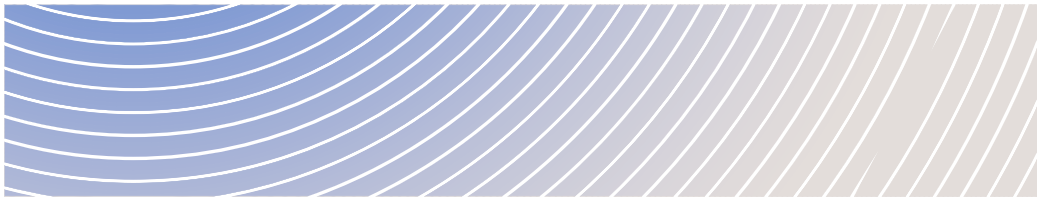
Lynn Lake Gold Project



ENVIRONMENTAL ASSESSMENT REPORT

March 2023

Impact Assessment Agency of Canada
Agence d'évaluation d'impact du Canada

Canada

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Executive Summary

Alamos Gold Inc. (the Proponent) is proposing the construction, operation, decommissioning, and reclamation of an open pit gold mine and new metal mill located approximately 1,000 kilometres north of Winnipeg, near Lynn Lake, Manitoba. The Lynn Lake Gold Project (the Project) would involve the redevelopment of two historical gold mines, known as the Gordon and MacLellan sites, for the purpose of extracting gold and silver to sell. The associated metal mill would have a maximum ore input capacity of 8,250 tonnes per day over a 13 year period. Components of the Project would include new mine infrastructure, open pits, access roads, an Ore Milling and Processing Plant, ore and overburden stockpiles, mine rock storage areas, and a Tailings Management Facility.

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 schedules to the *Regulations Designating Physical Activities*:

- Item 16(b): *The construction, operation, decommissioning and abandonment of a new metal mill with an ore input capacity of 4 000 t/day or more.*
- Item 17(c): *The expansion of an existing rare earth element mine or gold mine, other than a placer mine, that would result in an increase in the area of mine operations of 50% or more and a total ore production capacity of 600 t/day or more.*

On August 28, 2019, the *Impact Assessment Act* (IAA) came into force and CEAA 2012 was repealed. In accordance with the transitional provisions of the IAA, the environmental assessment of the Project is being continued under CEAA 2012 as if that Act had not been repealed.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, Climate, and Parks will make a licensing decision for the Project at the end of the provincial environmental assessment process.

This Environmental Assessment Report (EA Report) summarizes the assessment conducted by the Agency, including an evaluation of the potential environmental effects of the Project. This 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. The Agency prepared this EA Report in consultation with Environment and Climate Change Canada, Fisheries and Oceans Canada, Indigenous Services Canada, Health Canada, Natural Resources Canada, and Transport Canada following a technical review of the Proponent's Environmental Impact Statement. Furthermore, this EA Report was informed by comments submitted throughout the environmental assessment process by Indigenous nations, federal authorities, the Proponent, and the public.

The Agency analyzed environmental effects on 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 any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance for Indigenous Peoples. The Agency also considered transboundary effects, in relation to direct greenhouse gas emissions, and 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* for effects on 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)); licence(s) under the *Explosives Act* by Natural Resources Canada; and approvals(s) under the *Canadian Navigable Waters Act* by Transport 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 EA Report provides an assessment of impacts of the Project on Aboriginal and treaty rights, as recognised 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 main residual environmental effects of the Project, after considering the implementation of the key mitigation measures identified in this EA Report, in relation to section 5 of CEAA 2012 are:

- effects on fish and fish habitat, including from loss or alteration of fish habitat and effects to the health, growth, and survival of fish;
- effects on migratory birds, including from habitat loss and effects to bird health and mortality;
- effects on the current use of lands and resources for traditional purposes by Indigenous Peoples, including from loss or alteration of access for current use and effects to the availability and quality of lands and resources of importance;
- effects on the health and socio-economic conditions of Indigenous Peoples due to exposure to air and water contaminants by inhalation or ingestion, and reduced ability to harvest subsistence and economic resources; and
- effects to physical and cultural heritage and sites or things of historical, archaeological, paleontological, or architectural significance to Indigenous Peoples.

The Project may also result in residual environmental effects to species at risk, including from habitat loss and effects to wildlife health and mortality, and impacts to 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 nations and the public.

Key mitigation 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 control measures; managing

contact water and seepage from the project sites to prevent contamination of groundwater and surface water resources; 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; participating in monitoring and research programs for potentially affected species at risk, including woodland caribou, boreal population (*Rangifer tarandus caribou*; boreal caribou); continual engagement with Indigenous nations, including with respect to monitoring and access management; and development of an Indigenous Environmental Advisory Committee to support ongoing engagement and information sharing.

The Agency concludes that, taking into account the implementation of the key mitigation and follow-up program measures, the Project is not 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 Project is permitted to proceed. Any conditions established by the Minister would become legally binding on the Proponent. 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 careful and precautionary manner.

Contents

List of Abbreviations and Acronyms

Abbreviation/Acronym	Definition
Agency	Impact Assessment Agency of Canada
ASI	Areas of Special Interest
CAAQS	*Canadian Ambient Air Quality Standards*
CEAA 2012	*Canadian Environmental Assessment Act, 2012*
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COSEWIC	Committee on the Status of Endangered Wildlife In Canada
CWQG-FAL	*Canadian Water Quality Guidelines – Freshwater Aquatic Life*
EA Report	Environmental Assessment Report
EIS	Environmental Impact Statement
EIS Guidelines	Environmental Impact Statement Guidelines
FEQGs	*Federal Environmental Quality Guidelines*
GCDWQ	*Guidelines for Canadian Drinking Water Quality*
GHG	Greenhouse gas
HCN	Hydrogen cyanide
IAA	*Impact Assessment Act*
LAA	Local Assessment Area
Manitoba AAQC	*Manitoba Ambient Air Quality Criteria*
MDMER	*Metal and Diamond Mine Effluent Regulations*

Minister	Minister of Environment and Climate Change
MWQSOG	*Manitoba Water Quality Standards, Objectives, and Guidelines*
MWQSOG-FAL	*Manitoba Water Quality Standards, Objectives, and Guidelines – Freshwater Aquatic Life*
N_2O	Nitrous oxide
NO_2	Nitrogen dioxide
NRTA	*Natural Resources Transfer Act*
PDA	Project Development Area
$PM_{2.5}$, PM_{10}	Fine particulate matter
Project	Lynn Lake Gold Project
Proponent	Alamos Gold Inc.
RAA	Regional Assessment Area
SARA	*Species at Risk Act*
Section 35 rights	Aboriginal and treaty rights protected under section 35 of the *Constitution Act, 1982*
Site(s) of significance	Any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance
SO_2	Sulphur dioxide
US EPA	United States Environmental Protection Agency

Glossary

Term	Definition
Acid rock drainage	Some rocks, typically those containing an abundance of sulphide minerals, when exposed to water and air can release water which is more acidic than the natural surrounding environment. Often associated with metal leaching.
Contact water	Surface water or groundwater that has contacted mine workings or interacted with mine rock.
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 (*Species at Risk Act* (section 2(1))).
Cyanidation	A technique for extracting gold from low-grade ore, using a chemical reaction that involves a solution of cyanide.
Deleterious substance	Any substance that, if added to any water, would degrade or alter, or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water, or if by going through some process of degradation, it harms the water quality (*Fisheries Act* (paragraph 34(1)(a))). A substance is also deleterious if it exceeds a level prescribed by regulation.
Electrowinning	The recovery of metals from solutions by passing an electric current through the solution.
Elution	To extract or remove adsorbed material from an adsorbent (i.e. solid substance) by means of a solvent.
Environmentally sensitive sites	Represents critical wintering habitat; critical breeding habitat; species fidelity to dens and nests; and/or culturally significant sites.
Flotation concentration (or Froth flotation)	Process used to selectively separate free gold particles from other substances in the ore mixture by introducing air bubbles that attach to the gold particles, allowing recovery of gold as a froth.
Gravity concentration	The separation of heavy, valuable minerals or metals (e.g. gold) from lighter, non-valuable ore materials via gravity.
Heritage resources	A land or resource (e.g. an artifact, object, or place) that is considered as heritage or any structure, site, or thing that is distinguished from other lands and resources by the value placed on it.

Heritage sites	Sites with potential cultural or heritage value.
Metal leaching	The release of metals from rocks exposed to water and air, which can increase the concentrations of these metals in contact water. Often associated with acid rock drainage.
Mine rock	A natural rock that is extracted during the mining process and does not contain any valuable minerals, such as metals.
Non-contact water	Surface water or groundwater that has not contacted mine workings or interacted with mine rock.
Ore	A natural rock or sediment that contains one or more valuable minerals, such as metals, that can be mined and processed to extract the valuable mineral.
Overburden	Material overlying the ore deposit, including rock, soil, and other unconsolidated (i.e. loose) materials.
Residence	A dwelling-place, such as a den, nest, or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding, or hibernating. (*Species at Risk Act* (section 33)).
Sensitive sites	Sites that contain high quality habitat areas (i.e. known calving sites).
Species of management concern	Described by the Proponent as any species that is listed federally as endangered, threatened, or special concern on any Schedule of the *Species at Risk Act*; designated federally as endangered, threatened, or special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); listed provincially as endangered, threatened, or special concern, including species legally protected under the Alberta's *Wildlife Act*; and/or designated provincially as At Risk, May be at Risk, or Sensitive according to the Alberta Environment and Parks General Status of Alberta's Wild Species.
Sump	A pit or reservoir serving as a drain or receptacle for liquids.
Tailings	A mixture of ore material, water, and residual chemicals left over after gold is removed from ore in the Ore Milling and Processing Plant. Solid material in tailings is usually the size of sand grains or smaller.
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. The higher the

	concentration of these substances in water, the more turbid the water becomes.
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

Alamos Gold Inc. (the Proponent) is proposing the construction, operation, decommissioning, and reclamation of an open pit gold mine and new metal mill located approximately 1,000 kilometres north of Winnipeg, near the Town of Lynn Lake, Manitoba. The Lynn Lake Gold Project (the Project) would involve the redevelopment of two historical gold mines (known as the Gordon and MacLellan sites) for the extraction of gold and silver to sell. The Gordon site was formerly operated as an open pit gold mine between 1996 and 1999 by Black Hawk Mining Incorporated; the mine was closed and reclaimed in 1999. The MacLellan site was formerly operated as an underground gold and silver mine by Maskwa Nickel Chrome Mines Limited between 1986 and 1989. Operation at the MacLellan site mine was suspended in 1989.

