.	The Proponent committed to developing a detailed Aquatic Effects Monitoring Plan and Revegetation Management Plan during the permitting phase, in consultation with federal and provincial authorities and Indigenous groups. The Proponent noted that the channel armoring is expected to minimize sediment and debris such as peat or terrestrial and aquatic vegetation inputs from the channels. The Proponent indicated that monitoring of aquatic habitat conditions, including substrate composition and distribution of aquatic macrophytes will be conducted at the inlets and outlets of the outlet channels. Monitoring of habitat conditions will also occur in the outlet channels, including both open water and under ice. The	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation, follow-up, and monitoring measures would support vegetation establishment along the channels to reduce erosion and that the Proponent will monitor for subsequent effects to fish and fish habitat.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			Proponent committed to establishing long-lived perennial vegetative cover across the LMOC and LSMOC ROW. Revegetation using native plant species will provide long-term erosion and sediment control for the Project during operation.	
G5	Berens River First Nation, Bloodvein First Nation, Brokenhead Ojibway Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis	Concerns regarding data used in the Project effects assessment (i.e., baseline studies, selected spatial boundaries, model predictions and consideration of algae, chlorophyll α and benthic invertebrates). Clarify Fish Habitat Offsetting Plans, proposed mitigation measures and monitoring programs including protocols, and the methodology proposed for Lake Whitefish egg incubation and recruitment in the Aquatic Effects Monitoring Plan.	The Proponent committed to developing a detailed Aquatic Effects Monitoring Plan and Surface Water Management Plan during the permitting phase, in consultation with federal and provincial authorities and Indigenous groups. The Proponent committed to monitoring aquatic macrophytes to assess quality of aquatic habitat conditions, methylmercury in fish tissue and chlorophyll α . The Proponent committed to monitoring water quality parameters including routine chemistry, total and dissolved nutrients, carbon, total and dissolved metals, bacteria, hydrocarbons, and pesticides. Monitoring locations for fish utilization and water quality parameters include Lake Manitoba at Watchorn Bay, Lake St. Martin including Birch Bay, Birch Creek, Buffalo Creek, and Lake Winnipeg including Sturgeon Bay and selected points near McBeth Point and the southeast shore of Reindeer Island. The Proponent committed to implementing a fish habitat offsetting plan that is compliant with the Authorizations Concerning Fish and Fish Habitat Protection Regulations pursuant to the <i>Fisheries Act</i> , which will be developed in consultation with relevant provincial and	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent include collection of water quality parameters and monitor aquatic habitat conditions as part of its monitoring and follow-up program to enable detection of project-related changes in nutrient, contaminant, and sediment levels to inform adaptive management. The Agency is satisfied that the Proponent's definition of the LAA and RAA and is of the view that the spatial boundaries provided are sufficient to characterize the anticipated geographic extent of project-related effects to fish and fish habitat for the purpose of the environmental assessment. The Agency understands that the Proponent committed to providing additional information regarding effects and mitigation measures for fish and fish habitat to Fisheries and Oceans Canada through the <i>Fisheries Act</i> authorization process. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous groups, the Province of Manitoba, and Fisheries and

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, York Factory First Nation		<p>federal authorities and Indigenous groups, and to the satisfaction of Fisheries and Oceans Canada. An updated submission is currently being prepared and will be provided to Fisheries and Oceans Canada following engagement with Indigenous groups, as required as part of the <i>Fisheries Act</i> authorization process.</p> <p>The Proponent was of the view that its definitions of PDA, LAA and RAA for the assessment of Project effects to fish and fish habitat are sufficient to accurately characterize potential project-related effects. The LAA for the Project encompasses more than 800 square kilometres of aquatic habitat and includes Watchorn Bay and the inlet to the Fairford River, Watchorn Creek and its headwater lakes and drains, the Fairford River, Pineimuta Lake, Birch Creek and its headwater lakes and drains, Lake St. Martin, the Dauphin River, Buffalo Creek and Big Buffalo Lake, and Sturgeon Bay. The RAA extends to include the entirety of Lake Manitoba, the entire north basin of Lake Winnipeg, the mouth of the Mantagao River, and a tributary of Sturgeon Bay (near the proposed LSMOC outlet).</p>	Oceans Canada to develop a fish habitat offsetting plan.
G6	Brokenhead Ojibway Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Manitoba Métis Federation,	Concerns regarding effects to fish and fish habitat from the potential exposure to mercury methylation and other	The Proponent committed to developing a detailed Aquatic Effects Monitoring Plan during the permitting phase, in consultation with federal and provincial authorities and Indigenous groups. The Proponent provided baseline data for total mercury concentrations for locally harvested fish species (walleye, northern	The Agency is satisfied with the Proponent's assessment of potential project effects to fish and fish habitat from potential contaminants as a result of Project-related water level fluctuations. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop, in consultation with

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Misipawistik Cree Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	contaminants as a result of project-related water level fluctuations in waterbodies within the LAAs. Clarify that sampling programs and protocols, along with monitoring plans will be developed and that Indigenous groups will be consulted regarding fish species to be monitored.	<p>pike, lake whitefish) in Lake Manitoba, Lake St. Martin, Sturgeon Bay in the LAA. The Proponent evaluated risk associated with consumption of baseline levels of methylmercury in fish in a human health risk assessment. The Proponent used data collected from a health and socio-economic conditions survey in addition to socio-economic reports submitted by Indigenous groups to obtain additional health and socio-economic context and concerns.</p> <p>The Proponent committed to monitoring mercury concentrations in fish filets from Lake Manitoba, Lake St. Martin and Sturgeon Bay after commissioning of the Project, as well as after channel operation in conjunction with fish community sampling on Lake St. Martin. Samples will be collected from commercial catches for five years after commissioning. If mercury concentrations indicate a significant increase following commissioning, the human health risk assessment would be updated and shared with relevant provincial authorities to determine implications for fish consumers.</p>	Indigenous groups and relevant authorities, follow-up and monitoring programs to monitor and adaptively manage project-related exceedances to mercury concentrations in fish filets from Lake Manitoba, Lake St. Martin and Sturgeon Bay for the life of the Project.
G7	Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Manitoba Métis Federation, Misipawistik Cree	Concerns regarding fish winterkill due to low dissolved oxygen and poor water quality. Clarify the sufficiency of fish rescue plans.	The Proponent committed to developing a detailed Aquatic Effects Monitoring Plan during the permitting phase, in consultation with federal and provincial authorities and Indigenous groups. The Proponent noted that some fish will move into the channels, however baseflows will maintain dissolved oxygen levels. The Proponent indicated that during the winter, baseflow in the outlet channels will be	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent undertake monitoring for dissolved oxygen concentrations during the winter and develop and implement a follow-up and monitoring program for fish salvage, in consultation with Indigenous groups and relevant authorities.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Pinaymootang First Nation, Peguis First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>		<p>used to maintain dissolved oxygen levels for aquatic organisms, and these flows are not of sufficient magnitude to negatively impact ice processes in the outlet channels. The Proponent also noted that the Aquatic Effects Monitoring Plan does not include plans for a fish salvage during the winter as large numbers of large-bodied fish are not expected to be in the channels during the low flow conditions that would occur prior to baseflow.</p> <p>The Proponent committed to monitoring immediately following WCS closure during commissioning and after operation for flood mitigation to search along the outlet channels downstream of the WCS for stranded fish.</p> <p>The Proponent indicated that dissolved oxygen concentrations are not predicted to change in the receiving environments as a result of Project operation. Surface water quality is not predicted to change beyond the range of natural variability, which is not expected to result in change for fish and fish habitat beyond existing variability due to Project operation.</p>	
G8	<p>Lake St. Martin First Nation, Manitoba Métis Federation, Misipawistik Cree Nation</p>	<p>Concerns regarding indirect effects to fish and fish habitat from project activities such as noise, vibration, blasting and lighting.</p>	<p>The Proponent concluded that potential effects of acoustics are predicted to be short-term in duration, moderate in magnitude, limited to the LAA, sporadic/intermittent in frequency, and reversible. The Proponent indicated that borrow-pits and quarries would be at least 100 metres away from watercourses and waterbodies and that set-back and charge sizes would comply with the <i>Guidelines for</i></p>	<p>The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation, follow-up, and monitoring measures would adequately address potential effects of noise, vibration, blasting and lighting to fish and fish habitat.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<i>the Use of Explosives in or Near Canadian Fisheries Waters</i> and in accordance with any conditions of authorization issued under the <i>Fisheries Act</i> and its regulations.	
G9	Fisher River Cree Nation, Interlake Reserves Tribal Council, Manitoba Métis Federation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns with the Proponent's ranking of the magnitude residual effects for fish and fish habitat. Clarify how rankings were established.	The Proponent was of the view that its definitions for low, moderate, and high magnitude residual effects to fish and fish habitat are sufficient to accurately characterize the anticipated magnitude of project-related effects to fish and fish habitat. The Proponent provided definitions for changes in fish habitat quality or quantity, fish passage, or fish health or mortality. The Proponent defined a negligible magnitude as no measurable change in habitat quantity or quality, fish passage, or fish health or mortality from pre-Project baseline conditions. The Proponent defined low magnitude as a measurable change in habitat quantity or quality, fish passage, or fish health or mortality but that is <10 percent different from pre-Project baseline conditions. The Proponent defined moderate magnitude as a measurable change in habitat quantity or quality that is >10 percent but <20 percent different from pre-Project baseline conditions. The Proponent defined high magnitude as a measurable change in habitat quantity or quality that is >20 percent different from pre-Project baseline conditions.	The Agency is satisfied with the Proponent's definition of rankings of magnitude effects and is of the view that the definitions provided are sufficient to characterize the anticipated magnitude of project-related effects to fish and fish habitat for the purpose of the environmental assessment.
G10	Dauphin River First Nation, Interlake	Concerns regarding fish passage and fish	The Proponent committed to developing a detailed Aquatic Effects Monitoring Plan during the permitting phase, in	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop and implement a

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, York Factory First Nation	migratory patterns between Lake Manitoba, Lake St. Martin, Lake Winnipeg, and the Fairford and Dauphin Rivers due to operation of the outlet channels.	consultation with federal and provincial authorities and Indigenous groups. The Proponent committed to monitoring fish community composition and population metric monitoring in Lake St. Martin and Sturgeon Bay and sharing results with local communities. The Proponent committed to monitoring fish utilization of the Dauphin and Fairford Rivers, as well as larval and adult fish movement within the LMOC and LSMOC during operation. The Proponent indicated that field surveys recorded upstream migration of lake whitefish in the Dauphin River under low flow conditions in fall 2020, thus the predicted reduction in median flows due to the Project is not expected to prevent upstream migration. Field surveys in the Fairford River in 2021 under extreme low flow conditions found a range of large-bodied fish species present in the river in both spring and fall, thus a reduction in magnitude of flow due to the Project is not expected to affect fish use of the river. The Proponent noted while fish cannot move back upstream from downstream lakes using the outlet channels, fish can move back upstream using the Dauphin and Fairford Rivers.	follow-up and monitoring program, in consultation with Indigenous groups and relevant authorities, to monitor adult and larval fish movement within the LMOC and LSMOC, and fish utilization of the Dauphin and Fairford rivers to inform adaptive management responses for potential project-related changes in fish passage.
H	Groundwater			
H1	Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree	Concerns regarding the data used to calculate baseline conditions in water balance modelling,	For the LMOC, the Proponent provided maps of overburden thickness and bedrock topography in the LAA; cross sections showing profile of the hydrogeological bedrock topography, overburden stratigraphy, channel inverts,	The Agency accepts the information provided by the Proponent as sufficient for the EA process. Where uncertainty remains, the Agency developed key mitigation measures, follow-up, and monitoring programs, informed by

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation</p>	<p>and potential Project effects to regional groundwater flows and groundwater recharge rates during construction and operation of the Project. Request to incorporate 3D groundwater models.</p>	<p>channel operation levels and groundwater elevations; and three-dimensional modelling for bedrock surface perspective and perspective of surface of overburden thickness. For the LSMOC, the Proponent provided stratigraphic profiles showing bedrock surface and overburden stratigraphy; a map of groundwater pressures including artesian springs; and the hydraulic profile showing the channel invert, operating water levels, control structures and dyke elevations.</p> <p>The Proponent stated that the Project would not affect the sustainability of the bedrock aquifer because the Project is not predicted to affect the supply of water into the aquifer (i.e., recharge is not affected) and the Project would not involve withdrawing water from the aquifer at a rate greater than the recharge rate other than during construction. The Proponent asserted that the main change to the bedrock aquifer system would be the point of discharge where instead of groundwater flow discharging directly into the lakes, approximately 30 percent of the annual overall groundwater contributions to Lake Manitoba, Lake St. Martin, and Lake Winnipeg would discharge into the outlet channels prior to flowing into the lakes. The Proponent stated that the system would remain balanced during long-term operations, that there would not be a net loss of water from the bedrock aquifer system, and the Project would not change the sustainability of the bedrock aquifer.</p>	<p>consultation with relevant authorities and Indigenous groups to address outstanding concerns.</p> <p>The Agency agrees with the Proponent that the Project would not affect long-term aquifer sustainability, but that the Project would be changing the discharge location from lakes, wetlands, and springs to the outlet channels.</p> <p>The Agency is of the view that uncertainty remains regarding effects to groundwater due to the LMOC and recommends, for inclusion in the Minister's Decision Statement, monitoring to confirm EA predictions and that trigger mechanisms to re-evaluate the modelling assessment need to be developed prior to construction.</p> <p>The Agency agrees with the Proponent that additional three-dimensional modelling would not provide additional certainty to the LSMOC modelling. However, the Agency is of the view that uncertainty remains regarding changes to groundwater due to the LSMOC.</p> <p>The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent implement additional monitoring for both groundwater drawdown and flow monitoring and additional mitigation measures informed by consultation and input from Indigenous groups and relevant authorities to mitigate effects to the Big Buffalo Lake and the Buffalo Creek complex.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
H2	<p>Bloodvein First Nation, Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>Concerns regarding the potential change in the rate of groundwater discharge to surface and its effects to wetlands, springs and waterbodies due to the Project.</p>	<p>The Proponent stated that there is limited groundwater – surface water interaction within the wetland areas east of the LMOC, with the exception of a site east of Reed Lake. The Proponent stated that the Project effects to wetlands would primarily result from changes to surface water drainage. For the LSMOC, the Proponent calculated groundwater contributions to Big Buffalo Lake to be 25 percent with a sensitivity analysis ranging from 5 percent to 40 percent groundwater contributions and was determined to be groundwater seepage to tributaries that flow into Big Buffalo Lake.</p> <p>Based on aquifer properties known to date, the Proponent anticipated that groundwater drawdown outside of the range of natural variability would not extend to the Big Buffalo Lake complex, artesian spring sites, or to nearby communities during construction and operation of the LSMOC. The Proponent included a drought year and a wet year in their modelling. The Proponent asserted that the main change to the bedrock aquifer system would be the point of discharge where instead of groundwater flow discharging directly into the lakes, approximately 30 percent of the annual overall groundwater contributions to Lake Manitoba, Lake St. Martin and Lake Winnipeg will discharge into the channels prior to flowing into the lakes.</p> <p>The Proponent expected to use granite quarries outside of the LAA. Limestone quarries may be sourced within the project</p>	<p>The Agency agrees with Natural Resources Canada and Indigenous groups that uncertainty remains regarding the effects to surface water features along Birch Creek. The Agency understands that the effectiveness of the overlying till unit to adequately mitigate effects of depressurization needs to be confirmed with monitoring. Therefore, the Agency recommends, for inclusion in the Minister's Decision Statement, that trigger mechanisms to re-evaluate the modelling assessment need to be developed prior to construction to address this concern.</p> <p>The Agency is of the view that uncertainty remains regarding changes to groundwater due to the LSMOC, and therefore effects to fish and fish habitat, species at risk, and current use of lands. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent implement additional monitoring for both groundwater drawdown and flow monitoring and additional mitigation measures informed by consultation and input from Indigenous groups and relevant authorities to mitigate effects to the Big Buffalo Lake and the Buffalo Creek complex.</p> <p>To address the uncertainty of the quarry locations, the Agency recommends, for inclusion in the Minister's Decision Statement, that no quarries shall be used or developed below the water table where depressurization drawdown overlaps with</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			region within existing sources. Contractors would determine locations and may propose new quarry works. All quarry works would adhere to the criteria set out in the Project Environmental Plan and Quarry Management Plan.	the depressurization zone of the LMOC and LSMOC.
H3	Berens River First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns related to potential effects to groundwater quality including effects to potable water from groundwater under direct influence and exploratory borehole drilling.	<p>The Proponent stated that there would be no expected effects to groundwater quality for the LMOC due to the high artesian pressure in the local area. For the LSMOC, the Proponent stated that repeated infiltration of small quantities of surface water may cause local and short-lived water quality changes to the regional bedrock aquifer resource in close proximity to the LSMOC where there is a physical connection between the LSMOC and the bedrock aquifer (e.g., exposed bedrock in the Emergency Outlet Channel Reach 3). The Proponent indicated that there are no nearby domestic well users and expects no measurable pathways to valued components or Indigenous groups.</p> <p>The Proponent indicated that a detailed Groundwater Management Plan would be finalized prior to construction to outline groundwater quality thresholds in line with relevant water quality guidelines. The plan would outline monitoring and adaptive management to verify EA predictions. The Proponent has committed to develop a Complaint Resolution Process to address concerns from well-users.</p>	The Agency agrees with the Proponent that the high groundwater pressure in the PDA would generally limit effects to groundwater quality. The Agency is of the view that the likelihood of changes to groundwater quality extending to wells on reserve lands is low given the general upward pressure gradient, the direction of groundwater flows, and the distance between drinking water wells on reserves and the Project. The Agency highlights the need for monitoring and follow-up programs to verify EA predictions and address outstanding concerns. The Agency supports the Proponent mitigations and Complaint Resolution Process.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
H4	Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Clarify future groundwater monitoring, parameters, triggers, and action plans.	<p>The Proponent indicated that the Groundwater Management Plan would be finalized prior to construction and would detail monitoring during pre-construction, construction, and operation. The Proponent identified the suite of monitoring parameters which included groundwater piezometric head, field monitoring parameters, potable water parameters, total and dissolved metals, petroleum hydrocarbons, and microbiological parameters.</p> <p>The Groundwater Management Plan would include thresholds, actions and possible mitigations for unanticipated project-related private water supply effects and water quality effects of the LMOC. The Proponent committed to developing a Complaint Resolution Process to address concerns from well-users and committed to providing opportunity for Indigenous groups to provide input on the Environmental Monitoring Plans through the EAC.</p>	<p>The Agency recommends, for inclusion in the Minister's Decision Statement, follow-up, and monitoring programs be developed in consultation with Indigenous groups and relevant authorities prior to construction. Where uncertainty remained in the information provided in the EA process, the Agency developed key mitigation measures, follow-up, and monitoring programs, informed by consultation with federal authorities and Indigenous groups to address outstanding concerns. The follow-up program would include trigger mechanisms to re-evaluate the modelling assessment and monitoring plan for the LMOC and LSMOC during construction and operation of the Project for changes to groundwater conditions as it relates to fish and fish habitat, the current use of lands and resources for traditional purposes and Indigenous peoples' health.</p>
H5	Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little	Concerns related to the effects of groundwater depressurization during construction and operation and the potential impacts to well users (i.e., the potential for "blow-outs").	<p>The Proponent was of the view that active and passive depressurization and proposed mitigation measures (such as construction sequencing and promoting interconnections in a concentrated, central channel area, should they occur) would be sufficient to address the risk of basal heave. The Proponent indicated that the Groundwater Management Plan would be finalized prior to construction detailing monitoring and adaptive management to verify predictions. Additionally, the</p>	<p>The Agency is satisfied with the Proponent's response and is of the view that the potential risk of basal heave (known as a blow-out) has been adequately considered. The Agency recognizes that uncertainty in groundwater modelling remains, particularly for the effects of depressurization from the LSMOC, and is of the view that monitoring and adaptive management can address the concern. The Agency recommends, for inclusion in the Minister's Decision</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation		<p>Proponent has committed to developing construction sequencing plans to coordinate and mitigate construction-related risks due to high groundwater pressures, with the additional commitment of developing groundwater depressurization plans for the LMOC for each year of construction.</p> <p>The Proponent stated that groundwater would continue to be available for domestic or livestock use per the conditions of the water diversion licenses. They highlighted that groundwater would remain available but recognized that some flowing wells may need to be pumped as a result of the lowered groundwater pressure. The Proponent committed to developing a Complaint Resolution Process to address concerns from well-users.</p>	Statement, key mitigation measures, follow-up, and monitoring programs, informed by consultation with federal authorities and Indigenous groups for groundwater quantity and quality during construction and operation of the Project.
I	Health and Socio-economic Conditions of Indigenous Peoples			
11	Bloodvein First Nation, Brokenhead Ojibway Nation, Berens River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Kinonjeoshtegon First Nation, Interlake Reserves Tribal Council, Lake St.	Concerns regarding potential human health risks from the Project including contamination of air quality, water, and country foods.	The Proponent proposed various mitigation measures for effects to the atmospheric environment, surface water, and the terrestrial environment including country foods. Proposed mitigation measures include adhering to the Project Environmental Requirements (including maintenance of engines and exhaust systems and conducting work in a manner that minimizes dust from construction or operations); adhering to the MWQSOG and CCME guidelines; and following integrated weed management approaches that include mechanical treatment where feasible, hand clearing along shorelines,	<p>The Agency recognizes that construction and operation activities may result in adverse effects to the health of Indigenous peoples through changes to air quality, surface water and groundwater quality, the acoustic environment, and the quantity and quality of country foods.</p> <p>The Agency recommends the Proponent develop a follow-up program to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of changes to the quality of air, water, and country foods on the health of Indigenous peoples, taking into account available Indigenous</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Mispawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation		<p>and chemical vegetation control only for weed control/suppression (not as a method of clearing).</p> <p>The Proponent predicted that the Project will not result in residual effects to Indigenous people's health due to changes in atmospheric environment, surface or groundwater quality, or the consumption of country foods.</p>	<p>knowledge provided by Indigenous groups. As a part of this follow-up program, the Proponent would be required to monitor water quality and fish tissues, methylmercury, ambient air concentrations, and contaminants of concern in country foods.</p>
12	Berens River First Nation, Dakota Tipi First Nation, Dauphin River First Nations, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon	Concerns regarding Project effects to Indigenous groups' economic initiatives and interests in the region including commercial/sport fishing, hunting, and tourism.	<p>The Proponent acknowledged that project activities may adversely affect the ability of Indigenous groups to practice commercial fishing and trapping and undertake recreational activities through a loss of land area to practice these activities, a reduction in the availability or quality of resources, access restrictions to areas where these activities occur, and increased competition for resources due to an influx of project personnel.</p> <p>The Proponent predicted residual effects to commercial fishing and trapping during</p>	<p>The Agency recommends that the Proponent take into account the purposeful inclusion of Indigenous groups in the economic benefits of the Project, including training, employment, and contracting opportunities.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sandy Bay Ojibway First Nation		construction; however, these effects are expected to be short-term and cease following construction. The Proponent noted that there are commercial fisheries active on Lake Manitoba, Lake St. Martin, and Lake Winnipeg, and up to nine commercial fishery seasons which would be affected by the Project.	
13	Black River First Nation, Brokenhead Ojibway Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree	Concerns regarding the potential increase in racism and gender-based violence towards Indigenous groups due to the influx of workers into the area and the location of work camps, including the need for appropriate preventative mitigation measures, security services reporting, and local partnerships. Identify	All camp locations will be required to adhere to relevant management plans that form the Project Environmental Management Program. These plans include the Environmental Protection Plan and Access Management Plan. The Access Management Plan will outline the communication plans and access restrictions put in place for the safety of Indigenous land users that will be implemented during construction. The EAC will provide a venue to discuss any issues, concerns and potential environmental effects that are being addressed through the various Environmental Management Plans. A Complaint Resolution Process will be implemented to collect and manage concerns brought forth by Indigenous Groups and the public.	The Agency acknowledges that the influx of Project personal could result in a potential increase in racism, and gender-based violence. The Agency notes the Proponent will adhere to the Environmental Management Program and Access Management Plans will help to ensure the well-being of local Indigenous groups. The Environmental Management Program will also provide a venue to discuss Project issues, concerns and effects. A Complaint Resolution Process will be also implemented to collect and manage concerns brought forth by Indigenous groups.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>appropriate mitigation and accommodation measures to prevent these potential outcomes.</p>	<p>Through the consultation and engagement program for the Project, the Proponent is committed both to working with Indigenous groups to understand how Indigenous groups may be impacted by the Project, and to the design and implementation of appropriate mitigation strategies through a process of adaptive management that incorporates input from engagement. As Indigenous Knowledge, land uses, concerns, and recommendations are made available to the Proponent from Indigenous groups, they will be considered in the context of the results of the environmental assessment and will be used for Project planning, further engagement, and regulatory purposes, where applicable.</p>	
<p>14</p>	<p>Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang</p>	<p>Concerns regarding the Proponent's policies on Indigenous and local employment, training, education, economy, and other Project business opportunities.</p>	<p>The Proponent is committed to supporting Indigenous economic development by increasing contracting opportunities for businesses owned by First Nation and Métis people by helping to grow Indigenous businesses via increased access to the government procurement process. The Proponent endeavors to increase the participation of Indigenous businesses and workforce during construction of the proposed Project, to assist with achieving the intended benefits of the Indigenous Procurement Initiative.</p> <p>The Proponent is currently reviewing options and requesting appropriate permissions for increasing Indigenous participation, in construction contracts, including Indigenous set-asides. If approved, certain contracts could be</p>	<p>The Agency recommends that the Proponent consider the purposeful inclusion of Indigenous groups in the economic benefits of the Project, including training, employment, and contracting opportunities.</p> <p>Further, the Agency also recommends that the Proponent coordinate with Manitoba Economic Development and Training, Indigenous Services Canada, and First Peoples Development Inc. to identify Project labour force requirements, procurement requirements and anticipated schedules which could assist in the development of training opportunities for Indigenous groups to support potential employment as part of construction and environmental monitoring activities.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	First Nation, Poplar River First Nation		<p>limited to competition among Indigenous businesses. Further discussions are needed to determine the scope of work and magnitude of these contracts, but the Proponent expects that this will serve as another avenue to increase economic opportunities in the region.</p> <p>The Proponent uses established in-house practices, which include mandatory Indigenous involvement clauses for construction projects. Involvement can include undertaking the work as a contractor, subcontractor or joint venture, and/or the provision of services, materials, fuel, labour, and equipment from the local community. Involvement targets are typically 10 percent, but additional percentages may be considered for projects including both general and specific community involvement as a set-aside.</p> <p>The Proponent has been collaborating with Manitoba Economic Development and Training, Indigenous Services Canada, and First Peoples Development Inc. to identify Project labour force requirements, procurement requirements and anticipated schedules which could assist in the development of training opportunities for Indigenous groups to support potential employment as part of construction and environmental monitoring activities.</p>	
15	Dauphin River First Nation, Fisher River Cree	Concerns that the Project could negatively disrupt	The purpose of the Project is to manage flooding so that a repeat of conditions from 2011 and 2014 does not reoccur,	The Agency recognizes that Project infrastructure and activities may result in the loss of land; restrict access to lands