The Proponent is proposing to develop new mine infrastructure at both the Gordon and MacLellan sites. New infrastructure at the Gordon site would be limited to an open pit, ore and overburden stockpiles, a mine rock storage area, and other associated infrastructure. New infrastructure at the MacLellan site would include an open pit, an Ore Milling and Processing Plant for processing ore and extracting gold, ore and overburden stockpiles, a mine rock storage area, a Tailings Management Facility, and other associated infrastructure. Existing infrastructure at the MacLellan site would be demolished and removed from the site to accommodate the new open pit and the existing access road would be upgraded. Ore from the Gordon site would be transported by haul truck along Provincial Road 391 to the MacLellan site for processing; no tailings storage, milling, or ore processing would occur at the Gordon site.

The Ore Milling and Processing Plant associated with the Project is expected to have a maximum ore input capacity of 8,250 tonnes per day and an estimated operational life of 13 years. The maximum ore production capacity for the Project would be approximately 10,383 tonnes per day. The total footprint of the Gordon and MacLellan site Project Development Areas (PDA) would be approximately 270 hectares and 910 hectares, respectively.

1.1 Environmental Assessment Report

This 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 on areas of federal jurisdiction after taking into account the proposed key mitigation measures. Following a public comment period on the draft EA Report, the Agency finalized the EA Report and provided it to the 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 July 20, 2017, the Agency initiated a screening of a description of the Project from the Proponent, which included consultation with the public and Indigenous nations, to determine if a federal environmental assessment was required. On September 1, 2017, the Agency determined that an environmental assessment was required and commenced the environmental assessment. On November 6, 2017, following a consultation period on the draft Environmental Impact Statement Guidelines (EIS Guidelines), the Agency finalised and issued the EIS Guidelines to the Proponent.

In August 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 a technical review of the EIS. This technical review resulted in the issuance of four rounds of information requests to the Proponent between August 2020 and August 2022. On November 7, 2022, the Agency commenced a 30 day public comment period on the draft EA Report and potential conditions.

1.2 Scope of the Environmental Assessment

1.2.1 Environmental Assessment Requirements

On August 28, 2019, the *Impact Assessment Act* (the IAA) came into force and CEAA 2012 was repealed. In accordance with the transitional provisions of the IAA, 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 16(b) and 17(c) of the Physical Activities Schedule to the *Regulations Designating Physical Activities*:

> **Item 16(b).** ***The construction, operation, decommissioning and abandonment of a new metal mill with an ore input capacity of 4 000 t/day or more.***
>
> **Item 17(c).** ***The expansion of an existing rare earth element mine or gold mine, other than a placer mine, that would result in an increase in the area of mine operations of 50% or more and a total ore production capacity of 600 t/day or more.***

The Project is also subject to Manitoba's *The Environment Act*. The Agency and Manitoba Environment, Climate, and Parks 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 the 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 nations, and/or the public. The EIS Guidelines for the Project are available on the Canadian Impact Assessment Registry[1].

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 species at risk listed under subsection 79(2) of the *Species at Risk Act* (SARA) and species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The valued components considered by the Agency 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	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. 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, and the cultural and socio-economic importance of fish and fishing. There is a high likelihood of Project-valued component interactions.
Migratory birds	Project-related activities may affect migratory bird behavior due to sensory disturbance, direct mortality, effects to surface water quality and quantity, and habitat loss or alteration. Migratory birds are included due to their ecological importance and the legislated protection of migratory birds and species at risk. There is a high likelihood of Project-valued component interactions.
Federal lands	Project-related changes to the environment may affect Marcel Colomb First Nation's Black Sturgeon Reserve due to potential changes to groundwater, surface water, air quality, ambient light, and the acoustic environment. Federal lands are included due to the legislated protection of federal lands. There is a high likelihood of Project-valued component interactions.
Effect of changes to the environment on Indigenous Peoples – current use of lands and resources for traditional purposes	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. Project-related activities would disturb or reduce access to lands and resources used by Indigenous Peoples for traditional purposes. Indigenous-related valued components are included due to the legislated protection of Indigenous Peoples and their culture and traditional practices. There is a high likelihood of Project-valued component interactions.
Effect of changes to the environment on Indigenous Peoples – physical and cultural heritage; and	Project-related changes to the environment may directly affect, disturb, or prevent access to sites, structures, or things of cultural importance to Indigenous Peoples.

[1] The Final EIS Guidelines for the Lynn Lake Gold Project are available at the following link: https://iaac-aeic.gc.ca/050/documents/p80140/121021E.pdf.

Valued Component	Agency Rationale
any structure, site or thing that is of historical, archaeological, paleontological or architectural significance	Indigenous-related valued components are included due to the legislated protection of Indigenous Peoples and their culture and traditional practices. There is a high likelihood of Project-valued component interactions.
Effect of changes to the environment on Indigenous Peoples – health and socioeconomic conditions	Project-related changes to the environment may affect Indigenous Peoples' health and socio-economic conditions through changes to air quality, surface water and groundwater quantity and quality, effects to the quality and quantity of country foods, and effects to the ability of Indigenous Peoples to access community services. Indigenous-related valued components are included due to the legislated protection of Indigenous Peoples and their culture and traditional practices. There is a high likelihood of Project-valued component interactions.
Valued components identified due to their association with factors listed under subsection 5(1) of CEAA 2012	
Groundwater	Project-related activities may affect groundwater due to groundwater drawdown and potential changes to groundwater quality and flow. Groundwater quality and quantity are included due to their ecological importance and interconnectedness with fish and fish habitat, migratory birds, species at risk, Indigenous Peoples, and federal lands. There is a high likelihood of Project-valued component interactions.
Surface water	Project-related activities may affect surface water due to potential changes to surface water quality, quantity, and flow. Surface water quality and quantity are included due to their ecological importance and interconnectedness with fish and fish habitat, migratory birds, species at risk, Indigenous Peoples, and federal lands. There is a high likelihood of Project-valued component interactions.
Atmospheric environment	Project-related activities may affect the atmospheric environment, including the visual and acoustic environment, due to potential changes to air quality, vibration, noise, and light. The atmospheric environment is included due to its ecological importance and interconnectedness with fish and fish habitat, migratory birds, species at risk, Indigenous Peoples, and federal lands. There is a high likelihood of Project-valued component interactions.
Effects identified pursuant to subsection 79(2) of SARA and species designated by COSEWIC	
Federal species at risk and species of conservation concern	Project-related activities, such as disturbance of terrestrial habitat and wetlands, effects to air quality, and effects to surface water and groundwater quantity and quality may affect SARA-listed and COSEWIC-listed species and their habitat. SARA requires consideration of listed species when conducting an environmental assessment under CEAA 2012. The Agency also considered species assessed by COSEWIC as endangered, threatened, or of special concern.

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

- the environmental effects of the Project, including the environmental effects of accidents or malfunctions 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; and
- any change to the Project that may be caused by the environment.

1.2.3 Methods 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 Project is Likely to Cause Significant Adverse Environmental Effects under CEAA 2012*. The application of mitigation measures were considered by the Proponent in its 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 definition of each of these 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 accepted the Proponent's criterion and thresholds as adequate for the purpose of assessing environmental effects under CEAA 2012.

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 authorities and provincial ministries;
- advice and comments from potentially affected Indigenous nations; and
- comments received from the public.

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, and Indigenous Services Canada. Advice and expertise provided by Fisheries and Oceans Canada, Transport Canada, Environment and Climate Change Canada, Health Canada, and Natural Resources Canada was incorporated into this EA Report.

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

decommissioning/closure phases of the Project on areas of federal jurisdiction (Chapter 7 of this 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 EA Report), effects of the environment on the Project (Chapter 8.2 of this EA Report), and cumulative environmental effects (Chapter 8.3 of this EA Report).