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation</p>	<p>knowledge transmission, reduce the availability of access to traditional foods, and impact food security.</p>	<p>with associated effects to mental and social well-being.</p> <p>The management of flooding is expected to alleviate risks of shoreline erosion at high water marks. When operating, the Project will result in higher velocities, but based on modelling outputs, for most lake areas and islands these are not expected to increase velocities close to shorelines. One exception is the Narrows, but shorelines in this area already experience higher velocities and have eroded back to large rock or bedrock, which can resist erosion. As a result, other than losses addressed in the PDA as part of the Heritage Resources Impact Assessment (HRIA), sites used for social and cultural practices are not expected to be measurably affected by the Project.</p> <p>The reduction in flooding should improve availability of farmland and access to plants around the lake during these times.</p> <p>The channels may affect the movement of terrestrial wildlife and are anticipated to act as a semi-permeable barrier. Effects to wildlife movement are anticipated to be most prominent when the channels are operating in times of flooding.</p> <p>While it is difficult to address aspects of mental and social well-being, the Proponent is hopeful that the sharing of results and ongoing engagement will help to address the uncertainties, concerns, and issues currently being expressed. The results of monitoring will be shared with regulators and communities, and ongoing</p>	<p>and resources relied upon by Indigenous groups for recreation, and traditional and cultural practices, including knowledge transmission; diminish the availability and quality of resources of importance for commercial or subsistence harvesting; increase competition for resources; increase demands on community services and local infrastructure; and result in changes to community well-being and social cohesion.</p> <p>The Agency understands that as part of Project approval, the Proponent will develop both a Construction Environmental Management Program that includes management plans for surface water, groundwater, access management, and wildlife monitoring, and that mitigations for potential impacts to the atmospheric environment minimize impacts to air quality as well as impacts from dust deposition, vibration and noise. The Agency understands that a Complaint Resolution Process will also be implemented to address project-related construction and operation complaints. In addition to this, an air quality monitoring plan and noise management protocols will be developed in consultation with Indigenous groups. The Agency also understands that these measures have been and will be informed by ongoing impact engagement with Indigenous groups.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			engagement will provide opportunities for discussion.	
16	Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, York Factory First Nation	Concerns that the Project could result in impacts to mental health (i.e., addictions), and increased stress on community housing and infrastructure.	<p>While there are no specific Environmental Management Program plans to monitor and mitigate Project effects to the health and socio-economic conditions, this is achieved through two mechanisms. The first is through monitoring and managing the various pathways of effect that contribute to health and socio-economic conditions. These pathways include water quality, vegetation, wildlife, and fishing. Environmental Management Program plans such as the Surface Water Management Plan, Sediment Management Plan, Aquatic Effects Monitoring Plan, Revegetation Management Plan, Wetland Monitoring Plan, and Wildlife Monitoring Plan are examples of the various formal commitments the Proponent has made to manage the various pathways of effects to health and socio-economic conditions. The second mechanism to monitor these effects is through engagement. The Proponent is committed to ongoing engagement to share results on Project monitoring and discuss any issues of concern. A formal Complaint Resolution Process has been established as a venue outside of engagement to gather input. Another is the establishment of the EAC.</p> <p>The Proponent will continue to involve Indigenous groups in additional monitoring within the Project area. This will be achieved by the implementation activities of the EAC, on a consensus-based</p>	<p>The Agency notes that the Proponent will be required to engage with Indigenous groups throughout all project phases to identify and address potential project effects to the Indigenous groups' well-being, health and socio-economic conditions, including measurable and/or perceived effects.</p> <p>The Agency notes the Proponent will adhere to the Environmental Management Program and Access Management Plans will help to ensure the well-being of local Indigenous groups. The Environmental Management Program will also provide a venue to discuss Project issues, concerns and effects. A Complaint Resolution Process will also be implemented to collect and manage concerns brought forth by Indigenous groups and the public.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>approach with participating communities. The established terms of reference for the EAC and anticipates this committee would have a role in finalizing the Environmental Management Program plans prior to construction, as well as act as an avenue to share information and discuss project-related concerns, and to recommend plan modifications if required. As stated in the Terms of Reference for the EAC distributed to local communities on April 24, 2023, participation in the EAC is at the discretion of the Indigenous group. Participation in the EAC does not signify acceptance or approval of the Project by an Indigenous group and an Indigenous group may withdraw from the EAC at any time by advising the Secretariat in writing.</p>	
17	<p>Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>Concerns regarding lack of detail provided in the Proponent's assessment of changes to the atmospheric environment, including baseline information, effects analysis, mitigation, monitoring, and follow-up.</p>	<p>The proposed air quality monitoring plan includes trigger levels, and adaptive management actions and the Dust Control Plan. During Project construction, contractors will rely upon both visual and ambient air quality (particulate matter) monitoring methods to evaluate impacts on air quality and adapt mitigation. The Proponent indicated that they have developed a Complaint Resolution Process to address project-related construction and operation complaints, including those for the acoustic environment. Residential involvement in the development of noise mitigation measures at specific affected receptors will occur during the complaint investigation.</p>	<p>The Agency understands that prior to construction, a follow-up program will be developed in consultation with Indigenous groups and Health Canada, a follow-up program to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of changes to air quality, noise and vibration as well as a Complaint Resolution Process will also be implemented to address project-related concerns during construction.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
18	Bloodvein First Nation, Brokenhead Ojibway Nation, Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, York Factory First Nation	Concerns that the Proponent's assessment of Indigenous Health and Socio-Economic Conditions is insufficient and does not provide appropriate baseline information, which could result in inaccurate assessment of impacts.	<p>The Proponent will develop environmental management plans that include Indigenous engagement for socio-economic baseline collection and identifying the causes of change in health and socio-economic conditions; inclusion of Indigenous information in monitoring and follow-up plans; provision for Indigenous monitoring; and how key discrepancies with Indigenous groups will be addressed.</p> <p>Other offsetting commitments for wetland and fisheries provide the foundation for reducing or avoiding potential effects to health and socio-economic conditions of Indigenous groups.</p> <p>In addition, the Proponent has also established the Indigenous Economic Development Fund to address potential economic effects of the Project.</p>	The Agency notes that several Indigenous groups provided Rights Impact Assessments, Socio-economic and Well-being Reports. The Proponent indicated that they incorporated these studies and provided disaggregated Indigenous Group-specific data in their responses to the second round of Information Requests.
J	Impacts on Rights			
J1	Dakota Tipi First Nation, Dauphin River First	Concerns regarding the loss of vegetation	The Proponent noted that the main purpose of the Project is to alleviate flooding. The reduction in flooding should	The Agency recognizes that the Project would result in the loss of terrestrial habitat, including the temporary and

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	species of medicinal, and cultural importance resulting in decreased ability to gather resources for sustenance purposes.	<p>improve growth conditions and access to plants around the lake during these times, but the channels will impact movement and access to local resources. The Project will reduce the magnitude and duration of overland flooding during future flood events, which will alleviate most of the identified concerns, particularly with respect to plants and medicines.</p> <p>The Proponent acknowledged that the loss of harvesting sites within the PDA is an unavoidable consequence of channel construction, but the assessment concluded that the losses of plants and wildlife would not have significant effects to regional populations of these resources. The Proponent noted that Indigenous groups would be provided with opportunities to harvest resources in the PDA prior to construction start. Additionally, during construction, efforts would be made to retain treed areas where feasible, revegetate with native species, and apply weed control.</p>	<p>permanent loss of wetlands and wetland functions, and that these changes would affect the abundance and distribution of species of cultural importance.</p> <p>The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent consult with Indigenous groups to determine areas within the PDAs that contain vegetation plant species of cultural importance and provide Indigenous groups with access to these areas prior to construction for harvesting purposes.</p> <p>Additionally, the Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent ensure that species of importance to Indigenous groups for traditional and medicinal use, and species that are of value to moose and other species of interest to Indigenous groups are being used in revegetation. Further, once areas that have been revegetated with species of interest to Indigenous groups for harvesting purposes are identified, the Proponent would provide a timeline and maps of these locations to Indigenous groups to identify when they may be suitable for harvesting.</p>
J2	Assembly of Manitoba Chiefs, Black River First Nation, Dakota Tipi First Nation, Dauphin River First Nation, First Nations in Treaty	Concerns regarding Proponent's assessment of potential impacts to rights, lack of engagement and consideration of	<p>The Proponent indicated that they have, through ongoing engagement and consultation with Indigenous groups and material prepared in support of the environmental assessment of the Project, acknowledged and assessed potential impacts on Indigenous rights.</p> <p>The Proponent noted that information</p>	<p>The Agency notes the importance of the Proponent's ongoing and meaningful consultation with Indigenous groups to continue to understand and address the Project's real and perceived impacts to rights. The Proponent has committed to continued engagement with Indigenous groups to reflect on and respond to</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	2 Territory, Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, York Factory First Nation	accommodation measures.	<p>received from Indigenous groups has informed and influenced the Project design, Project planning, and mitigation planning process. The Proponent noted that the consideration of Aboriginal and treaty rights relied on information obtained through the Project's Indigenous consultation and engagement process and publicly available sources to document the assertion of potential or established Aboriginal and treaty rights and the perspectives of Indigenous groups on potential Project interactions with the ability to exercise Aboriginal or treaty rights. Potential or established Aboriginal and treaty rights identified by Indigenous groups through the consultation and engagement process for the Project have been incorporated into the environmental assessment.</p> <p>The Proponent received Rights Impact Assessments and Socio-economic and Well-being studies from Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, and Pinaymootang First Nation. The Project will need to receive formal provincial and federal regulatory approval before it can be constructed. It is expected that decisions will incorporate concerns expressed by Indigenous communities and how they are being addressed.</p>	concerns, issues, and insights of consequence to the Project and Indigenous groups' interests throughout the life of the Project. The Agency recommends that the Proponent develop and implement a survey program for impacts to rights to be conducted within five years post-construction to provide insight regarding the impacts to Indigenous groups, efficacy of mitigation measures and whether additional mitigation measures would be required.
J3	Black River First Nation, Dauphin River First	Concerns regarding direct loss of preferred	The Proponent indicated that the purpose of the Project is to reduce existing adverse effects created by periodic regional	The Agency understands that the Project may result in impacts on Indigenous group's ability to practice hunting and

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>hunting and trapping areas due to project activities, increased water levels resulting in flooding of areas relied upon for hunting and trapping and changes to the ability to access and navigate preferred hunting and trapping areas.</p>	<p>flooding. Flooding effects can include impacts on the availability of traditional resources for current use through damage or removal of wildlife habitat and access to areas for traditional resource use. The Proponent noted that flood protection provided by the Project will have positive effects to farmland, hunting, and trapping areas around the lake. Project-related changes are expected to be positive, in terms of birds and wildlife habitat, as well as access to these resources.</p> <p>While there will be positive regional effects, the Proponent acknowledged that the Project has the potential to cause adverse effects to traditional hunting and trapping that require mitigation and monitoring to manage effectively. The Project is anticipated to result in a change in the availability of traditional resources for current use. This could be through the loss of traditionally harvested wildlife – either directly, or indirectly, through the loss of the habitat that supports them. This can affect the distribution and abundance of wildlife in the LAA, which can result in changes to traditional hunting and trapping within the LAA.</p> <p>Wildlife species that are commonly hunted and trapped by Indigenous groups will be monitored through the Wetland Monitoring Plan, which includes components such as mammal movement monitoring using remote trail cameras and winter track surveys, and wildlife mortality reporting.</p>	<p>trapping rights in their preferred manner through changes to access to preferred hunting and trapping areas, and changes to wildlife and wildlife habitat. The Project will result in the direct loss of wildlife habitat in the PDA, changes to wildlife movement and availability, and changes to Indigenous peoples' access due to the barriers created by the channels.</p> <p>The Agency understands that the Project is intended to reduce flooding along Lake Manitoba and Lake St. Martin and that the Proponent predicted that there would be negligible measurable changes to elevations and flows in Lake Winnipeg.</p> <p>The Agency notes that maintaining unimpeded access to preferred sites and the availability and quality of resources for current use, including species of cultural importance, is critical to enable the continued exercise of hunting and trapping rights.</p> <p>The Agency recommends, for inclusion in the Minister's Decision Statement, the purposeful inclusion of and sufficient support be provided to Indigenous groups to participate in wildlife, vegetation, and revegetation monitoring and the development of community-specific access management plans to support Indigenous groups' ability to navigate through the area.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
J4	Brokenhead Ojibway First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First	Concerns regarding the Project's contribution to increased water levels in the region (RAA) that may cause the erosion of lake shorelines that may affect areas available for hunting, fishing, and camping.	<p>The Proponent indicated that cumulative effects of past activities have been incorporated into the baseline conditions in carrying out the Project environmental assessment and the responsibility for the Project is to maintain current conditions and look for opportunities to improve conditions where feasible, from a Project perspective.</p> <p>The Proponent noted that the main purpose of the Project is to alleviate flooding. It will only operate (in accordance with the Operating Guidelines) to manage flooding conditions when water levels on Lake Manitoba exceed the top of the target range of 247.65 metres (812.5 feet); outside of this, conditions will remain as currently experienced.</p> <p>The reduction in peak flood flows will reduce the potential for shoreline erosion. Velocities will be higher at specific locations in the lakes (inlets/outlets, Lake St. Martin Narrows) during Project operation, but generally not in shoreline areas, including islands in Lake St. Martin.</p>	<p>The Agency supports the views expressed by Indigenous groups that the context of historical flooding in the region must be considered in characterizing impacts to rights. The Agency acknowledges that the Project is intended to alleviate flooding and that the Project's effects, in combination with past, present, and reasonably foreseeable projects and activities were assessed by the Proponent as a part of the cumulative effects assessment.</p> <p>The Agency is recommending that the Proponent consult with Indigenous groups on the Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines and assess the need for periodic updates to ensure that the intent of the Project is being carried out in a manner that is consistent with Indigenous groups' rights and interests.</p> <p>The Agency acknowledges that more direct and collaborative work with Indigenous governments and rightsholders is essential, and that this is a central commitment in Manitoba's water management strategy framework.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Tataskweyak Cree Nation			
J5	Berens River First Nation, Bloodvein First Nation, Dauphin River First Nation, First Nations in Treat 2 Territory, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy	Concerns regarding the sustainability of subsistence fishing activities due to changes to water quality from increased suspended sediments introduced by sediment outflows from the channels and the potential for reduction of lake levels during operations.	<p>The Proponent indicated that sediment would be monitored and managed during construction via the Surface Water Management Plan and Sediment Management Plan, with the Aquatic Effects Monitoring Plan addressing sediment monitoring during operation. During channel commissioning, sediment concentrations in the water will be monitored using real-time loggers and gate opening will be operated to maintain sediment concentrations to within acceptable limits agreed to with regulators as per water quality guidelines.</p> <p>Lake St. Martin is a shallow, turbulent lake influenced by wind and wave action and based on modelling results sediment deposition is expected to affect a relatively small amount of fish habitat in comparison to the total amount of habitat available in the lake.</p> <p>The Proponent indicated that areas at the inlet and outlet that will be excavated for the channels are not unique fish habitat (i.e., same habitat is available elsewhere around the lake). Changes to fish habitat in inlet and outlet areas will be offset as required under the <i>Fisheries Act</i>. Modeling of sediment deposition at the LSMOC outlet indicates that sediment will be widely dispersed in Sturgeon Bay and not form a thick enough layer to affect fish use of coarse substrates for spawning.</p>	<p>The Agency understands that the Project would deposit sediment into Lake St. Martin and Lake Winnipeg, which would significantly change fish spawning and fish habitat. In addition, fluctuations in water levels of the north basin of Lake St. Martin will affect fish spawning and habitat areas located within shorelines and nearby wetland areas. As a flood mitigation Project, the nature of the Project is moving water and thus would result in changes to fish and fish habitat throughout Lake Manitoba, Lake St. Martin, and Lake Winnipeg. As the Project would be operating in perpetuity, the Project would result in long-term, intermittent impacts on Indigenous groups' ability to successfully practice fishing rights.</p> <p>The Agency is recommending that the Proponent support Indigenous peoples' continued ability to practice fishing rights, through measures such as not impeding fish passage, avoidance of fish stranding, maintaining water depth and baseflow within the channels, and implementing a fish habitat offsetting plan that is compliant with an authorization under the <i>Fisheries Act</i>. In addition, the Agency recommends, for inclusion in the Minister's Decision Statement, the Proponent engage with Indigenous commercial fish harvesters and anglers to address potential conflict, disturbance, or access restrictions to</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Bay Ojibway First Nation, York Factory First Nation		Changes to regional fish populations are not expected but will be monitored under the Aquatic Effects Monitoring Plan, with results being made available to regulators and local communities.	fishing/harvesting areas and availability of fish resources.
J6	Berens River First Nation, Black River First Nation, Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation	Concerns regarding changes to shoreline access from reserve lands for fishing purposes along Lake Manitoba, Lake St. Martin, and Lake Winnipeg due to project-related changes to water levels. Additionally, Indigenous groups noted that the Project would cause changes to the ability to safely access preferred fishing areas and decrease the efficacy of fishing.	<p>The Proponent indicated that the main purpose of the Project is to alleviate flooding. It will only operate (in accordance with the Operating Guidelines) to manage flooding conditions when water levels on Lake Manitoba exceed the top of the target range of 247.65 metres (812.5 feet); outside of this, conditions will remain as currently experienced. Seasonal fluctuations in lake levels are still expected to occur, and so the effects to lake shorelines and associated wetlands and other habitat are expected to remain relatively unchanged.</p> <p>When the channels are operated during the winter months it is at reduced flow rates and there is less change in water levels on Lake St. Martin during these periods, particularly for a repeat of the 2011 flood event. Water levels on Lake St. Martin are more stable and at lower elevations during post-Project operation. There should be no loss of access to winter fishing areas, with the possible exception of the LMOC outlet in Birch Bay and the LSMOC inlet in Lake St. Martin north basin.</p> <p>More stable and lower water levels during operation in the post-Project environment should improve shoreline access for fishing purposes. Shoreline access should</p>	<p>The Agency acknowledges that the Project is intended to reduce flooding along Lake Manitoba and Lake St. Martin, including on reserve lands.</p> <p>The Agency understands that, based on updated water balance models and engineering designs, the Proponent has indicated that the Project would result in negligible measurable changes to elevations and flows in Lake Winnipeg and that no measurable changes are anticipated to the predicted effects to Indigenous peoples as a result. The Agency acknowledges that there is some uncertainty given the nature of the parameters and concerns from Indigenous groups about downstream effects to Lake Winnipeg, and that mitigations to address these concerns are difficult to develop.</p> <p>The Agency is recommending that the Proponent support Indigenous peoples' continued ability to practice fishing rights, through measures such as not impeding fish passage, avoidance of fish stranding, maintaining water depth and baseflow within the channels, and implementing a fish habitat offsetting plan that is compliant with an authorization under the <i>Fisheries Act</i>.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>be better in the post-Project environment. In addition, recent (MIKE21) hydraulic modeling completed in Lake St. Martin including wind/wave effects shows minimal to no changes in water velocities in Lake St. Martin during the open water season (spring, summer, fall) with the exception of the channel inlets/outlets, Fairford River outlet, and the LSM Narrows. These changes are even less in the ice-covered winter environment. Therefore, ice thicknesses in the lake should not change, even during operation for a repeat of a 2011 flood event.</p> <p>Changes to Lake Winnipeg will be limited mainly to areas close to the LSMOC Outlet. Lake Winnipeg water levels are managed under the Lake Winnipeg Regulation. During Project operation to manage flooding there will be more flow entering the lake earlier, but changes in lake levels will be within past water level extents and virtually imperceptible among wind and wave action.</p>	
J7	Dauphin River First Nation, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang	Concerns about the ability to govern resources within traditional territories, which is incidental to the exercise of rights.	The Proponent indicated that they regard the issue of stewardship to be beyond the scope of the environmental review of the Project. Matters of provincial water management regimes or provincial and federal licensing and approval processes are not within the care and control of the Proponent. The right to steward lands and resources within their traditional territories are matters Indigenous groups should more properly seek to resolve with the	The Agency acknowledges Indigenous groups have witnessed changes over time that have resulted in a decline in the conditions required for the exercise of stewardship over the lands and resources within their traditional territories. The Agency recognizes that the development and operation of WCSs has been particularly impactful on their stewardship of water, fish, and terrestrial values. Participation of Indigenous groups in the development and implementation of