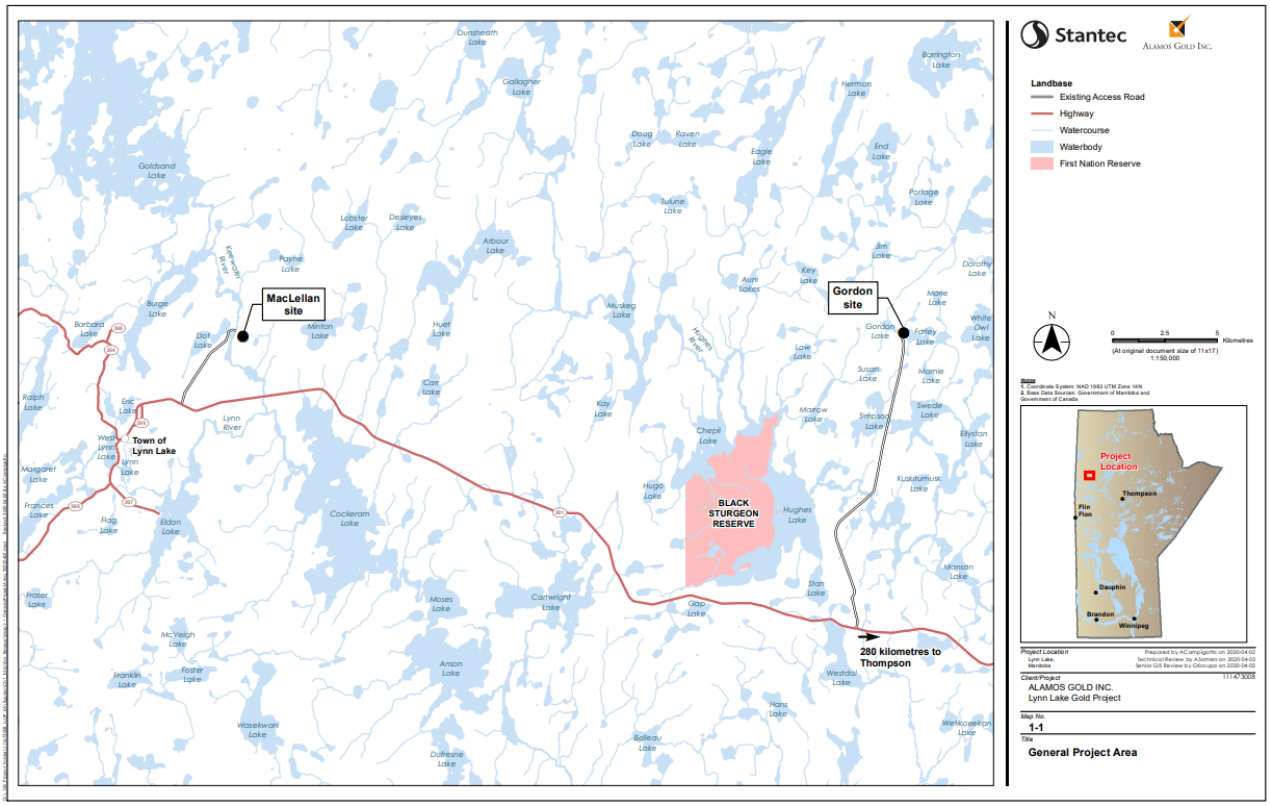
The Agency's analysis, including where the Agency incorporated information received from Indigenous nations, the public, and federal authorities, is provided throughout this EA Report.

2 Project Overview

2.1 Project Location and Temporal and Spatial Boundaries

The Project would be located approximately 1,000 kilometres north of Winnipeg, near the Town of Lynn Lake, Manitoba. The Project's location, described as the PDAs, is depicted in Figure 1. The PDAs are the anticipated area of temporary and permanent physical disturbance associated with the construction and operation of the Project. The combined footprint of the Gordon and MacLellan site PDAs is approximately 1,210 hectares. The Gordon and MacLellan sites are located approximately 30 kilometres apart.

Figure 1 Regional Location of the Lynn Lake Gold Project



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 29, 2020)

Figure Description: *Provincial Road 391 spans the figure from east to west, with the Town of Lynn Lake at the far west end. The Gordon and MacLellan sites are located 15 kilometres and three kilometres north of the road, respectively. The Black Sturgeon Reserve is located 0.5 kilometres north of the road.*

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.

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: PDA, Local Assessment Area (LAA), and Regional Assessment Area (RAA); separate PDAs and LAAs were defined for the Gordon and MacLellan sites. Figures 2 and 3 provide a visual representation of the Gordon and MacLellan site PDAs; the spatial extent of the PDAs is the same for all valued components. Figures C-1 to C-16 in Appendix B provide visual representations of the Proponent's LAAs and RAA for each valued component.

Proponent's Project Development Areas: includes the immediate area within which project activities and components may occur, including the existing access roads, plus a 30 metre buffer; Provincial Road 391 and the portion of the distribution line outside of the MacLellan site PDA are not included within the Gordon or MacLellan site PDAs. The PDAs are the anticipated area of direct physical disturbance associated with the construction, operation, and decommissioning/closure of the Project.

Proponent's Local Assessment Area: includes the area in which project-related environmental effects (i.e. direct or indirect) can be predicted or measured for assessment. The Gordon and MacLellan site LAAs, which are specific to each valued component, include the respective PDA and the geographic extent of effects on the given valued component.

Proponent's Regional Assessment Area: 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 Gordon and MacLellan site PDAs and LAAs.

Temporal Boundaries

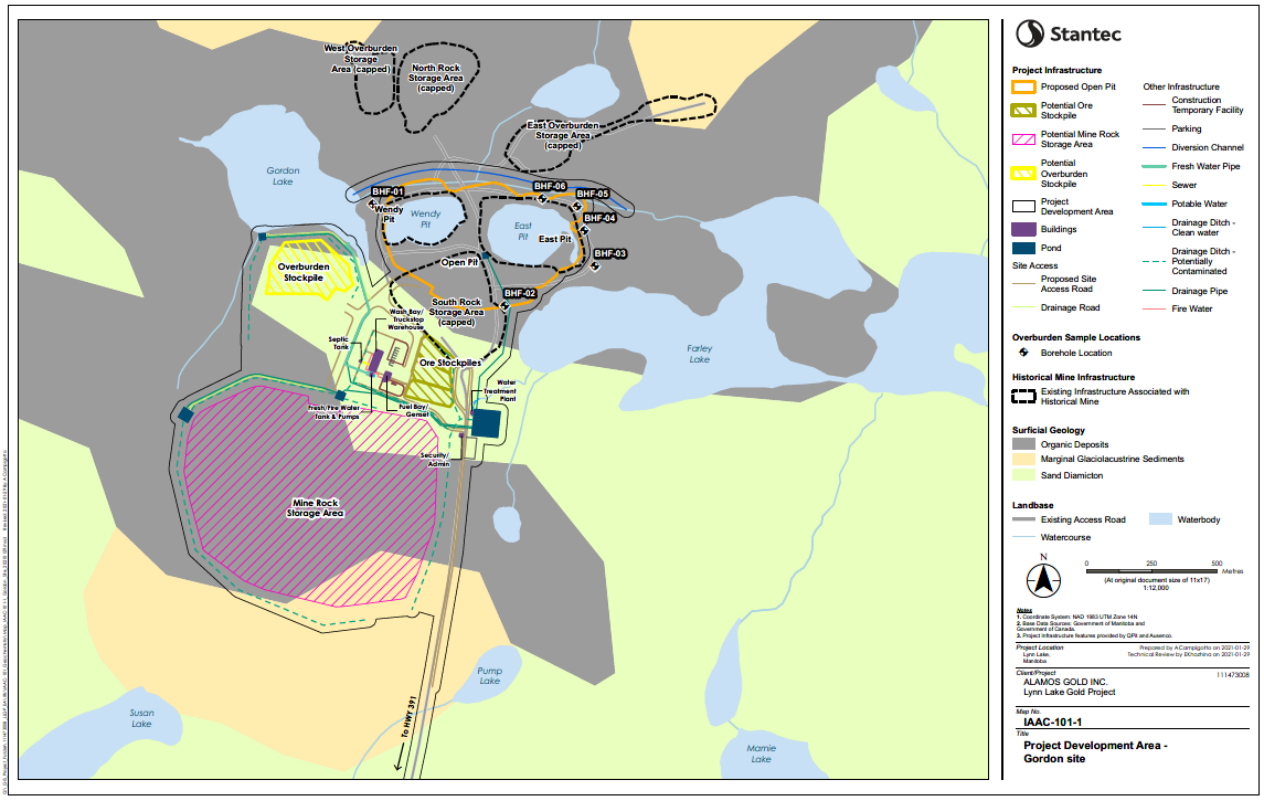
The Proponent defined temporal boundaries based on the timing and duration of project activities that could cause environmental effects. The purpose of the temporal boundaries is to identify when an effect may occur in relation to specific phases and activities of the Project. For all valued components, the Proponent's temporal boundaries are defined as:

- construction: would begin following regulatory approval of the Project and would continue for approximately nine months at the Gordon site and two years at the MacLellan site;
- operation: immediately following construction and would continue for a period of approximately six years for the Gordon site and 13 years for the MacLellan site;
- decommissioning/closure: immediately following operation and would continue for approximately five to six years for both the Gordon and MacLellan sites; and
- post-closure: immediately following decommissioning/closure and would continue for approximately 11 years at the Gordon site and 21 years at the MacLellan site.

2.2 Project Components

The Project's components are depicted in Figures 2 to 4 and described below.