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	First Nation, Poplar River First Nation, Sandy Bay Ojibway First Nation		Government of Manitoba and the Government of Canada.	monitoring programs and subsequent decisions about mitigations and adaptive management measures is critical to supporting stewardship rights. The Agency is recommending that the Proponent consult with Indigenous groups on the Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines and assess the need for periodic updates to ensure that the intent of the Project is being carried out in a manner that is consistent with Indigenous groups' rights and interests.
J8	Black River First Nation, Dauphin River First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding Project changes to the ability to practice rights, maintain spiritual connections to the land, promote community well-being, and knowledge transfer.	The Proponent indicated that the purpose of the Project is to reduce existing adverse effects created by periodic regional flooding. Flooding can impact cultural value and importance through damage or destruction of important cultural and spiritual sites and areas, disruption of cultural experiences, activities, or practices, unsettling a sense of place and well-being, and dislocation of community members. By alleviating the effects of regional flooding, the Project is expected to reduce property damage and episodes of dislocation for Indigenous groups, result in positive effects to Indigenous mental health and social well-being and reduce adverse effects to cultural value or importance associated with current use. Proposed mitigation measures that may serve to reduce or avoid Project effects to the cultural value or importance associated with current use include ongoing engagement by the Proponent with potentially affected Indigenous	The Agency understands that the Project will likely affect the cultural and spiritual relationship between Indigenous groups and surrounding lands and resources, consequently resulting in changes in sense, experience, or enjoyment of cultural practices and spiritual places. The Project is likely to cause changes in access, loss of areas of importance, and changes to the availability and quality of resources that support traditional practices. Such changes would accelerate the loss of inter-generational teaching of language or traditional practices through changes to the way in which Indigenous groups can practice their rights. The Agency notes the importance of the Proponent's ongoing and meaningful consultation with Indigenous groups to continue to understand and address the Project's real and perceived impacts to rights. The Proponent committed to continued engagement with Indigenous groups to reflect on and respond to

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>groups and implementation of measures to continue to provide access and minimize disturbances to traditional practices, opportunities to harvest traditional plants and medicines in advance of Project construction, firearms restrictions for Project workers, public access restrictions to protect the public from potential hazards created by the new construction, signage to inform the public about potential safety issues, such as at the inlet, outlet and WCS areas.</p> <p>The Proponent indicated that while it is difficult to address aspects of mental and social well-being, they are committed to the sharing of results and ongoing engagement to help to address the uncertainties, concerns and issues currently being expressed.</p>	<p>concerns, issues and insights of consequence to the Project and Indigenous groups' interests throughout the life of the Project.</p>
J9	<p>Berens River First Nation, Black River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First</p>	<p>Concerns regarding the Proponent's lack of consideration of the context of historical flooding and effects to Indigenous groups in the region resulting in already heavily impacted landscapes and resources, and severely altered ability to practice rights. Fluctuating water levels and decreased water</p>	<p>The Proponent noted that the Project environmental assessment is responsible for considering current conditions but incorporates changes due to previous projects and activities into the baseline.</p> <p>The Proponent explained that management of the regional watershed to address flooding is accomplished by the Province of Manitoba through the planned coordination of operational parameters of multiple existing flood physical works infrastructures. The outcome of such coordination is to reduce peak water elevations and hence to reduce adverse effects of flooding in the regional watershed. Thus, the existing flood physical works infrastructures are part of</p>	<p>The Agency supports the views expressed by Indigenous groups that the context of historical flooding in the region must be considered in characterizing impacts to rights. The Agency recognizes that multiple flooding events have not only permanently altered the landscape but caused the displacement of Indigenous communities for years. Indigenous groups' ability to exercise their rights in the region has been significantly altered over the past several decades.</p> <p>Continued Proponent-led Indigenous consultation will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation	quantity have and continue to affect access to culturally important rivers and lakes, affect subsistence and commercial fisheries, and create social and health issues such as flooding of houses and mold growth.	the existing baseline conditions against which the Project effects are assessed. The cumulative effects contributions of these other physical works are implicit in the cumulative effects assessment. A Regional Historical Overview was submitted providing additional detail on the natural and human history of southern Manitoba, and therefore, context for regional change leading up to the proposed Project.	concerns as they arise throughout the life of the Project. The Agency recognizes the importance of utilizing Indigenous knowledge and information gathered from nation-to-nation consultation to inform the need for additional mitigation and adaptive management measures for any unanticipated effects that arise. The Agency considered this historical context in assessing the severity of impacts on rights. See Chapter 9 for more details.
K	Migratory Birds			
K1	Dakota Tipi First Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding the potential release of harmful substances to water bodies and changing water levels, and the potential effects to migratory birds within the LAA. Request the Proponent implement a detailed monitoring and follow-up.	The Proponent indicated surface water quality plans as described in the Surface Water Management Plan and Sediment Management Plan, along with Project Environmental Requirements and Construction Environmental Management Program, include protocols and mitigations for hazardous material transportation and management, emergency response, dust control, working in or near water, petroleum storage and equipment fueling and servicing, and erosion and sedimentation control. Based on the mitigation measures and best management practices and the limited interaction of the road realignment with wetland habitat, potential effects can be avoided or reduced, and monitoring will be undertaken. Residual effects to surface water quality are not anticipated to pose a threat to the long-term persistence and viability of wildlife species in the RAA and	The Agency acknowledges that the Project may result in adverse effects from harmful substances and water levels to migratory birds. The Agency is of the view that the Proponent's proposed mitigation and monitoring measures would minimize potential project effects to surface water quality. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous groups, with respect to the Aquatic Effects Monitoring Plan and Surface Water Management Plan, Revegetation Management Plan, Wildlife Monitoring Plan and Wetland Monitoring Plan. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent, in consultation with Indigenous groups and relevant authorities, conduct monitoring and assess the effectiveness of mitigation measures to prevent the deposition of any substance in waters

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>will not result in the loss of vegetation communities in the LAA.</p> <p>The Proponent planned to provide additional outlet capacity to Lake St. Martin, resulting in lower water levels and decreased area of inundation during peak flows. These changes are expected to reduce the flooding of nesting islands, shorelines, and overwater nests that currently occurs during these conditions. It is anticipated that migratory bird species (i.e., piping plover) that inhabit islands within Lake St. Martin are expected to benefit from an increased availability of habitat and reduced risk of nest loss during flood events when the outlet channels are active. As such, no mitigation is currently proposed unless monitoring demonstrates the need for adaptively mitigating and managing effects that are currently not anticipated for migratory bird nesting islands on Lake St. Martin or Lake Winnipeg islands.</p> <p>The Proponent committed to compliance monitoring to verify adherence to the mitigation measures during construction of the PR 239 realignment listed in the environmental protection plans. The Aquatic Effects Monitoring Plan and Surface Water Management Plan include water quality monitoring at waterbodies along future PR 239, and the Wetland Monitoring Plan will monitor for changes in wetland function and use by Indigenous groups. Wildlife Monitoring Plan which includes species at risk and migratory bird</p>	<p>frequented by migratory birds. and implement species-specific mitigations and conduct monitoring for effects to migratory birds and avian species at risk.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			surveys at wetlands located along the PDA during construction and operation.	
K2	Interlake Reserves Tribal Council, Manitoba Métis Federation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding project effects to migratory birds (i.e., yellow rail, least bittern, horned grebe) including a lack of mitigation measures to protect associated wetland habitat.	The Proponent indicated that the Project was designed to avoid wetlands and species at risk habitat for species such as yellow rail, least bittern and horned grebe, where feasible. The Proponent committed to wetland compensation and offsetting program and wetland monitoring to evaluate the effectiveness of mitigation measures and monitor functional changes to wetlands. The Proponent has provided species-specific mitigation measures during construction and operations, which includes measures for migratory birds.	The Agency recognizes that the Project may result in residual adverse effects to wetlands habitats and may disrupt wetland habitat features. The Agency agrees with the Proponent's commitment to monitor project effects to wetlands and wetland functions through the Wetland Monitoring Plan, Wetland Compensation Plan and wetland offsetting program. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent, in consultation with Indigenous nations and relevant authorities implement species-specific mitigations and conduct monitoring for effects to species at risk migratory birds and develop and implement monitoring programs for Big Buffalo Lake and Birch Creek wetland complexes for direct and indirect effects to migratory birds and species at risk. Should any changes to wetland functions be triggered, implement adaptive management strategies as needed.
L	Monitoring and Follow-up/Consultation			
L1	Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis	Concerns regarding the lack of detail provided in the Proponent's monitoring plans for all valued components.	Follow-up and monitoring plans will be finalized during detailed Project design and following consultation with Indigenous groups and relevant authorities. The Proponent committed to conduct follow-up and monitoring for all valued components under federal jurisdiction to verify the accuracy of the environmental assessment, verify the effectiveness of	The Agency is satisfied with the Proponent's response and agrees with the Proponent's commitment to continue to develop follow-up and monitoring plans, in consultation with Indigenous groups and relevant authorities. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop, in consultation with