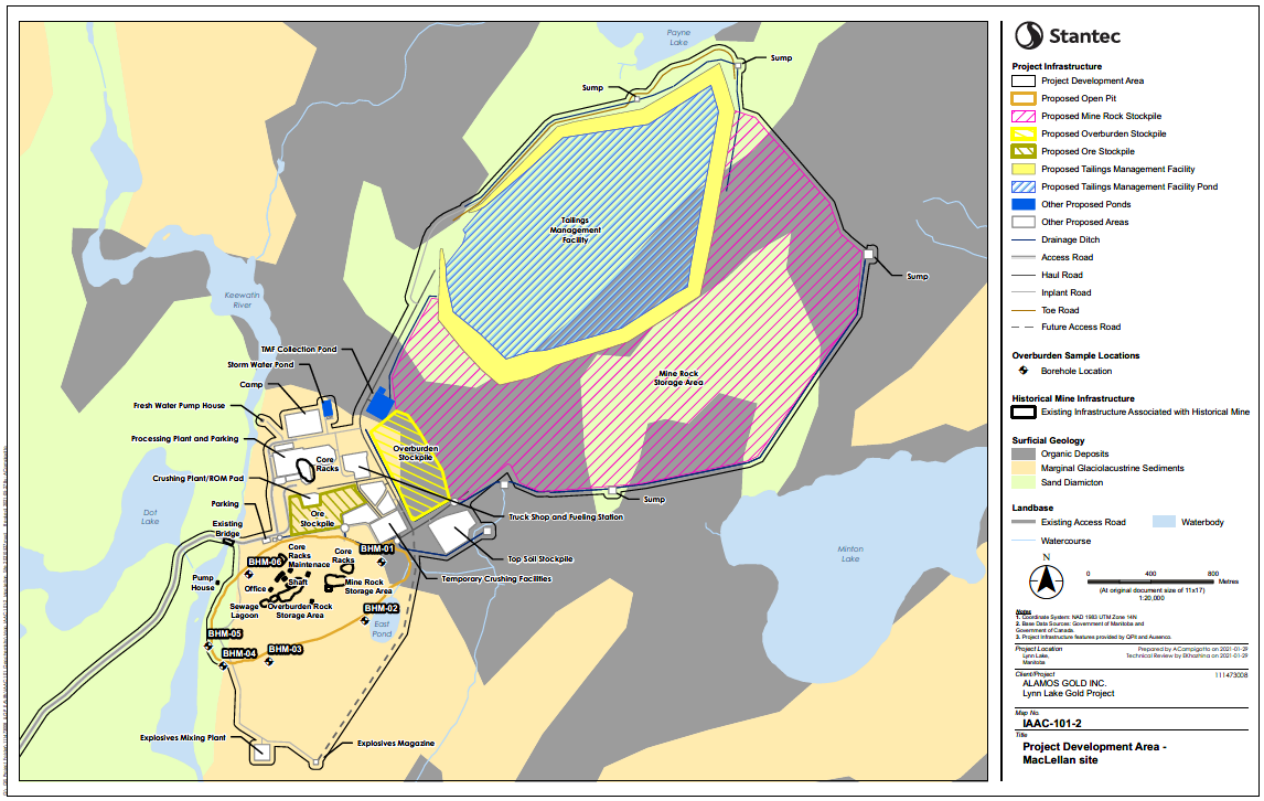
Figure 2 Project Components at the Gordon Site



Source: Lynn Lake Gold Project Environmental Impact Statement, Federal Information Request Responses, Round 1, Package 2 (June 1, 2021)

Figure Description: *The existing diversion channel is located at the far north end of the Gordon site, to the south of capped overburden and mine rock storage areas from the historical mine. Located south of the diversion channel are the existing Wendy and East Pits, where the new open pit would be developed, and the proposed new overburden and ore stockpiles, miscellaneous project facilities, and the mine rock storage area. The existing access road continues south from the Gordon site to the access point to Provincial Road 391.*

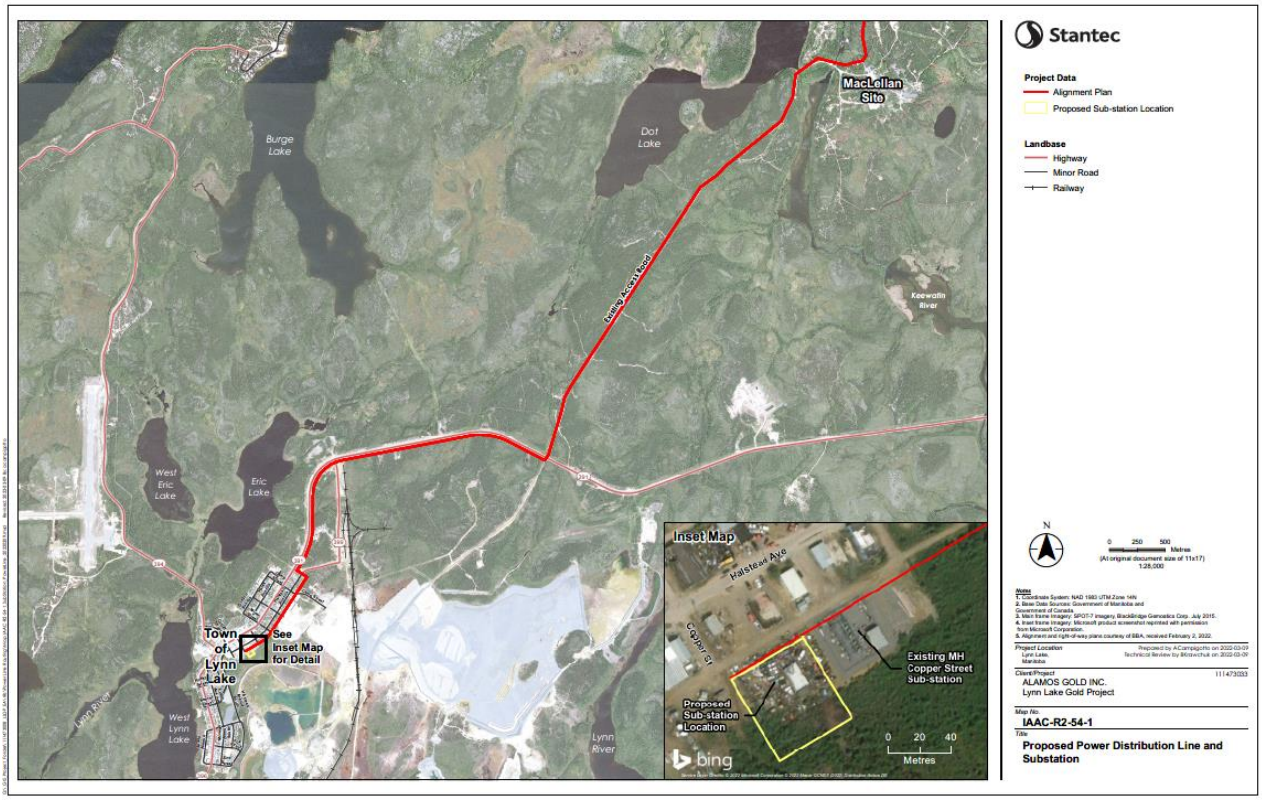
Figure 3 Project Components at the MacLellan Site



Source: Lynn Lake Gold Project Environmental Impact Statement, Federal Information Request Responses, Round 1, Package 2 (June 1, 2021)

Figure Description: *The new Tailings Management Facility would be located on the northernmost end of the MacLellan site. Moving towards the south of the site is the mine rock storage area, ore and overburden stockpiles, Ore Milling and Processing Plant, miscellaneous project facilities, proposed open pit, and the explosives mixing plant and magazine. The existing access road continues south from the MacLellan site to the access point to Provincial Road 391.*

Figure 4 Power Distribution Line and Substation for the MacLellan Site



Source: Lynn Lake Gold Project Environmental Impact Statement, Federal Information Request Responses, Round 2, Package 2 (May 24, 2022)

Figure Description: *The new substation would be located within the Town of Lynn Lake. The power distribution line would originate within the Town of Lynn Lake and follow the existing right of way along Provincial Road 391 and the MacLellan site access road northeast of the Town of Lynn Lake.*

2.2.1 Gordon Site

Existing Infrastructure

After closure of the historical mine, the Gordon site was reclaimed and most of the buildings and mining infrastructure were removed. The Gordon site currently consists of a 15 kilometre gravel access road, a bridge across the Hughes River, two water-filled open pits (i.e. the Wendy and East pit lakes), a diversion channel between Gordon Lake and Farley Lake, two capped mine rock storage areas, and two capped overburden storage areas. All other buildings and infrastructure associated with the historical mine have been removed. Access to the Gordon site following closure of the historical mine, including access by local Indigenous nations and the public, was restricted.

Proposed Open Pit

One open pit mine is proposed for the Gordon site, which would be developed in a series of benches, on which drilling and blasting would occur, followed by shovel and truck removal of mine rock and ore. The anticipated ultimate depth of the Gordon site open pit would be approximately 225 metres. The open pit

would be located on the north end of the Gordon site PDA near Gordon and Farley Lakes, and would include the areas currently occupied by the historical Wendy and East pit lakes.

During pre-production years (i.e. the first two years of operation), the Wendy and East pit lakes would be dewatered to allow development of the new open pit. Subsequently, mine rock, overburden, and ore would be removed from the open pit and stored in the mine rock storage area, and overburden and ore stockpiles at the Gordon site. Once construction at the MacLellan site is complete, haul trucks would transport ore from the Gordon site via Provincial Road 391 to the MacLellan site for crushing and processing to extract gold at the Ore Milling and Processing Plant. The total quantity of material to be mined from the open pit at the Gordon site is approximately 59 million tonnes, which includes eight million tonnes of ore. Open pit mining at the Gordon site is planned to cease after year five; however, the transfer of ore from the Gordon site to the MacLellan site would continue into year six.

Ore, Overburden, and Mine Rock Stockpiles/Storage Areas

Two ore stockpiles for storage of a combined total of 1.6 million tonnes of ore are planned at the Gordon site, which would have a combined footprint of approximately 33,800 square metres and be located adjacent to each other, south of the open pit. The ore stockpiles at the Gordon site would be depleted by year six of operation.

An overburden stockpile and mine rock storage area would be located to the southwest and south of the open pit, respectively. The overburden stockpile would store a maximum of 0.9 million tonnes of overburden from the open pit and would have a footprint of approximately 123,300 square metres. The mine rock storage area would store a maximum of 50.1 million tonnes of mine rock and would have a footprint of approximately 618,100 square metres.

As mine rock from the Gordon site has the potential to result in acid rock drainage and metal leaching, blending of potentially acid generating and non-potentially acid generating materials at the mine rock storage area may occur, or dry or wet covers may be constructed to limit exposure of mine rock to water and air. Materials to be stored in the ore and overburden stockpiles were not expected to result in acid rock drainage, yet may result in a moderate amount of metal leaching. The Proponent did not propose additional infrastructure or activities to manage acid rock drainage and metal leaching in these areas, such as the use of liners beneath the ore and overburden stockpiles and mine rock storage area. Stockpiles were not predicted to result in adverse effects to environmental receptors given their residence time and subsurface flows in the area.

Borrow Sources

Aggregate materials required to support construction activities at the Gordon site, including access road upgrades and construction of new site roads and laydown areas, would be sourced from the existing north mine rock stockpile, located to the north of the proposed open pit.

Utilities and Fuel

A regular water supply for dust and fire suppression, safety showers, the truck shop, and the truck wash would be sourced from Farley Lake and pumped, as needed, to a storage tank located on the Gordon site. Potable water, trucked from the fresh-water treatment plant at the MacLellan site, would be stored at a central potable water storage facility. This infrastructure would be decommissioned in year six.

Power for the Gordon site would be supplied on site via two 300 kilowatt diesel generators, connected to 4.16 kilovolt overhead distribution lines. Site lighting from power line pole-mounted fixtures and building mounted fixtures would be designed to reduce spill-over light.

Fuel (i.e. diesel, gasoline, and propane) for heavy equipment, on site generators, and space heating would be delivered to the Gordon site as needed by tanker trucks. Fuels would be stored in aboveground storage tanks equipped with secondary containment. Stationary and mobile mine equipment would be fueled with a fuel-dispensing truck.

Roads and Bridges

The main access point to the Gordon site PDA would be via the existing Provincial Road 391, an all-weather road connecting Thompson and Lynn Lake under the care and control of Manitoba Transportation and Infrastructure, which connects to the 15 kilometre Gordon site gravel access road. Provincial Road 391 would be used for material deliveries, by project personnel to access the Gordon site, and to transport ore and other materials from the Gordon site to the MacLellan site. Upgrades to Provincial Road 391, including resurfacing of at least a six kilometre section of the road, may be completed by Manitoba Transportation and Infrastructure during construction to accommodate project-related traffic. The Agency does not consider upgrades to this six kilometre section of Provincial Road 391 to be incidental to the Project.

During construction, the 15 kilometre gravel access road, including the bridge crossing at the Hughes River, would be upgraded to accommodate project-related traffic and maintain access from the Gordon site to Provincial Road 391 for ore transportation to the MacLellan site. The access road is currently gated in two locations and access to the Gordon site would be restricted to project personnel during construction, operation, and decommissioning/closure.

Internal site roads to allow movement of project personnel, equipment, and materials would also be required, and would be owned and maintained by the Proponent. Large haul truck traffic and other site vehicular traffic would be separated where appropriate. Internal site access roads would be decommissioned following operation.

Explosive Manufacturing and Storage

Explosives required for operation at the Gordon site would be transported from the MacLellan site, as required.

Water Management

To accommodate the open pit at the Gordon site, the previously constructed fish-bearing diversion channel between Gordon and Farley Lakes would be relocated northward during construction. The new channel would be designed to accommodate a 1 in 100 year precipitation event, would allow long-term fish passage and habitat use along its length, and would be approximately 8.4 metres wide and 1,200 metres long.

Seepage or runoff collection ditches would be constructed around the perimeter of the ore and overburden stockpiles and mine rock storage area to direct seepage and runoff to a series of sumps or small ponds. Water collected in sumps or ponds would then be pumped to a site water management pond or collection pond for management and treatment, if required, prior to discharge to the surrounding environment. These ditches would be designed to contain a 1:25 year precipitation event. Other surface

water management structures that would be required for the Gordon site include a series of diversion ditches to collect, divert, and release non-contact water to the surrounding environment. These ditches would be designed to contain a 1:25 year precipitation event.

A series of groundwater interceptor wells would be installed during construction between the open pit at the Gordon site and Gordon and Farley Lakes to limit the volume of groundwater outputs into the open pit during operation. Groundwater intercepted by the interceptor wells would be pumped to a water management pond for testing and treatment, if required, prior to release to Gordon and Farley Lakes.

Installation of intake (i.e. water supply) pipes and effluent (i.e. contact water) discharge pipes would be required between the Gordon site and Gordon and Farley Lakes. The water intake pipe would be located in the western basin of Farley Lake; a withdrawal rate of ten cubic metres per hour would be required during operation. Effluent pipes would discharge contact water from the collection pond at the Gordon site into the deepest part of Gordon and Farley Lakes. Once installed, the total in-water footprint of these intake and effluent pipes would be less than one cubic metre each and pipes would be removed following operation.

Wastewater at the Gordon site would be collected on site in septic tanks and transported to the MacLellan site for processing at the Sewage Treatment Plant.

2.2.2 MacLellan Site

Existing Infrastructure

The historical underground mine at the MacLellan site has been in a “care and maintenance” phase since 1989 with limited reclamation. The MacLellan site currently consists of a 4.6 kilometre gravel access road, an abandoned power distribution line, and other above ground infrastructure and buildings from the former mine. The underground mine workings are currently flooded with water. All existing above-ground infrastructure, other than the access road, would be demolished during construction to accommodate the Project.

Open Pit

One open pit mine is proposed for the MacLellan site, which would be developed in a series of benches, on which drilling and blasting would occur, followed by shovel and truck removal of mine rock and ore. The open pit would be located on the southern end of the MacLellan site PDA near the Keewatin River and Dot Lake and its anticipated maximum depth would be approximately 450 metres.

During pre-production years, mine rock, overburden, and ore would be removed from the open pit and stockpiled in the mine rock storage area and overburden and ore stockpiles. The total quantity of material to be mined from the MacLellan site would be approximately 266 million tonnes, which includes 26.9 million tonnes of ore material.

Ore, Overburden, and Mine Rock Stockpiles/Storage Areas

The MacLellan site would include one ore stockpile for storage of up to 2.7 million tonnes of ore. Ore would be stored in this stockpile starting in year one of operation and depleted by year 13. The ore stockpile would have a total footprint of approximately 115,500 square metres and would be located adjacent to the Ore Milling and Processing Plant.

The mine rock storage area at the MacLellan site would wrap around the southern and eastern sides of the Tailings Management Facility and has been designed to avoid fish-bearing streams. The mine rock storage area would store a maximum of 230.9 million tonnes of mine rock and would have a footprint of approximately 3.6 million square metres. The overburden stockpile would be located to the southwest of the mine rock storage area, would store a maximum of 8.2 million tonnes of overburden, and would have a footprint of approximately 181,800 square metres.

Mine rock at the MacLellan site has the potential to result in acid rock drainage and metal leaching, including arsenic and other trace elements; approaches to limit acid rock drainage and metal leaching would be similar to those described for the Gordon site (i.e. mine rock blending and soil covers). Materials to be stored in the ore stockpiles are not expected to result in acid rock drainage but have a high potential for metal leaching, including arsenic and cadmium. Overburden at the MacLellan site would have a low potential for acid rock drainage and metal leaching; therefore, the Proponent concluded that special management procedures are not required.

Mill Feed Storage Area and Crushing Plant

Ore from the Gordon and MacLellan sites would be transported to a storage pad adjacent to the Ore Milling and Processing Plant at the MacLellan site prior to being sent through the Crushing Plant and, via a conveyor system, to the Ore Milling and Processing Plant. The Crushing Plant and conveyors would be fully enclosed and dust collection systems would be installed to limit fugitive dust emissions.

Ore Milling and Processing Plant

The Ore Milling and Processing Plant would be located on the northwest side of the MacLellan site PDA, would be designed to process a maximum of 8,250 tonnes per day of ore, and would operate between year one and 13.

The Ore Milling and Processing Plant would extract gold and silver from crushed ore using various chemical processes, including cyanidation, elution, and electrowinning, after which the extracted gold and silver would be transported off-site to a certified facility for further processing. By-products from this process, including carbon and contact water, would be recycled back into the extraction process; any materials that cannot be reused would be discharged to the Tailings Management Facility after a cyanide detoxification process. Tailings would consist of crushed rock (i.e. potentially acid generating and non-potentially acid generating), contact water, sulphides, carbonates, and residual cyanide, acids, neutralization solutions, and other chemicals from the gold and silver extraction process.

Tailings Management Facility

A facility (i.e. pond) to manage and store mine tailings and other liquid wastes from the Ore Milling and Processing Plant would be located at the MacLellan site, approximately 1.5 kilometres from the Ore Milling and Processing Plant, on the northern side of the MacLellan site PDA to avoid potential deposition of mine tailings into fish-bearing waterbodies and to avoid physical disturbance of fish-bearing waterbodies. The Tailings Management Facility would be designed to contain a 1:100 year precipitation event without discharge to the environment. This would include the construction of ten metre high and 4,150 metre long dams around the perimeter of the Tailings Management Facility composed of non-acid generating materials from local borrow sources. The Tailings Management Facility would also be equipped with an emergency spillway to allow for the safe routing of precipitation to prevent dam overtopping during large storm events.