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Federation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation		mitigation measures, and to inform the need for contingency measures.	Indigenous groups and relevant authorities, follow-up and monitoring programs for all valued components under federal jurisdiction and that reports from follow-up and monitoring programs be shared annually with the Agency and other parties.
L2	Assembly of Manitoba Chiefs, Berens River First Nation, Black River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation,	Concerns regarding the lack of Indigenous engagement regarding incorporation of Indigenous knowledge and views into the environmental assessment of the Project.	<p>The Proponent has undertaken a project-specific Indigenous consultation and engagement process for the proposed Project and incorporated Indigenous knowledge and feedback gained into Project mitigation and monitoring plans.</p> <p>The Proponent provided a list of key mitigation measures that have been developed based on Indigenous groups' input, including changes to the channel alignment and commissioning, revisions to Environmental Management Program, changes to proposed wetland offsetting, modifications to channel sloping to facilitate wildlife movement, channel armouring to mitigate erosion, and improvements to baseflow to better accommodate fish in the channels.</p> <p>The Proponent sought feedback from Indigenous groups on what level of involvement and participation they would desire in the follow-up and monitoring</p>	<p>The Agency is of the view that continued Proponent-led consultation with Indigenous groups, will be critical for validating the effects assessment, assessing the effectiveness of the mitigations proposed, and identifying issues and solutions to concerns as they arise throughout the life of the Project.</p> <p>The Agency recognizes the importance of utilizing Indigenous knowledge and information gathered from community-specific consultation to inform the need for additional mitigation and adaptive management measures for any unanticipated effects that arise. The Agency recommends, for inclusion in the Minister's Decision Statement, a follow-up program for effects to current use involving the continued gathering and consideration of Indigenous knowledge and the incorporation of monitoring results in order to verify Project effects and</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, York Factory First Nation</p>		<p>activities outlined in the Environmental Management Program and has proposed the development of an EAC as an ongoing information sharing forum.</p> <p>The Proponent indicated that they expect that environmental monitoring will primarily be undertaken by service providers who are experts on the subject matter, and who will work on behalf of the Proponent as contracted through standard tendering practices. These tendering practices will include opportunities for Indigenous group involvement in environmental monitoring.</p>	<p>implement adaptive management measures as required.</p>
L3	<p>Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little</p>	<p>Concerns regarding the lack of engagement regarding mitigation, monitoring, and follow-up programs for the Project, including for quarries. Request that Indigenous groups be involved in the development and implementation of follow-up and monitoring plans.</p>	<p>The Proponent indicated that the environmental assessment examined potential effects from the Project and developed mitigation to address adverse effects. This included addressing effects and concerns expressed by participating Indigenous groups. Information was documented and shared during the engagement process.</p> <p>The Proponent will continue to involve Indigenous groups in additional monitoring within the Project area. This will be achieved by the implementation activities of the EAC, on a consensus-based approach with participating communities. The Proponent established terms of reference for the EAC and anticipates this</p>	<p>The Agency acknowledges that the Proponent developed the EAC as a mechanism for ongoing engagement. However, the Agency understands that Indigenous groups have raised and continue to raise concerns about the structure, function, transparency, and decision-making authority of the EAC and that many Indigenous groups have refused to participate in the EAC due to the concerns raised. The Agency recommends, for inclusion in the Minister's Decision Statement, as a part of the EAC, that the Proponent revisit the terms of reference in consultation with Indigenous groups and modify it based on any input received, ensure adequate</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Saskatchewan First Nation, Manitoba Métis Federation, Mispawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>		<p>committee would have a role in finalizing the Environmental Management Program plans prior to construction, as well as act as an avenue to share information and discuss project-related concerns, and to recommend plan modifications if required.</p> <p>The Proponent indicated that aggregate for use in Project construction or maintenance shall, to the greatest extent possible, be sourced from existing sites, or from within the PDA and not be acquired from below the groundwater level. Should existing aggregate sources be of insufficient quantities or inadequate material quality, development of additional sites shall, to the greatest extent possible, be limited to sites previously identified by the Proponent. Proposed quarries that are not currently active or already identified are subject to a site selection analysis. The analysis will include a review of the Environmental Protection Plan mapbooks and/or a separate biophysical review so that proposed quarry sites will not interfere with sensitive features, including heritage resources and known cultural sites.</p> <p>Environmentally Sensitive Sites will be identified to the extent practicable prior to quarry development. If any additional Environmentally Sensitive Sites are identified during the construction period they will be brought to the attention of the monitor, inspector, or contract administrator, to take appropriate mitigative action. The Proponent has considered input from Indigenous groups</p>	<p>support is provided to enable participation, offer opportunities for Indigenous groups to lead sessions, and submit quarterly reports to the Agency and Indigenous groups with the recommendations that come out of the EAC and with the Proponent's response regarding the implementation of such recommendations. The Agency notes the importance of continued Proponent engagement with each Indigenous group separately, understanding that large forums do not always allow for community specific concerns to be raised.</p> <p>The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent finalize locations of ancillary areas (including work camps, quarries, and laydown areas) within the LAA or RAA and conduct pre-construction surveys for heritage resources, in collaboration with Indigenous groups and relevant federal and provincial authorities. If the Proponent's proposed locations are not selected, the Agency recommends that the Proponent provide a description detailing the reasons for the decision.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			in the identification of Environmentally Sensitive Sites.	
L4	Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding the Proponent's proposed EAC as a means of continued engagement and involvement of Indigenous groups in monitoring efforts associated with the Project. Concerns about the EAC include lack of effectiveness of the committee, lack of transparency and accountability by the Proponent, lack of authority of the EAC in project decision making, limitations on Indigenous participation including lack of capacity support, and use of the committee for the identification and assessment of adaptive management	The Proponent indicated the EAC would support the meaningful participation of local communities in environmental monitoring for the Project, promote the inclusion of local and Indigenous knowledge in the Environmental Management Plans, and provide a direct point of contact for local communities and Indigenous groups with the Proponent. The Proponent anticipates this committee would have a role in finalizing the Environmental Management Plans prior to construction, as well as act as an avenue to share information and discuss project-related concerns, and to recommend plan modifications if required. The Proponent acknowledges that participation in the EAC does not signify acceptance or approval of the Project by an Indigenous group and an Indigenous group may withdraw from the EAC at any time.	Given the significant concerns raised by Indigenous groups about the EAC, the Agency acknowledges that there is uncertainty in the effectiveness of the EAC in meeting its purpose of supporting meaningful participation of Indigenous groups moving forward. The Agency understands that a Proponent-led advisory committee remains important to ensure continued involvement of Indigenous groups in monitoring and provide a forum for discussions. The Agency is considering recommending, for inclusion in the Minister's Decision Statement, that the Proponent offer opportunities to participate in the EAC to all Indigenous groups engaged on the Project, revise the terms of reference in consultation with Indigenous groups, ensure adequate support is provided to enable Indigenous groups' participation in monitoring, offer opportunities for Indigenous groups to lead sessions of the EAC, and post an annual report of the recommendations from the EAC along with a plan for their implementation.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
		measures and offsetting initiatives. Certain Indigenous groups are concerned about their lack of invitation to participate as the Proponent only offered membership to Indigenous groups whom they determined to be most affected.		
M	Physical and Cultural Heritage			
M1	Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree	Concerns regarding the lack of Indigenous knowledge incorporation into baseline data in the physical and cultural heritage resources survey work, artifact/site management, and proposed mitigation measures.	The Proponent noted that their 2019 review of heritage resources within the RAA indicated the presence of 15 archaeological sites and three paleontological sites, with one of the sites located in the LAA. A pre-construction Heritage Resource Impact Assessment, drafted in 2021, identified ten heritage resources within the PDA. The Proponent has considered effects pathways to sites of significance, including cemeteries and burial sites, trails, ceremony sites and camps, the Narrows and shorelines, and islands. The Proponent indicated that no Project effects are anticipated in the RAA. The Proponent identified additional locations that will undergo surveys to identify potential heritage resources and record and preserve heritage objects found.	The Agency agrees that there is uncertainty regarding how Indigenous knowledge and views were incorporated in the assessment of effects of the Project to heritage resources and sites of significance, and intangible aspects of cultural heritage. The Agency understands that many sites of significance are within the LAA and RAA, and therefore were not captured in the HRIA of the PDA completed in 2021. The Agency agrees with the Proponent's commitment to conduct additional heritage assessments. The Agency understands that the process for releasing artifacts to Indigenous groups and the storage and curation requirements for artifacts are managed by the HRB, and that the Proponent has approached the HRB to receive more information about this process.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation		<p>The Proponent has obtained input from Indigenous groups through community meetings, written documents, traditional knowledge land use studies, and review responses to the HRIA. This information has contributed to developing an understanding of the potential effects to tangible and intangible cultural heritage. Additionally, the Proponent established a Project Heritage Resources Planning Group to obtain input from Indigenous groups.</p> <p>The Proponent developed additional procedures, to be incorporated into the HRPP, for human remains and regionally important heritage resources that would provide opportunities for Indigenous groups to make recommendations regarding concerns such as further analysis, repatriation sites, and potential memorial structures.</p> <p>The Proponent has indicated that there will be further opportunities to advance Indigenous content in the Environmental Management Program plans, including the HRPP, through the establishment of an EAC prior to construction.</p>	<p>The Agency understands that the Proponent would work with Indigenous groups and HRB to identify sites of significance with tangible and intangible value and develop appropriate mitigations. The Agency also understands that the Proponent would conduct mapping sessions with Indigenous groups to better understand Project effects to culturally important sites or harvesting areas, identify and map where areas or sites may be located, and develop additional mitigation or accommodation measures that may be considered to address potential adverse Project effects.</p>
M2	Berens River First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Interlake Reserves Tribal	Concerns that intangible Project effects such as loss of cultural connection to sites of physical and cultural heritage could occur and that users will lose	<p>The Proponent acknowledged that the Project would result in the permanent loss of traditional use sites and areas. The Proponent anticipated that Project effects would not critically reduce or eliminate the availability of and access to cultural sites and areas, and effects would be mitigated by the implementation of the proposed HRPP and adherence to Manitoba's <i>The</i></p>	<p>The Agency is of the view that residual effects to physical and cultural heritage, sites of significance, and traditional resources and areas of current use would adversely affect intangible aspects of cultural heritage – including the transmission of traditional language, oral history, and teachings between generations of Indigenous peoples. The</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Council, Little Saskatchewan First Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sandy Bay Ojibway First Nation	their cultural and spiritual connection with these areas.	<i>Heritage Resources Act</i> . The Proponent indicated intangible cultural heritage is addressed in the HRPP and that if there is a potential pathway of effect to a specific, identified site, whether tangible or intangible, the HRPP must include measures that address any site-specific issues.	Agency agrees with the Proponent's commitment to work with Indigenous groups and HRB to identify sites of significance with intangible value and develop appropriate mitigations.
M3	Interlake Reserves Tribal Council, Manitoba Métis Federation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns with the lack of involvement of Indigenous groups in development of the Heritage Resource Protection Plan, clarity requested regarding communication procedures with Indigenous groups regarding chance finds and effects to physical and cultural heritage.	The HRPP includes procedures for managing known heritage resources, heritage sensitive areas, and culturally important areas of the Project; procedures for chance find heritage resources; and additional procedures for specific chance find heritage resources including human remains, animal remains, artifacts, historic objects, features, and cultural use areas. The Proponent has proposed a new section to the HRPP to address the notification process if human remains or a regionally unique or important heritage resource is discovered, including notification of Indigenous groups once human remains are deemed non-forensic by the Royal Canadian Mounted Police and opportunities to conduct ceremony. The Proponent committed to provide heritage resource training for Indigenous groups to build capacity and capabilities to conduct heritage monitoring by the potentially most affected Indigenous	The Agency agrees with the Proponent's commitment to provide further opportunities to advance Indigenous content in the Environmental Management Program plans, including the HRPP. The Agency recognizes that the Proponent has developed additional procedures for human remains and regionally important heritage resources and has committed to providing heritage training to Indigenous group monitors to inform identification of heritage resources that may be found during construction activities. The Agency acknowledges that several Indigenous groups do not consider excavation an appropriate mitigation measure for effects to physical and cultural heritage and sites of significance. For heritage resources at the LMOC inlet, the Agency agrees with the Proponent's commitment to engage with Indigenous groups to determine and coordinate an Indigenous ceremony or other activity prior to fieldwork and involve Indigenous monitors in the heritage resource work.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>groups and to establish a pool of qualified heritage resource monitors.</p> <p>The Proponent indicated that, through the engagement and consultation process, they obtained information regarding tangible and intangible cultural heritage that contributed to the development of the Heritage Resource Impact Assessment and assisted in determining locations that had a higher potential to contain heritage resources. Through engagement with Indigenous groups, the Proponent has indicated additional locations where heritage surveys will be conducted to identify potential heritage resources and record and preserve heritage objects found.</p> <p>The Proponent committed to conducting mapping sessions with Indigenous groups to better understand Project effects to culturally important sites or harvesting areas, identify and map where areas or sites may be located, and develop additional mitigation or accommodation measures that may be considered to address potential adverse Project effects.</p>	<p>The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent include a description of the means of communication and notification procedures regarding the protection of culture and heritage resources and adaptive management strategies as part of the HRPP.</p>
N	Project in General			
N1	Assembly of Manitoba Chiefs, Berens River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Interlake Reserves Tribal	Concerns regarding the adequacy of assessment and consideration of feasible measures to mitigate effects of the project (e.g., eliminate, reduce,	<p>The Proponent indicated that information received from Indigenous groups has informed and influenced the Project design, Project planning, and mitigation planning processes.</p> <p>The Proponent committed to ongoing consultation and continued to engagement with Indigenous groups on mitigation and adaptive management measures. The</p>	<p>The Agency advised the Proponent that they submitted the information and studies requested by the Agency that are necessary to conduct the environmental assessment of the Project, and to prepare the Environmental Assessment EA Report under CEAA 2012 within the required timeline. The Agency recommends additional mitigation measures, for</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation	or control the adverse effects, and/or restitution for damage).	EAC has been formed for the Project to facilitate information sharing and for communities to provide advice or recommendations to the Proponent on the ongoing refinement and implementation of the Environmental Management Program. The Proponent anticipates that the EAC will provide opportunities for Indigenous groups to provide input on mitigation and adaptive management measures.	inclusion in the Minister's Decision Statement, to address gaps or uncertainty. Key mitigation measures identified by the Agency incorporate feedback received from the federal authorities, Indigenous groups, the public and members of the TAG. The Agency highlights the importance of continued meaningful consultation with Indigenous groups. The Agency recognizes outstanding concerns regarding the EAC and recommends, for inclusion in the Minister's Decision Statement, additional consultation on the terms and conditions with each Indigenous group.
0	Species at Risk			
O1	Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy	Concerns regarding effects assessments on the local populations for northern leopard frogs and snapping turtles. Clarify mitigation measures regarding critical lifecycle periods,	The Proponent is committed to completing pre-construction surveys for northern leopard frog and snapping turtles and has committed to the wetland offsetting program for the loss of Class III, IV, and V wetlands for northern leopard frog and snapping turtle overwintering and breeding habitats. The Proponent has determined that there is overwintering habitat for northern leopard frog near the LMOC inlet, there is potential for snapping turtles to be within the same area. The	The Agency is satisfied with the Proponent's assessment on northern leopard frog and snapping turtle and is of the view that the Proponent's proposed mitigation measures and required setback distances will adequately address potential project effects to these species. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent, in consultation with Indigenous groups and relevant authorities, develop a