Seepage from the Tailings Management Facility would be controlled via low permeability seepage cutoffs and the use of a High Density Polyethylene partial liner on the upstream slopes of the dams anchored to the bedrock. The use of a full liner beneath the Tailings Management Facility was not proposed as it would reduce the long-term stability of the tailings and may increase the risk of embankment failure. The current design was considered more economically feasible and would allow tailings consolidation over time. A downstream seepage collection system, consisting of a series of sumps and buried weeping tile or a rockfill finger drain system, would be installed during construction to capture seepage at the toe of the dam, which would be pumped back to the Tailings Management Facility collection pond. Water from the Tailings Management Facility collection pond would be directed to the open pit at closure.

Geochemical testing showed that the majority of the tailings to be stored in the Tailings Management Facility would be non-potentially acid generating; therefore, the Proponent did not expect acid rock drainage from tailings during operation. However, concentrations of some metals may exceed regulatory limits during operation. During decommissioning/closure, the risk of acid rock drainage and metal leaching would be managed by placing soil covers on the Tailings Management Facility to limit infiltration of precipitation and ingress of oxygen. A circuit to remove sulphides from tailings during decommissioning/closure may also be installed.

Sewage Treatment Plant and Potable Water Treatment Plant

A Sewage Treatment Plant would be required to treat sanitary wastewater generated on the Gordon and MacLellan sites prior to release to the Keewatin River. Treated sanitary wastewater from the Plant would be discharged through an outfall pipe and stilling basin. The volume of sanitary wastewater generated and to be treated at the Plant would be approximately 100,000 litres per day.

A regular water supply at the MacLellan site would be required for make-up water for ore processing during the first year of operation, fire and dust suppression, safety showers, truck washes, and potable water. Water would be sourced from the Keewatin River to meet water requirements during the first year of operation, which are estimated to be 0.56 million cubic metres annually (i.e. 312 cubic metres per hour), and 350,400 cubic metres annually (i.e. 40 cubic metres per hour) after the first year. Potable water for project personnel would be generated at the Potable Water Treatment Plant, connected to a water distribution system. The Plant would have a treatment capacity of approximately 92,000 litres per day and would supply potable water to both the MacLellan and Gordon sites (i.e. via truck). Water supply requirements for the Ore Milling and Processing Plant would be met using water removed from the historical underground mine workings and reclaimed water from the Tailings Management Facility.

Borrow Sources

Aggregate materials would be required at the MacLellan site to support construction activities, including access road upgrades and construction of new site roads and laydown areas. Aggregate materials would be sourced from within the project footprint through open pit development (i.e. in-pit borrow source) and from an external aggregate source (i.e. ex-pit borrow source). A contingency borrow source located south of the MacLellan site was identified should additional aggregate material be required. If development of this borrow source is required, clearing of vegetation and construction of access roads would be required.

Utilities, Fuel, and Chemicals

To support the cyanidation process within the Ore Milling and Processing Plant, sodium cyanide would be transported to and stored on the MacLellan site in isocontainers. Approximately 82 tonnes of sodium

cyanide would be required per month, all of which would eventually become part of the tailings slurry stored in the Tailings Management Facility, following cyanide detoxification.

Fuel (i.e. diesel, gasoline, and propane) for heavy equipment, other project vehicles, and space heating would be delivered to the MacLellan site, as needed, by tanker trucks. Fuels would be stored in aboveground storage tanks in the truck shop and fueling station, located to the west of the Ore Milling and Processing Plant. Stationary and mobile mine equipment would be fueled with a fuel-dispensing truck.

Power for the MacLellan site would be supplied by Manitoba Hydro's Line 6. The Project would require upgrades to the existing power supply transmission line between Laurie River and Lynn Lake and the Lynn Lake Copper Street Station from 69 kilovolts to 138 kilovolts. The Project would also require a new 138 kilovolt-34.5 kilovolt substation, to be located in Lynn Lake, and a new eight kilometre 34.5 kilovolt overhead distribution line from Lynn Lake to the MacLellan site. The Proponent anticipated that Manitoba Hydro would independently undertake the upgrades to the existing transmission line and substation; the Agency does not consider these activities to be incidental to the Project. Construction of the new substation in the Town of Lynn Lake and the distribution line to the MacLellan site would be undertaken by the Proponent; the Agency considers these activities to be incidental to the Project. The distribution line would follow existing rights of way from the Town of Lynn Lake, along Provincial Road 391, and along the existing MacLellan site access road (Figure 4).

Site lighting would consist of a combination of power line pole-mounted fixtures and building mounted fixtures designed to reduce spill-over light.

Several pipelines would be required at the MacLellan site to transport and dispose of contact water between the open pit, the Ore Milling and Processing Plant, and the Tailings Management Facility; to transport tailings from the Ore Milling and Processing Plant to the Tailings Management Facility; and to transport potable water and wastewater between on-site facilities and the Potable Water Treatment Plant and Sewage Treatment Plant. Treated contact water from the on-site collection pond would be pumped through a buried pipeline to a stilling basin to be installed near the Keewatin River prior to release to the river. Two raw water pipelines would be required to allow water withdrawals from the Keewatin River, which would be buried into the riverbank during construction.

Roads and Bridges

The main point of access to the MacLellan site PDA would be via the existing Provincial Road 391, which connects to the gravel access road at the MacLellan site. Provincial Road 391 would be used for material deliveries, by project personnel to access the MacLellan site, and to transport ore and other materials from the Gordon site to the MacLellan site. The gravel access road on the MacLellan site would be upgraded during project construction to accommodate project-related traffic. Access to the gravel access road and the MacLellan site PDA would be restricted to project personnel during construction, operation, and decommissioning/closure.

Internal site roads to allow movement of project personnel, equipment, and materials would be required, and would be constructed by the Proponent. Large haul truck traffic and other site vehicular traffic would be separated, where appropriate.

Work Camp

A permanent 300-bed work camp would be constructed at the MacLellan site during construction to accommodate project personnel and would be used during operation.

Explosives Manufacturing and Storage

Emulsion explosives with non-electric detonators would be manufactured and stored at the MacLellan site during operation for use in open pit mining. Explosives would be transported to the Gordon site, as required.

Water Management

Seepage or runoff collection ditches would be constructed around the perimeter of the mine rock storage area and the ore and overburden stockpiles to direct seepage and runoff to a series of sumps or small ponds. Water collected in sumps and ponds would then be pumped to the Tailings Management Facility collection pond for management and treatment, if required, prior to discharge to the Keewatin River through an effluent discharge pipe and stilling basin. These ditches would be designed to contain a 1:25 year precipitation event.

Diversion ditches would also be required to collect, divert, and release non-contact water from the MacLellan site to the surrounding environment. These ditches would be designed to contain a 1:25 year precipitation event.

2.3 Project Activities and Timing

Construction (Two Years)

Construction activities for both the Gordon and MacLellan sites are generally expected to consist of site preparation, physical construction and equipment installation, and commissioning (i.e. testing of mechanical and electrical systems prior to operation). Construction was expected to take a total of nine months at the Gordon site and two years at the MacLellan site, after which open pit mining would commence. As construction of the Ore Milling and Processing Plant at the MacLellan site is expected to take two years, extracted ore from the Gordon site would be stored in stockpiles until the Plant is operational.

Construction would begin with clearing vegetation in areas required for the open pits and other project infrastructure. Cleared merchantable timber would be sold and remaining cleared vegetation would be stored on site for use during closure activities. A 100-bed temporary work camp would be established during construction at the MacLellan site and used throughout the construction phase until the permanent work camp is operational. For the Gordon site, mine rock from the historical mine rock storage area would be excavated and moved to the new proposed mine rock storage area as part of site preparation activities to allow for open pit mining.

As vegetation clearing is completed, internal access roads, ore and overburden stockpiles, mine rock storage areas, and the Tailings Management Facility, including dams, would be constructed and realignment of the existing diversion channel at the Gordon site would be completed. A temporary diversion ditch would be constructed at the MacLellan site near the mine rock storage area to collect and divert non-contact water to the unnamed tributary of the Keewatin River. Utilities, ancillary facilities, and other services, including power supply systems, waste handling systems, fresh water supply systems,

open pit dewatering systems, contact water collection systems, various buildings, fueling areas, storage tanks, and processing equipment would be installed at this time, and removal of overburden materials in the area of the open pits would occur in preparation for mining activities.

The gravel access roads connecting the Gordon and MacLellan sites to Provincial Road 391 would be upgraded, including the bridge crossing at the Hughes River at the Gordon site. Upgrades to the bridge crossing at the Keewatin River would not be required as this bridge was recently replaced due to failure of the bridge that was constructed as part of the historical mining operation at the MacLellan site.

Operation (13 Years)

The operation phase for the Gordon site is estimated to span six years and would consist primarily of ore extraction and associated activities (e.g. removal and storage of mine rock, solid and liquid waste management, groundwater and surface water management, etc.). Approximately 4,100 tonnes of ore (i.e. seven truckloads per hour for 20 hours per day) would be hauled from the Gordon site to the MacLellan site during the first six years of operation.

Operation at the MacLellan site is estimated to span 13 years and consist primarily of ore extraction and associated activities, explosives manufacturing and storage, ore crushing and processing to extract gold and silver for market, and tailings management. Extracted gold and silver would be transported off-site to a certified facility for further processing.