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Bay Ojibway First Nation	avoidance periods and habitat fragmentation and potential pathways of mortality.	Proponent has provided a table of species-specific mitigation measures during construction and operations, which includes measures for both species such as avoiding vegetation clearing during certain time periods, hand clearing within 30 metres of a waterbody, and exclusionary fencing around open excavations near wetlands.	monitoring plan where habitat setback cannot be implemented.
O2	Dakota Tipi First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding lack of baseline data collected for species at risk and if baseline data information was incorporated into residual effects assessment. Clarify the mitigation measures in the Wildlife Monitoring Plan and Wetland Monitoring Plan during construction and operation phases.	The Proponent gathered baseline species at risk data and survey data was used to understand species occurrence and distribution relative to the Project's PDAs, not estimate population abundance and/or density, which is inferred from the provincial species rankings. Mitigation measures and restricted activity periods presented in the Wetland Monitoring Plan were derived using provincial guidance and species at risk literature where provincial guidance was lacking. Wildlife mitigation measures, including the timing of such measures, can be found in the Project Environmental Requirements and the Wildlife Monitoring Plan. The maximum setback distances presented in the Wildlife Monitoring Plan will be applied to wildlife features if encountered during construction and operation.	The Agency is of the view that the Proponent adequately characterized potential effects to species at risk and their habitat. The Agency is satisfied with the Proponent's proposed mitigation measures and required setback distances will adequately address potential project effects to these species.
P	Surface Water			
P1	Bloodvein First Nation, Brokenhead Ojibway Nation,	Concern that the Project would decrease surface water quality and	The Proponent provided baseline data for water quality from 1973 to 2021 for the LAA and Lake Manitoba. The Proponent stated that the Project operation is not	The Agency agrees with the Proponent that the Project would have minimal effects to surface water quality regarding nutrient concentrations.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, York Factory First Nation	increased nutrient loading. Concern regarding the characterization of baseline conditions.	expected to affect nutrient concentrations in the waterbodies. The Proponent has developed a Surface Water Management Plan and an Aquatic Effects Monitoring Plan to monitor surface water quality parameters during construction and operation of the Project. The management thresholds will adhere to the MWQSOG and CCME guidelines, including parameters such as nutrients, metals, and pH. The Proponent has committed to continue to provide Indigenous groups the opportunity to provide input on the Environmental Management Program through the EAC.	The Agency is of the view that the proposed mitigation measures and follow-up programs will adequately address project-related changes to surface water quality. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop a monitoring program, in consultation with Indigenous groups and relevant authorities, to monitor surface water quality during construction and operation of the Project to maintain baseline water quality conditions taking into account the CCME and MWQSOG water quality guidelines.
P2	Berens River First Nation, Dauphin River First Nation, First	Concerns regarding potential Project effects to watersheds (i.e.,	The Proponent evaluated that the updated effects to downstream water levels in Lake Winnipeg, Cross Lake, and Split Lake were less than originally anticipated in the	The Agency agrees with the Proponent's use of modeling to assess potential Project effects to hydraulic conditions in the LAA and RAA. The Agency

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nations in Treaty 2 Territory, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, York Factory First Nation	water levels, flow rates including the Lake St. Martin Narrows and downstream effects to Playgreen Lake, Cross Lake, Split Lake, and Nelson River) and ability to manage future floods.	<p>EIS and remained negligible. Operation of the Project is anticipated to increase the duration of time that water levels and volume flow are elevated in Lake Winnipeg. This is due to increased volume flow of water into Lake Winnipeg and longer retention of that additional water as it then flows downstream into the Nelson River. However, the Proponent estimated the effects as negligible.</p> <p>The Proponent considered the constricting effects of the Lake St. Martin Narrows in the hydrological modelling. The Proponent noted that the Project may increase velocities at the Lake St. Martin Narrows and that sediment movement would reach equilibrium.</p> <p>The Proponent has committed to finalizing a Surface Water Management Plan and Aquatics Effects Monitoring Plan which details mitigations, monitoring, and follow-up actions to verify the EA predictions. They have committed to work with Indigenous groups and facilitate information sharing to receive input on the Environmental Management Plans through the EAC in addition to the feedback received to date.</p> <p>The Proponent is of the view that the Project is adequate to manage future floods. The design flood for the Project captures a 1 in 300 year flood event, and the project was designed to withstand a 1 in 1,000 year flood event without the risk of failure of a major project component.</p>	<p>recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop a monitoring program, in consultation with Indigenous groups and relevant authorities, to monitor surface water quantity during construction and operation of the Project to verify EA predictions in the LAA, RAA with additional monitoring locations to address concerns such as Cross Lake and Split Lake.</p> <p>The Agency agrees with Environment and Climate Change Canada and is of the view that additional data collection to validate the hydrological model, including at the Lake St. Martin Narrows, is necessary to validate EA predictions and inform the need for additional contingency measures.</p> <p>The Agency recognizes that the LMOC and LSMOC are designed to accommodate a design flood event, and that the outlet channels can accommodate a 1 in 1,000 year flood without risk of failure of major Project components including WCS – but with a decreased safety factor against erosion. The Agency is of the view that the Project is designed to manage the design flood volume, however the Agency recognizes that outstanding concerns may remain regarding residual flooding of reserves lands on Lake St. Martin.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
P3	Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation	Concerns regarding unpredictable ice formation and breakup, thinner lake ice covers, ice jamming and frazil ice due to project activities.	<p>The Proponent expected that the Project would result in reduced flows and lake levels which would reduce the risk of ice jamming and flooding in the Fairford and Dauphin rivers. The Proponent stated that ice thicknesses in Lake St. Martin should not change, even during operation for a repeat of a 2011 flood event.</p> <p>The risk of ice jamming, frazil ice accumulation, and hanging ice dam formation within the outlet channels during winter operation would be mitigated through the implementation of operational measures per The Lake Manitoba and Lake St. Martin Water Control Structures Operating Guidelines. Winter flow releases and monitoring of ice conditions within the channel would promote formation of a stable ice cover and avoid mechanical ice break-up.</p> <p>The Proponent indicated that the Ice Management Plan would be finalized prior to construction and committed to providing opportunity for Indigenous groups to provide input on the Environmental Management Plans through the EAC.</p>	<p>The Agency accepts the Proponent's response and is of the view that the proposed mitigation measures and follow-up programs will adequately address potential effects to ice and ice processes. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop a monitoring program, in consultation with Indigenous groups and relevant authorities, to monitor surface water quantity, including effects to ice and ice processes, during construction and operation of the Project to verify EA predictions.</p> <p>To address concerns of Project operation during winter months and potential effects to current use, the Agency recommends, for inclusion in the Minister's Decision Statement, additional mitigation measures including a description of the safety protocols, as determined in consultation with Indigenous groups, and notification needed for Indigenous groups when WCS gates would be open during frozen conditions for potential risks associated with ice jamming and ice depth changes.</p>
P4	Berens River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First	Concerns related to increased erosion, and sediment and the accuracy of the sediment modelling and predicted potential effects.	<p>The Proponent has committed to armouring the LMOC and LSMOC to address potential long-term sediment mobilization in the outlet channels due to till softening.</p> <p>The Proponent identified that the sediments mobilized during commissioning would be the only project-related source of sediments and provided sediment mass balance modeling of the</p>	<p>The Agency is of the view that technically and economically feasible measures to reduce the amount of sediment and prevent adverse effects to surface water quality, fish and fish habitat, current use, and health and socio-economic conditions are available. Therefore, the Agency recommends, for inclusion in the Minister's Decision Statement, additional mitigation measures be implemented to</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation		<p>system between Lake Manitoba and Lake Winnipeg (Sturgeon Bay) to characterize Project effects. The modelling included analyzing wind effects on the sediment plume during commissioning and total suspended solids concentrations in response to a controlled gate opening sequence.</p> <p>The Proponent will finalize a Sediment Management Plan, Surface Water Management Plan, and Aquatic Effects Monitoring Plan that outline sediment mitigation measures, monitoring, and follow-up programs to meet the MWQSOG and CCME water quality guidelines and management thresholds. Where monitoring indicates an exceedance of the water quality guidelines or management thresholds, additional mitigation measures will be implemented as outlined in the Sediment Management Plan, Surface Water Management Plan, and Aquatic Effects Monitoring Plan.</p>	reduce the volume of sediment available for mobilization prior to commissioning and during subsequent opening of the WCS gates. The Agency recommends that a follow-up and monitoring program be developed in consultation with relevant authorities and Indigenous groups prior to construction.
P5	Berens River First Nation, Black River First Nation, Bloodvein First Nation, Dakota Tipi First Nation, Dauphin River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree	Concern related to the proposed mitigation measures, and details of the Aquatic Environmental Monitoring Plan, Surface Water Monitoring and Management Plan, and Environmental	The Proponent indicated that information received from Indigenous groups has informed and influenced the Project design, Project planning, and mitigation planning processes. Through the Information Request process, the Proponent refined design features based on comments from Indigenous groups, such as armoring of the outlet channels and the change of elevation to the LSMOC to account for the head loss due to the Lake St. Martin Narrows. The	The Agency understands that the Proponent incorporated information received from Indigenous groups into project planning and mitigation planning processes. However, the Agency acknowledges that outstanding concerns exist regarding the lack of meaningful incorporation of Indigenous Knowledge. The Agency recommends, for inclusion in the Minister's Decision Statement, key mitigation measures, follow-up and monitoring programs be developed in

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, Tataskweyak Cree Nation, York Factory First Nation	Management plans, including a lack of traditional knowledge consideration. Request to involve Indigenous groups in operation guidelines development, and monitoring and follow-up activities.	Proponent has committed to finalizing the Aquatic Environmental Monitoring Plan, Surface Water Management Plan, and Sediment Management Plan and provide opportunities for Indigenous groups to provide input through the EAC.	consultation with relevant authorities and Indigenous groups prior to construction. The Agency also recommends, for inclusion in the Minister's Decision Statement, the Proponent include Indigenous monitors in the implementation of follow-up programs related to surface water, groundwater, and fish and fish habitat. The Agency acknowledges that the Proponent developed the EAC as a mechanism for ongoing engagement. However, the Agency understands that Indigenous groups have raised and continue to raise concerns about the structure, function, transparency, and decision-making authority of the EAC. Therefore, the Agency recommends, for inclusion in the Minister's Decision Statement, as a part of the EAC, that the Proponent revisit the terms of reference in consultation with each Indigenous group and modify it based on any input received, ensure adequate support is provided to enable participation, offer opportunities for Indigenous groups to lead sessions, and submit quarterly reports to the Agency and Indigenous groups with the recommendations that come out of the EAC and with the Proponent's response regarding the implementation of such recommendations.
Q	Terrestrial			

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
Q1	Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake Manitoba First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Misipawistik Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding the lack of detail related to Project effects on critical lifecycle periods, active dens or burrows, and disruption to nesting birds and other wildlife. Request that the Proponent provide additional information regarding setback distances for known sensitive habitats and avoidance, with ecological equivalency of habitat loss and offset locations.	The Proponent committed to a detailed Wildlife Monitoring Program during the permitting phase, in consultation with federal and provincial authorities and Indigenous groups. Measures to protect active mammal burrows, dens, and nests include applying species-specific setbacks during species-specific avoidance periods if encountered prior to or during construction. The Proponent stated that for all Project phases, two types of avoidance periods will be applied: proactive/known activity windows with set restrictions (e.g., no clearing between April 1 – August 30, excavating wetlands during frozen conditions) and reactive measures for features currently known or identified in the future (e.g., setback restrictions, no blasting within close proximity to known sensitive wildlife habitat during critical lifecycle periods), along with periodic channel maintenance (mowing).	The Agency is of the view that the Project is not likely to cause significant adverse effects to migratory birds, species at risk and culturally important species, after taking into account the proposed key mitigation measures and follow-up measures to be included in the conditions of approval. The Agency is of the view that habitat loss would result in alterations to wildlife movement and reductions in wildlife abundance, but not at the population level.
Q2	Dakota Tipi First Nation, Dauphin River First Nation, First Nations in Treaty 2 Territory, Fisher River Cree Nation, Hollow Water First	Concerns regarding the Proponent's collection of baseline information, assessment of Project effects to wildlife habitat,	The Proponent completed field studies to assess the effects to culturally significant species, migratory birds and species at risk to assess the presence and distribution of wildlife within the PDAs, LAAs, RAA and temporary workspaces and camps to inform the environmental assessment for the Project. The Proponent also completed species-	The Agency is of the view that the Proponent adequately characterized potential effects to wildlife habitat, mortality, and movement and is satisfied with the Proponent's selection of spatial boundaries for the assessment of Project effects to species at risk and is of the view that the spatial boundaries selected are sufficient to characterize the anticipated

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	<p>Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>mortality, and movement (i.e., spoil piles, distribution line) including the selection of spatial boundaries, and implementation of mitigation and offsetting measures.</p> <p>Request that the Proponent incorporate Indigenous knowledge in mitigation, monitoring, and follow-up programs.</p>	<p>specific plans for the species at risk (Red-headed Woodpecker and Eastern Whip-poor-will). Other wildlife mitigation measures, including restricted activity periods and maximum setback distances, to address potential effects during all phases of the Project are presented in Project Environmental Requirements, Wildlife Monitoring Plan, and a summary table for Species at Risk, Migratory Birds and Species of Cultural Importance which considers wildlife movement, habitat use and habitat quality.</p> <p>The Proponent was of the view that the spatial boundaries selected for the assessment of effects to wildlife are appropriate to accurately characterize the anticipated extent of project-related effects to species at risk, based on the predicted extent of Project effects and the known distribution of the wildlife. The Proponent identified the LAA one kilometre buffer around the PDA to be representative of the spatial distribution of native vegetation communities and capture measurable effects to migratory birds, moose, and vegetation. The RAA includes the PDA and LAA with a 12-kilometre buffer on either side of the PDA to capture effects to landscape diversity and wetland functions, contributing sub-watersheds and contributions to cumulative effects.</p> <p>The Proponent committed to developing a Wildlife Monitoring Plan and Revegetation Management Plan, prior to construction and in consultation with Indigenous groups and relevant authorities, to monitor</p>	<p>extent of Project effects to species at risk for the purpose of the environmental assessment.</p> <p>The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent conduct pre-construction surveys to confirm the distribution and presence of migratory birds, species at risk and culturally important species within the PDAs. The Proponent will use the results of these surveys to verify the environmental assessment, verify whether existing mitigation measures will adequately address potential effects and inform the need for adaptive management.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			for the presence of wildlife and vegetation in the PDAs and adaptively manage Project effects.	
Q3	Black River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Pinaymootang First Nation	Concern regarding exemption from licensing requirements under the provincial <i>The Water Rights Act</i> , including the criteria for wetlands that require compensation.	<p>The Proponent stated that <i>The Water Rights Act</i> establishes a requirement for a provincial license to control water or construct and operate water control works and establishes a licensing requirement for compensation or offsetting to mitigate loss and/or alteration of Class III wetlands.</p> <p>The Proponent indicated that the Project is exempt from providing offsetting under <i>The Water Rights Act</i> and is voluntarily following the intent of <i>The Water Rights Act</i> and <i>The Peatland Stewardship Act</i> requirements by providing offsetting for the loss or alteration of 239 hectares of Class III, IV, and V wetlands that are directly affected by the proposed Project. In addition, 769 hectares of other peatlands will be directly affected by the proposed Project and peatland offsetting would be included as a mitigation measure.</p> <p>Depending on the outcome of the Wetland Monitoring Plan, additional no-net-loss offsetting may be provided for wetlands that are demonstrated to be affected by the proposed Project (where effective mitigation cannot be applied). The Proponent committed to developing and implementing the Wetland Monitoring Plan and Wetland offsetting program to monitor and adaptively manage Project effects to wetlands, in consultation with Indigenous groups and relevant authorities.</p>	The Agency understands that the Proponent will be required to comply with the provincial legislation for compensation or offsetting of wetlands under <i>The Water Rights Act</i> and <i>The Peatland Stewardship Act</i> . and agrees with the Proponent's commitment to implement a Wetland Monitoring Plan and voluntarily commit to a Wetland Offsetting program to include Class III, IV and IV wetlands along with other peatlands.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
Q4	Fisher River Cree Nation	Concerns regarding the potential contamination of water bodies and adjacent wetlands from use of fertilizers (i.e., phosphorus, glyphosate, and other fertilizers and herbicides) when re-establishing vegetation along the outlet channels after construction.	The Proponent indicated that the Revegetation Management Plan includes measures for preventing and managing weeds along the LMOC and LSMOC. Weed control will follow integrated approaches that include mechanical treatment where feasible, and hand clearing will occur along shorelines. Chemical vegetation control will only be used for weed control/suppression, and not as a method of clearing. Where chemical control is used, the least toxic, least persistent and most target-specific pesticides, options for pesticides are listed in the Surface Water Management Plan, a list of monitoring parameters include glyphosate, 2,4-D, MCPA, and dicamba, which are all common herbicides with applicable water quality guidelines.	The Agency is of the view that the Proponent's proposed mitigation and monitoring measures would minimize potential Project effects, due to the use of fertilizers and herbicides for revegetation along the outlet channels after construction.
Q5	Brokenhead Ojibway Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Little Saskatchewan First Nation, Norway House Cree Nation, Peguis First Nation, Pimicikamak Okimawin, Pinaymootang First Nation,	Concerns regarding the scope and adequacy of the wetlands and riparian effects assessment and wetland monitoring programs. Request that the Proponent incorporate Indigenous knowledge during monitoring, and follow-up programs.	The Proponent is committed to ongoing consultation and engagement throughout the development of the Wetland Monitoring Plan and Wetland Compensation Plan. The Proponent completed wetland surveys as per the Wetland Monitoring Plan and included the collection of abundance and distribution data on plant species of interest to Indigenous groups. Collected field data will further support mitigation of plant species at risk, plants of interest to Indigenous groups, and wetlands, and support evaluation of the refined wetland function assessment. Wetland characteristics, including water presence, extent and flow, signs of wildlife	The Agency recognizes that the Project may result in residual adverse effects to wetlands and riparian habitats and may disrupt wetland characteristics, including water presence, extent and flow, signs of wildlife use, and habitat features. The Agency agrees with the Proponent's commitment to monitor project effects to wetlands and wetland functions through the Wetland Monitoring Plan and additionally recommends, for inclusion in the Minister's Decision Statement, that the Proponent, in consultation with Indigenous groups and relevant authorities, create follow-up and monitoring programs for all wetland dependent migratory birds and species at risk.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
	Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation, York Factory First Nation		use, and habitat features will be evaluated for each targeted wetland. The Wetland Monitoring Plan will monitor for changes in wetland function in terms of surface water flow/quality, groundwater interchange/hydraulics, wetland class, vegetative cover, presence of bird and amphibian species at risk, and use by Indigenous groups.	
Q6	Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Sagkeeng Anicinabe First Nation	Concerns regarding the accuracy of the total amount of Class II, III, IV, and V wetlands identified as affected by the Project. Clarity requested on whether these totals include consideration of all Project infrastructure.	The Proponent would voluntarily provide offsetting by incorporating compensation for Class III, IV and V wetland habitat which addresses wetland sites that are directly affected by the Project and cannot be fully mitigated. This consists of a total of 1,008 hectares, comprised of 239 hectares for Class III, IV, V wetlands (199.1, 39.6, and 0.8 hectares respectively), plus 769 hectares for peatlands (comprised of bogs, fens, and swamps). For wetlands that are receiving offsetting consistent with <i>The Water Rights Act</i> , the ratio of offsetting will depend on whether the Class III, IV, or V wetland directly affected by the Project is being restored, enlarged (2:1 ratio), enhanced or receiving permanent protection (3:1 ratio). In addition, peatland offsetting will be applied at a 3:1 ratio. The Proponent noted that Class II wetlands (73.4 hectares) were not included in the offsetting ratio due to their highly ephemeral nature. Use of Class II wetlands by species at risk and migratory birds can be highly variable, with greater potential for occupancy during wet years and lower potential during normal to dry	The Agency is satisfied with the Proponent's response, while the Project will result in the loss of or changes to wetlands, they will voluntarily commit to wetland offsetting which includes Class III, IV and IV wetlands along with other peatlands and agrees with the Proponent's commitment to continue engagement activities with Indigenous groups for the life of the Project.

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			<p>years. As such, mitigation or offsetting of potential effects to ephemeral Class I and temporary Class II wetlands are not being provided or being offered as an accommodation.</p> <p>The Proponent committed to developing and implementing the Wetland Monitoring Plan and Wetland offsetting program to monitor and adaptively manage Project effects to wetlands, in consultation with Indigenous groups and relevant authorities.</p>	
Q7	<p>Berens River First Nation, Bloodvein First Nation, Fisher River Cree Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Little Saskatchewan First Nation, Norway House Cree Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>Concerns that waterbodies including wetlands along the Project route could be affected by hydrological changes (i.e., dewatered, potentially destroying viable and diverse ecosystems). The Project may exacerbate existing issues related to shoreline erosion and vegetation changes on the shores of Lake St. Martin and Lake Winnipeg.</p>	<p>The Proponent stated that wetland offsetting will mitigate project-related changes to the quantity, quality and availability of plant resources and will offset the loss of wetland habitats having potential to support upland game birds, waterfowl, furbearers, moose, and other wildlife resources used by Indigenous groups. The Proponent also stated that a considerable majority of incremental effects caused by the Project to Lake St. Martin and Lake Winnipeg. Shorelines would be positive due to reduction of floodwater elevation.</p> <p>The Proponent will compensate and/or offset for wetland loss according to <i>The Water Rights Act</i>. The Proponent also committed to involving Indigenous groups in monitoring and revegetation.</p>	<p>The Agency acknowledges that the Project will result in loss of or changes to wetlands and shorelines in the PDAs and LAAs and may result in adverse effects to current use activities and the quality of experience of Indigenous groups and impacts to rights.</p> <p>The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous groups, with respect to the Revegetation Management Plan, Wildlife Monitoring Plan and Wetland Monitoring Plan.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
Q8	<p>Fisher River Cree Nation, Interlake Reserves Tribal Council, Kinonjeoshtegon First Nation, Lake St. Martin First Nation, Little Saskatchewan First Nation, Manitoba Métis Federation, Misipawistik Cree Nation, Norway House Cree Nation, Peguis First Nation, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation</p>	<p>Request for clarity on the baseline assessment of plant species in determining thresholds and the significance of effects to plant species and communities.</p> <p>Request that the Proponent prioritize the Revegetation Management Plan with active restoration and rehabilitation and incorporate Indigenous knowledge during revegetation, mitigation, monitoring, and follow-up programs.</p>	<p>The Proponent committed to have a detailed Revegetation Management Plan and selection of native species, in consultation with federal and provincial authorities and Indigenous groups. The plan will incorporate lessons learned from the Emergency Outlet Channel for reclamation suitability and how organic soils were handled including the planned mixing of the organic and mineral soil layers to support revegetation, and the phasing of revegetation works to minimize the duration of exposure of excavated soils and hasten active revegetation.</p> <p>Disturbed lands will be seeded and/or planted in accordance with the Revegetation Management Plan, which identifies locations and methods for restoration of vegetation cover in disturbed areas. The Proponent stated that the direct and indirect loss of habitat for plant species of concern and harvested species is relatively small compared to the remaining habitat available in the RAA. Residual effects to wildlife, fish and plant species will not pose a threat to the long-term persistence and viability of species in the RAA.</p> <p>The total estimated area of effects with mitigation (the entire length of each side of the channel) will be a distance of 500 metres perpendicular to the channels (total affected area of 2,400 hectares). Given that the effects of the unmitigated Emergency Outlet Channel were commonly found within 300 metres of the channel, the proponent stated that the 500</p>	<p>The Agency acknowledges that the Project will result in the loss of or change to vegetation and plant species in the PDAs and LAA. The Agency agrees with the Proponent's commitment to monitor project effects to vegetation through the Revegetation Management Plan.</p> <p>The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent engage with Indigenous groups regarding the selection of plant species included in native seed mixes, shrubs and plants to be used to revegetate the PDA.</p>

#	Indigenous Group	Comment or Concern	Summary of Proponent's Response	Agency Response
			metres area of effect is likely an overestimation. Effects to the abundance of plants of importance to Indigenous groups will likely be greatest within 100 metres of the channel but could extend to 600 metres.	
Q9	Dauphin River First Nation, Fisher River Cree Nation, Hollow Water First Nation, Interlake Reserves Tribal Council, Lake St. Martin First Nation, Manitoba Métis Federation, Pimicikamak Okimawin, Pinaymootang First Nation, Poplar River First Nation, Sagkeeng Anicinabe First Nation, Sandy Bay Ojibway First Nation	Concerns regarding potential effects of fluctuating water levels on wildlife species within riparian habitats. Request the Proponent implement a more detailed monitoring and follow-up program to assess these measures.	While the Project may result in adverse effects to wildlife habitat and mortality, the Proponent stated that increased water levels and velocities in the outlet channels are not expected to affect local movements or populations of wildlife. Therefore, a measurable change in the abundance and distribution of wildlife in the LAA is possible, but a measurable change in the RAA is unlikely. The Proponent concluded that residual effects to wildlife would not be significant. The Proponent committed to Wildlife Monitoring Plan, with additional mitigations for wildlife movement across the PDA such as wildlife crossings and spoil pile breaks, and Revegetation Management Plan to conduct follow-up and monitoring in consultation with Indigenous groups and relevant authorities.	The Agency is satisfied with the Proponent's assessment on culturally important wildlife species, migratory birds and species at risk and is of the view that the Proponent's proposed mitigation measures and required setback distances will adequately address potential project effects to wildlife.

Appendix D: Species at Risk, Migratory Birds, and Species of Cultural Importance Setbacks and Mitigation Measures

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
Mammals (7+)							
American Badger ^a	<i>Taxidea taxus</i>	Year-round	100	500	500	No clearing between April 1-August 31	Delayed channel haying/mowing until after July 15
						Revegetation of outlet channels to grassland community during construction	Revegetation of outlet channels to grassland community
						Buffers/setbacks will be applied to active dens	Buffers/setbacks will be applied to active dens
Moose	<i>Alces alces</i>	N/A	N/A	N/A	N/A	Access restrictions (gates, signage, fencing)	Access restrictions (gates, signage, fencing)
						Reduced speed limits	Reduced speed limits
						Cover plantings along edges of PDAs to reduce line of sight	Cover plantings along edges of PDAs to reduce line of sight
						Breaks in spoil piles and shallow (4:1) maximum grade on vegetated dike and	Breaks in spoil piles and shallow (4:1) maximum grade on vegetated dike and

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						spoil pile slopes to facilitate movement	spoil pile slopes to facilitate movement
						Small-diameter rock armouring along channel slopes to facilitate movement	Small-diameter rock armouring along channel slopes to facilitate movement
Black Bear ^b	<i>Ursus americanus</i>	Year-round	150	150	150	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Buffers/setbacks will be applied to active dens	Buffers/setbacks will be applied to active dens
Little brown bat ^{a,c} Northern bat ^{a,c}	<i>Myotis lucifugus</i> <i>Myotis septentrionalis</i>	May 1 – Aug 31	100	500	500	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						If active bat maternity roost identified adjacent to PDA a 500 metres (1,640 feet) activity restriction buffer will be applied to protect from noise and activity disturbance	If active bat maternity roost identified adjacent to PDA a 500 metres (1,640 feet) activity restriction buffer will be applied to protect from noise and activity disturbance
						If tree clearing is required during the maternity roosting period, a qualified biologist will review the trees to determine the	If tree clearing is required during the maternity roosting period, a qualified biologist will review the trees to determine the

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						likelihood of occupancy before removal	likelihood of occupancy before removal
						Buffers/setbacks will be applied to active maternity roosting sites	Buffers/setbacks will be applied to active maternity roosting sites
Denning furbearers of importance to Indigenous groups (e.g., red fox, gray wolf, coyote, American marten, fisher, least weasel)	N/A	Year-round	50	50	50	No clearing between April 1-August 31	Delayed channel haying/mowing until after July 15 during operation and maintenance
						Buffers/setbacks will be applied to active dens	Buffers/setbacks will be applied to active dens
Terrestrial furbearers (e.g., American marten, fisher)	N/A	N/A	N/A	N/A	N/A	Access restrictions (gates, signage, fencing)	Access restrictions (gates, signage, fencing)
Semi-aquatic furbearers	N/A	N/A	N/A	N/A	N/A	Access restrictions (gates, signage, fencing)	Access restrictions (gates, signage, fencing)