Blasting during the operation phase at both the Gordon and MacLellan sites would be required to extract ore from the open pits. The amount and frequency of blasting will be confirmed during detailed engineering. Blasting was expected to occur two to three times per week and drilling of holes for explosives would occur 24 hours per day. Explosives to be used for blasting, including ammonium nitrate and fuel oil, would be manufactured and stored at the MacLellan site.

Decommissioning and Closure (Five to Six Years)

Following the completion of mining activities, both the Gordon and MacLellan sites would be decommissioned, reclaimed, and closed in accordance with the Conceptual Closure Plan and the Mine Closure Regulation under *The Mines and Minerals Act* of Manitoba. Active closure at each site was expected to take approximately five to six years. All facilities, equipment, buildings, and water management features (e.g. water treatment systems, ditches, and ponds) that would not be required for reclamation and closure activities would be removed and both sites would be reclaimed to establish physical, chemical, and biological stability, and to meet desired end land functions and uses. The Proponent would be responsible for monitoring and maintaining the integrity of any remaining structures (e.g. access roads) on both sites.

Post-Closure (21 Years)

The post-closure phase would immediately follow decommissioning/closure and reclamation of the Gordon and MacLellan sites, and is the period during which the open pits would continue filling and post-closure monitoring would occur. The post-closure phase would be approximately 11 years at the Gordon site and 21 years at the MacLellan site. After post-closure monitoring is no longer required, the Proponent would transfer the leases of both sites back to the Province of Manitoba. Both sites are expected to remain open indefinitely post-closure for recreational activities, such as hunting and trapping.

3 Purpose of and Alternative Means of Carrying out the Project

3.1 Purpose of Project

The purpose of the Project is to develop gold deposits located at the Gordon and MacLellan sites for the purpose of extracting gold (i.e. doré bullion) and silver to sell.

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 physical activity that are technically and economically feasible, and consider the environmental effects of any such alternative means. The Agency's *Operational Policy Statement Addressing "Purpose of" and "Alternative Means" under the Canadian Environmental Assessment Act, 2012* sets out the general requirements and approach to address the alternative means of carrying out the designated project under CEAA 2012.

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

- ore transportation, including the means and routing of transport;
- access to the Project sites;
- the length of operation;
- the location of key project infrastructure;
- ore processing methods/technologies;
- power supply;
- operational and potable water supply and wastewater management;
- contact water management and the location of effluent discharge points;
- workforce accommodations and transportation;
- the location of the new diversion channel between Gordon and Farley Lakes;
- groundwater interception methods to limit groundwater discharge into the open pits; and
- mine waste disposal and effluent discharge, including the methods of disposal and management of mine rock and tailings.

Input from Indigenous nations, including traditional 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.

3.2.1 Proponent's Alternatives Assessment

Ore Transportation

Only one option, truck transport using the existing access roads and a portion of Provincial Road 391, was considered for ore transportation from the Gordon site to the MacLellan site as other transport options (e.g. rail, conveyor belts, etc.) are not available and would not be economically feasible. Alternative transportation routes were not considered as Provincial Road 391 is the only roadway connecting the Gordon and MacLellan sites. Alternative haulage rates, including options for the timing, number of trucks, and amount of ore transported, were not considered economically or legally feasible, as increasing the number of trucks and decreasing the amount of ore transported would increase costs, and increasing the amount of ore hauled per trip would exceed provincial weight restrictions for Provincial Road 391. Haulage rates were optimized based on the amount of ore to be transported and the provincial seasonal weight restrictions for Provincial Road 391.

Ore mined at the MacLellan site would remain on site for ore milling and processing at the on-site plant. Off-site ore processing was not considered due to the associated inefficiencies and increased environmental footprint.

Access to the Gordon and MacLellan Sites

Two alternatives were considered for access to the Gordon and MacLellan sites: the use of existing site access roads and construction of new access roads, both of which would be connected to the existing Provincial Road 391.

For the first option, the existing 15 kilometre access road, including the bridge crossing at the Hughes River, at the Gordon site and the existing 4.6 kilometre access road at the MacLellan site would be upgraded to safely accommodate project-related traffic. The existing bridge crossing at the Keewatin River at the MacLellan site would not require upgrades as the bridge was recently replaced to maintain safe access to the site. While this option may result in some additional disturbance associated with any required upgrades to infrastructure, the project footprint would not increase beyond the existing footprint left by the historical mining operations at both sites and therefore would not result in additional land disturbance.

Alternatively, construction of a new access road connecting the MacLellan site to Provincial Road 391 would increase the project footprint and would potentially result in:

- adverse effects to surface water quality and quantity and fish and fish habitat due to the need for installation of a new bridge crossing of a tributary of the Keewatin River;
- the loss or alteration of vegetation and wetlands, and wildlife habitat;
- the removal of a bald eagle nest; and
- increased access to previously inaccessible areas or areas that were previously difficult to access, which may result in effects to land and resource use by Indigenous Peoples, including hunting, fishing, trapping, and gathering.

Due to the reduced magnitude and likelihood of potential adverse environmental effects, use of the existing access roads to the Gordon and MacLellan sites was chosen as the preferred option.

Mine Life

Two alternatives were considered for the duration of the operational mine life at the Gordon and MacLellan sites. The first option included a six-year mine life at the Gordon site and an 11-year mine life at the MacLellan site, based on the projected useful life span of major mine equipment and infrastructure,

mine sequencing (i.e. rock extraction and stockpiling) required to maintain a consistent maximum mill feed rate, and economic and technical feasibility. However, additional resources were identified at the MacLellan site, allowing an option to extend the life of the mine to 13 years. The mine life at the Gordon site was maintained at six years. The extension of the mine life was anticipated to have a positive effect on local socio-economic conditions, including those of Indigenous nations, due to an extension of the duration of employment and economic benefits.

Location of Key Project Infrastructure

Ore Milling and Processing Plant

Three locations for the Ore Milling and Processing Plant were considered, including its currently proposed location north of the open pit at the MacLellan site (Figure 3), a location east of East Pond at the MacLellan site, and a location at the Gordon site. The currently proposed location was chosen given its close proximity to the ore stockpiles at the MacLellan site, which would increase process efficiency, result in a reduced project footprint, and would not require watercourse crossings to allow construction of the mine road between the open pit and the Ore Milling and Processing Plant. In comparison, the location to the east of East Pond at the MacLellan site would have resulted in production inefficiencies, additional costs, and an increased potential for environmental effects due to increased air emissions, the need for watercourse crossings, and a larger project footprint, resulting in increased habitat loss and alteration. Locating the Ore Milling and Processing Plant at the Gordon site was determined to not be economically feasible, therefore the potential environmental effects of this option were not assessed.

Tailings Management Facility

Three alternatives were considered for the location of the Tailings Management Facility, including the currently proposed location on the north end of the MacLellan site (Figure 3), a location immediately north of Minton Lake at the MacLellan site, and a location at the Gordon site. Due to the decision to locate the Ore Milling and Processing Plant at the MacLellan site, locating the Tailings Management Facility at the Gordon site was determined to not be economically feasible due to the need to transport tailings from the MacLellan site to the Gordon site; therefore, the potential environmental effects of this option were not assessed. The currently proposed location of the Tailings Management Facility was chosen over the location immediately north of Minton Lake as it would result in a smaller footprint, a lower volume for dam construction, a higher storage capacity to dam volume ratio, limited to no upstream watershed diversion, would be located in closer proximity to the Ore Milling and Processing Plant, and would avoid the potential deposition of mine tailings into fish-bearing waterbodies (i.e. Minton Lake).

Mine Rock Storage Areas and Ore and Overburden Stockpiles

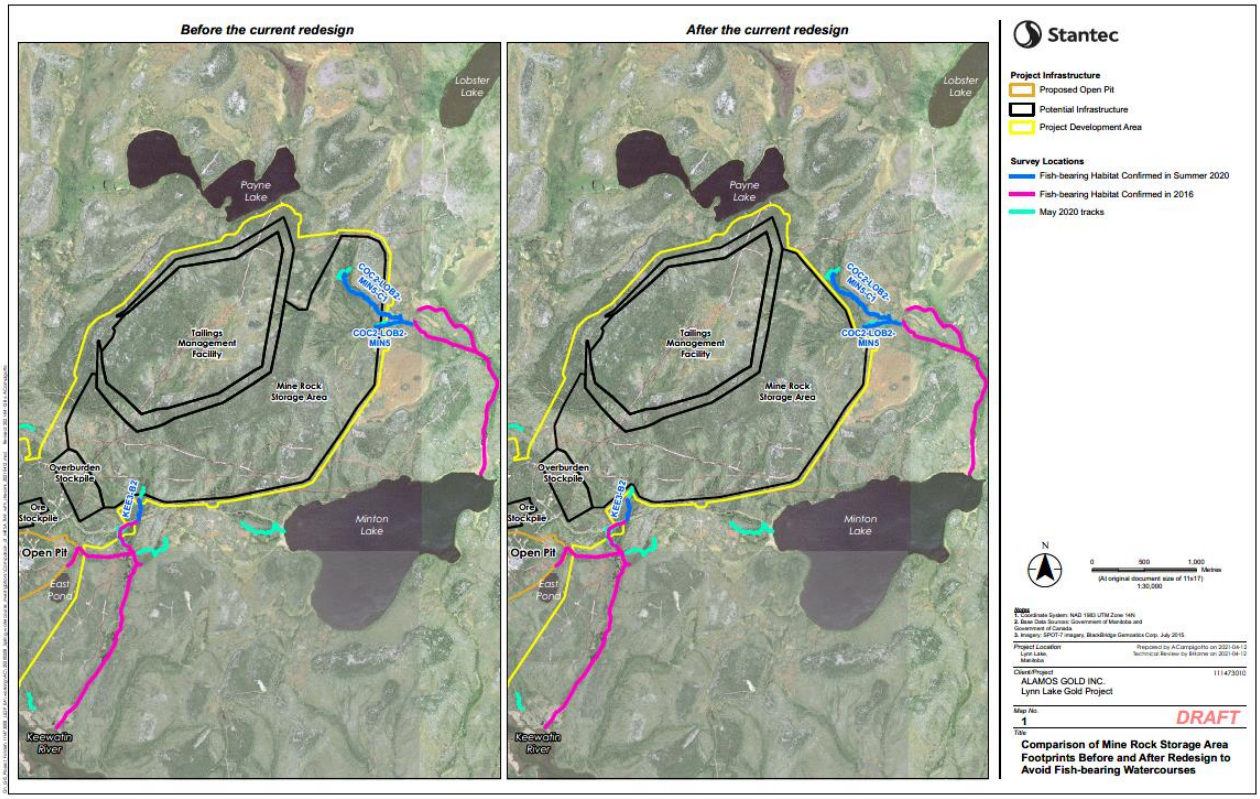
Two alternative locations were considered for the ore and overburden stockpiles at the MacLellan site, including areas located to the north and south of the open pit. The area to the north of the open pit (Figure 3) was selected as this area allowed for lower stockpile heights and the most efficient hauling distances, and therefore lower air and dust emissions, compared to the area to the south of the open pit.