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
(e.g., beaver, muskrat)						Breaks in spoil piles and shallow (4:1) maximum grade on vegetated dike and spoil pile slopes to facilitate movement	Breaks in spoil piles and shallow (4:1) maximum grade on vegetated dike and spoil pile slopes to facilitate movement
						Small-diameter rock armouring along channel slopes to facilitate movement	Small-diameter rock armouring along channel slopes to facilitate movement
Migratory Birds (22+)							
Pileated Woodpecker	<i>Dyrocopus pileatus</i>	N/A	N/A	N/A	N/A	Monitor designated period (36 months) before confirmed inactive nests can be disturbed, damaged, removed, or destroyed; or request Environment and Climate Change Canada's permit	Monitor designated period (36 months) before confirmed inactive nests can be disturbed, damaged, removed, or destroyed; or request Environment and Climate Change Canada's permit
Great blue heron	<i>Adrea herodias</i>	Apr 1 – Aug 31	400	500	750	Monitor designated period (24 months) before confirmed inactive nests can be disturbed, damaged, removed, or destroyed; or request Environment and Climate Change Canada's permit	Monitor designated period (24 months) before confirmed inactive nests can be disturbed, damaged, removed, or destroyed; or request Environment and Climate Change Canada's permit

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						Quarry site selection will consider environmentally sensitive sites	Quarry site selection will consider environmentally sensitive sites
						Buffers/setbacks will be applied to great blue heron rookeries	Buffers/setbacks will be applied to great blue heron rookeries
Bank swallow	<i>Riparia riparia</i>	May 15 – Jul 31	50	150	300	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Existing quarries that have been inactive and become active during the migratory bird breeding season (April 1 - August 31) will be investigated for the presence of migratory bird nests (e.g., swallow colonies) prior to quarry reactivation	Existing quarries that have been inactive and become active during the migratory bird breeding season (April 1- August 31) will be investigated for the presence of migratory bird nests (e.g., swallow colonies) prior to quarry reactivation
						Sand/gravel/soil/aggregate piles in active quarries will be contoured prior to and during the breeding bird season (April 1-August 31) to have a slope of less than 60 degrees	Sand/gravel/soil/aggregate piles in active quarries will be contoured prior to and during the breeding bird season (April 1-August 31) to have a slope of less than 60 degrees

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
Barn swallow	<i>Hirundo rustica</i>	May 15 – Sep 30	50	50	300	No clearing between April 1-August 31	No clearing between April 1-August 31
						Revegetation of outlet channels to grassland community during construction	Revegetation of outlet channels to grassland community during construction
						Machinery will be parked in active areas and infrastructure will be monitored during the breeding bird season (April 1 – August 31); bird deterrents will be applied if necessary	If maintenance staff identify issue with barn swallow nesting on ancillary buildings, mitigation will be applied e.g., nest removal outside of nesting window, keep doors and windows closed and repairing cracks and holes Exclusionary netting will be applied if necessary to keep birds from nesting in work areas
Bobolink	<i>Dolichonyx oryzivorus</i>	May 15 – Aug 15	100	250	400	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Revegetation of outlet channels to grassland community during construction	Delayed channel haying/mowing until after July 15

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
Canada warbler	<i>Cardellina canadensis</i>	May 1 – Jul 31	200	300	450	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Common nighthawk	<i>Chordeiles minor</i>	May 1 – Aug 31	100	200	500	Existing sites that have been inactive and become active during the migratory bird breeding season (April 1- August 31) will be investigated for the presence of migratory bird nests (e.g., common nighthawk nests) prior to quarry reactivation	Existing sites that have been inactive and become active during the migratory bird breeding season (April 1- August 31) will be investigated for the presence of migratory bird nests (e.g., common nighthawk nests) prior to quarry reactivation
						Reduced speed limits	Reduced speed limits
Eastern whip-poor-will	<i>Anthrostromas vociferous</i>	May 15 – Jul 16	100	200	500	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
							Delayed channel haying/mowing until after July 15
						Shrub plantings along edges of LMOC; shrub and tree plantings along edges of LSMOC	Shrub plantings along edges of LMOC; shrub and tree plantings along edges of LSMOC
						Quarry site selection will consider	Quarry site selection will consider

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						environmentally sensitive sites	environmentally sensitive sites
Eastern wood-pewee	<i>Contopus virens</i>	May 15 – Aug 15	50	150	300	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Golden-winged warbler	<i>Vermivora chrysoptera</i>	May 15 – Aug 6	200	300	450	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Shrub plantings along edges of LMOC; shrub and tree plantings along edges of LSMOC	Shrub plantings along edges of LMOC; shrub and tree plantings along edges of LSMOC
Horned grebe	<i>Podiceps auritus</i>	May 1 – Sep 15	100	200	400	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Offsetting for loss or alteration of directly impacted Class IV and V wetlands	Offsetting for loss or alteration of directly impacted Class IV and V wetlands
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
Least bittern	<i>Ixobrychus exilis</i>	May 1 – Jul 31	100	200	400	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Offsetting for loss or alteration of directly	Offsetting for loss or alteration of directly

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						impacted Class IV and V wetlands	impacted Class IV and V wetlands
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
Olive-sided flycatcher	<i>Contopus cooperi</i>	May 1 – Aug 31	50	150	300	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Apr 15 – Aug 15	50	100	200	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Obtain <i>Species at Risk Act</i> permit for removal and relocation of red-headed woodpecker nest trees (trees with nest cavity)	Obtain <i>Species at Risk Act</i> permit for removal and relocation of red-headed woodpecker nest trees (trees with nest cavity)
						Shrub plantings along edges of LMOC during construction	Shrub plantings along edges of LMOC during construction
						Installation of snags and/or nest boxes along edges of LMOC during construction	Installation of snags and/or nest boxes along edges of LMOC during construction

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						Quarry site selection will consider environmentally sensitive sites	Quarry site selection will consider environmentally sensitive sites
Trumpeter swan	<i>Cygnus buccinator</i>	Apr 1 – Jul 31	500	750	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
						Offsetting for loss or alteration of directly impacted Class IV and V wetlands	Offsetting for loss or alteration of directly impacted Class III and IV wetlands
Yellow rail	<i>Coturnicops noveboracensis</i>	May 1 – Jul 15	100	150	350	No clearing between April 1-August 31	Hand clearing within 30 metres (98 feet) of a waterbody
						Hand clearing within 30 metres (98 feet) of a waterbody	
						Offsetting for loss or alteration of directly impacted Class III and IV wetlands	Offsetting for loss or alteration of directly impacted Class III and IV wetlands
Osprey	<i>Pandion haliaetus</i>	May 1 – Aug 15	500	1000	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Gulls/terns	N/A	May 1 – Jul 15	400	500	750	Offsetting for loss or alteration of directly	Offsetting for loss or alteration of directly

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						impacted Class III, IV and V wetlands	impacted Class III, IV and V wetlands
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
Double-crested cormorant	<i>Phalacrocorax auritus</i>	Apr 1 – Aug 31	400	500	750	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
American white pelican	<i>Pelecanus erythrorhynchos</i>	Apr 1 – Aug 31	500	750	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Bald eagle	<i>Haliaeetus Leucocephalus</i>	Mar 15 – Jul 15	250	500	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Piping Plover	<i>Charadrius melodus</i>	Apr 15 – Aug 15	200	400	600	Does not include metrics for piping plover due to lack of Project interaction (Project EIS Volume 3, Section 8.3.6.2; see also IAAC-R1-46)	
Non-Migratory Birds (10)							
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	Mar 15 – May 15	200	500	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Shrub plantings along edges of outlet channels during construction	Delayed channel haying/mowing until after July 15 during operation and maintenance

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
							Shrub plantings along edges of outlet channels
Great gray owl	<i>Strix nebulosa</i>	Feb 15 – Jul 15	250	500	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Revegetation of outlet channels to grassland community during construction	Revegetation of outlet channels to grassland community
Northern hawk owl	<i>Surnia ulula</i>	Feb 15 – Jul 16	250	500	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Boreal Owl	<i>Aegolius funereus</i>	Mar 1 – Jul 15	250	500	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Pied-billed grebe	<i>Podilymbus podiceps</i>	May 15 – Jul 15	100	200	400	Offsetting for loss or alteration of directly impacted Class III, IV and V wetlands	Offsetting for loss or alteration of directly impacted Class III, IV and V wetlands
Western grebe	<i>Aechmophorus occidentalis</i>					Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	Apr 1 – Aug 31	400	500	750	Offsetting for loss or alteration of directly impacted Class III, IV and V wetlands	Offsetting for loss or alteration of directly impacted Class III, IV and V wetlands

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
Barred owl	<i>Strix valia</i>	Mar 15 – Jul 15	250	500	1000	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
Rusty blackbird	<i>Euphagus carolinus</i>	May 1 – Jul 31	50	150	300	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
Short-eared owl	<i>Asio flammeus</i>	Apr 15 – Sep 15	200	300	500	No clearing between April 1-August 31	Delayed channel haying/mowing until after July 15
						Revegetation of outlet channels to grassland community during construction	Revegetation of outlet channels to grassland community
Amphibians and Reptiles (3)							
Red-sided garter snake ^b	<i>Thamnophis sirtalis</i>	Year-round	200	200	200	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Revegetation of outlet channels to grassland community during construction	Revegetation of outlet channels to grassland community

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						Quarry site selection will consider environmentally sensitive sites	Quarry site selection will consider environmentally sensitive sites
Northern leopard frog ^a	<i>Lithobates pipeins</i>	Year-round	10	200	500	No clearing between April 1-August 31	Delayed channel haying/mowing until after July 15
						Excavation within wetlands will be completed during dry or frozen conditions whenever feasible	
						Exclusionary fencing will be installed around open excavations near wetlands when and where there is potential for entrapment of amphibians or other wildlife species, or as directed by the Contract Administrator	
						Revegetation of outlet channels to grassland community during construction	Revegetation of outlet channels to grassland community during construction
						Hand clearing within 30 metres (98 feet) of a waterbody	No woody vegetation management between April 1-August 31

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						Breaks in spoil piles and shallow (4:1) maximum grade on vegetated dike and spoil pile slopes to facilitate movement	Breaks in spoil piles and shallow (4:1) maximum grade on vegetated dike and spoil pile slopes to facilitate movement
						Small-diameter rock armouring along channel slopes to facilitate movement	Small-diameter rock armouring along channel slopes to facilitate movement
						Offsetting for loss or alteration of directly impacted Class III, IV and V wetlands	Offsetting for loss or alteration of directly impacted Class III and IV wetlands
Snapping turtle ^{3,a}	<i>Chelydra serpentina</i>	Mar 15 - Jun 30	0	400	400	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Reduced speed limits	Reduced speed limits
						Exclusionary fencing will be installed around open excavations near wetlands when and where there is potential for entrapment of amphibians, turtles, or other wildlife species, or as directed by the Contract Administrator	

Common Name	Scientific Name	Restricted Activity Period	Recommended Setback Period by Disturbance Level (square metres)			Species-Specific Mitigation	
			Low	Medium	High	Construction	Operation and Maintenance
						Hand clearing within 30 metres (98 feet) of a waterbody	Hand clearing within 30 metres (98 feet) of a waterbody
						Buffers/setbacks will be applied to nesting habitat	Buffers/setbacks will be applied to nesting habitat
Bat Cave	N/A	Year-round	200	200	200	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						No quarry development near bat caves	No quarry development near bat caves
Mineral Lick	N/A	Year-round	120	120	120	No clearing between April 1-August 31	No woody vegetation management between April 1-August 31
						Quarry site selection will consider environmentally sensitive sites	Quarry site selection will consider environmentally sensitive sites
						Buffers/setbacks will be applied to mineral licks	Buffers/setbacks will be applied to mineral licks

Notes:

1. Recommended setback distances and restricted activity periods are derived from Manitoba Conservation Data Centre (2021) *Recommended Development Setback Distances and Restricted Activity Periods for Birds by Wildlife Feature Type*, retrieved

February 8, 2024 from <https://www.gov.mb.ca/nrnd/fish-wildlife/cdc/pubs/mbcdc-bird-setbacks-nov2021.pdf>, unless otherwise specified (see a-e below):

a – Saskatchewan Ministry of Environment, Fish, Wildlife and Lands Branch. (2017). *Saskatchewan Activity Restriction Guidelines for Sensitive Species*. Retrieved February 8, 2024 from https://pubsaskdev.blob.core.windows.net/pubsask-prod/89554/89554-Saskatchewan_Activity_Restriction_Guidelines_for_Sensitive_Species_-_April_2017.pdf

b – Manitoba Hydro. (2019). *Manitoba-Minnesota Transmission Project Construction Environmental Protection Plan*. Retrieved February 8, 2024 from https://www.hydro.mb.ca/docs/projects/mmtpepp_construction_environmental_protection_plan.pdf

c – Core maternity roost period for bats as defined by Fenton, M.B., and R.M.R. Barclay. (1980). *Myotis lucifugus*. Mammalian Species, Issue 142, pp. 1-8, <https://doi.org/10.2307/3503792>; Barclay, R.M. (1982). *Night roosting behavior of the little brown bat, Myotis lucifugus*. Journal of Mammalogy 63(3), pp. 464-47, <https://doi.org/10.2307/1380444>; and Barclay, R.M. (1984). *Observations on the migration, ecology and reproductive behavior of bats at Delta Marsh, Manitoba*. Canadian Field-Naturalist 98(3), pp. 331-336, <https://doi.org/10.5962/p.355160>.

d – Manitoba Sustainable Development. (2017). *Forest Management Guidelines for Terrestrial Buffers*. Retrieved February 8, 2014 from https://www.gov.mb.ca/nrnd/forest/pubs/practices/terrestrial_final_jan2017.pdf

e – Environment Canada. 2009. *Petroleum Industry Activity Guidelines for Wildlife Species at Risk in the Prairie and Northern Region*. Retrieved February 8, 2024 from <https://www.gov.mb.ca/sd/eal/registries/5526provident/attach1.pdf>

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



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