Two locations for the mine rock storage area at the MacLellan site were originally considered, including one location to the north of the open pit and east of the Tailings Management Facility, and another location to the south of the open pit. The area to the north of the open pit (Figure 3) was selected as this area allowed for lower stockpile heights and the most efficient hauling distances, and therefore lower air and dust emissions, compared to the area to the south of the open pit. However, during follow-up fish

surveys conducted in spring and summer 2020 at the MacLellan site, the Proponent identified two fish-bearing tributaries of Minton Lake and one fish-bearing tributary of the Keewatin River located within the footprint of the originally selected mine rock storage area location. To avoid removal or disturbance of these watercourses, the mine rock storage area was redesigned to eliminate the storage of mine rock from the northeast corner and southern boundary of the original mine rock storage area footprint, extend the mine rock storage area to the northwest, and increase the height of mine rock stored in the southeastern portion of the mine rock storage area by five metres (Figure 5).

Only one location option for each of the ore and overburden stockpiles and mine rock storage area was considered technically and economically feasible at the Gordon site; these locations were chosen as the preferred options (Figure 2).

Figure 5 Comparison of the MacLellan Site Mine Rock Storage Area Footprints Before and After Redesign



Source: Lynn Lake Gold Project Environmental Impact Statement: Supplemental Filing Re. MacLellan Site Water Balance/Water Quality Model Update Following Mine Rock Storage Area Refinement (May 10, 2021)

Figure Description: *The left pane shows the location of the originally proposed MacLellan site mine rock storage area and the newly discovered fish-bearing watercourses that overlap with its northeastern section. The right pane shows the revised configuration of the mine rock storage area with the northeastern section removed to avoid fish-bearing watercourses.*

Ore Processing Methods/Technologies

Several options for gold extraction were considered, including cyanidation, gravity concentration, and flotation concentration. While all of these options were comparable in terms of their gold recovery efficacy

and technical feasibility, only cyanidation was considered to be economically feasible and was therefore chosen as the preferred method for gold extraction. As gravity concentration and flotation were not considered economically feasible, the potential environmental effects of these options were not assessed. Potential adverse environmental effects may result from the cyanidation process through potential spills of sodium cyanide, which can be toxic or fatal to terrestrial and aquatic organisms and humans if ingested or through other means of exposure.

Power Supply

Five alternatives were assessed for supplying power to the Project, including on-site diesel generators, upgrading and converting the existing Copper Street Station in the Town of Lynn Lake, construction of a new electrical station, construction of a new distribution line from the existing Laurie River Station to the Project, and construction of a new substation on the project sites and overhead distribution line to the Project following the existing access road right of way. For the Gordon site, given the lower energy requirements for project activities and infrastructure, on-site diesel generators were selected as the preferred option as they are more economical and would not require disturbance of off-site areas to construct new infrastructure. Construction of a new distribution line from the Laurie River Station to the Gordon site would have resulted in a larger disturbance footprint compared to the use of the diesel generators, leading to greater loss of vegetation and wildlife habitat. Construction of a new electrical station at the Gordon site was not economically feasible and therefore was not assessed further.

For the MacLellan site, the preferred options chosen were for Manitoba Hydro to upgrade the existing Copper Street Station in the Town of Lynn Lake, and for the Proponent to construct a new substation next to the Copper Street Station and a new distribution line from the Town of Lynn Lake to the MacLellan site, using existing rights of way to the extent possible. These options were considered technically and economically feasible and would result in the least environmental effects. As the MacLellan site has a higher energy demand, use of diesel generators would have resulted in higher air and greenhouse gas emissions.

Water Supply and Wastewater Management

Two alternatives were considered to meet the Project's 92,000 litre per day operational and potable water supply requirements: the use of surface water and sourcing water from the Town of Lynn Lake. Due to the ongoing Boil Water Advisory in the Town of Lynn Lake that has been in effect since 2012, it was determined that the Town of Lynn Lake's water system would be unable to meet the demands of the Project. Therefore, sourcing water from existing surface waterbodies in the LAAs was selected as the preferred option. Water would be sourced from the Keewatin River, pumped to the Potable Water Treatment Plant for purification, and distributed to the MacLellan site via a series of water pipelines. Potable water for the Gordon site would be trucked from the MacLellan site potable water treatment plant; no other alternatives were considered for this site.

Three alternatives were assessed for wastewater management, including treatment at an on-site sewage treatment facility, storage of wastewater in septic tanks, and storage of wastewater in sewage lagoons. Use of the existing wastewater treatment facility in the Town of Lynn Lake was not considered a viable option as it is currently operating at its maximum capacity. For the MacLellan site, it was determined that both septic tanks and sewage lagoons would not provide adequate sewage treatment capacity due to storage capacity restrictions at the site. Therefore, construction of an on-site Sewage Treatment Plant was selected as the preferred alternative. Sewage would be collected from buildings at the MacLellan site

via a series of buried pipes and conveyed by gravity to the treatment facility; treated wastewater would be discharged to the surrounding environment.

For the Gordon site, the use of septic tanks was selected as the preferred alternative as less wastewater would be generated at the site versus the MacLellan site; sewage lagoons were not selected as they would not provide adequate storage capacity. Wastewater would be collected by gravity into two septic tanks, then trucked to the MacLellan site for processing at the on-site Sewage Treatment Plant.

Contact Water Management and Effluent Discharge Points

One option was assessed for the management of contact water and effluent discharge at the MacLellan site: the collection of contact water locally and treatment in a central contact water collection pond or in the on-site Sewage Treatment Plant, if required, prior to discharge to the Keewatin River. A contact water collection system would be constructed at the MacLellan site to collect contact water from the project site, including from dewatering of the open pit and run-off, and return it to the Ore Milling and Processing Plant for reuse. Contact water that is not required to meet the requirements of the Ore Milling and Processing Plant would be discharged to the Keewatin River, following treatment, if required, to ensure applicable federal and provincial discharge requirements are met. This option would avoid potential adverse effects to surface water, groundwater, and fish and fish habitat; therefore, no additional alternatives were considered. The Keewatin River was chosen as the preferred site for contact water discharge at the MacLellan site as it is the largest watercourse in the area and, therefore, has the largest assimilative capacity of any waterbody near the MacLellan site. As such, alternative discharge locations were not assessed. Seepage from the ore, overburden, and mine rock storage areas would be collected in a series of contact water collection ditches and pumped to the contact water collection pond for monitoring and treatment prior to discharge to the surrounding environment. Seepage and runoff from the mine rock storage area may also be directed to the Tailings Management Facility; no other alternatives were considered.

Contact water from the Gordon site, including from dewatering of the open pit and run-off and seepage from ore, overburden, and mine rock storage areas, would be collected in a site water management pond for treatment before being discharged via pipeline to the surrounding environment. Two discharge locations were considered, including the western basin of Farley Lake and the Hughes River. The western basin of Farley Lake was chosen as it is the deepest basin of Farley Lake, and therefore has a large assimilative capacity, and is located within three kilometres of the Gordon site, limiting requirements for additional infrastructure and associated disturbance to pump contact water to the discharge location. The Hughes River is located over ten kilometres from the Gordon site, which would necessitate the installation of several pump stations along the pipeline length to convey contact water to the river for discharge and would result in additional effects to valued components.

Workforce Accommodation and Transportation

Four options were considered to accommodate the required workforce for the Project: a permanent work camp at the MacLellan site; off-site accommodation in the Town of Lynn Lake; the re-use of existing housing in the Town of Lynn Lake; and the combined use of a work camp within the Town of Lynn Lake and triplex units. Due to the declining population in the Town of Lynn Lake, the condition of most available housing is deteriorated and not habitable, and existing temporary accommodations, such as hotels, motels, campgrounds, and lodges, would not have sufficient capacity to support the required workforce for the Project; therefore, these options were not selected. A camp located within the Town of Lynn Lake was also not selected as the infrastructure upgrades that would be required were substantial and were

determined to not be economically or technically feasible. Therefore, construction of a new permanent work camp at the MacLellan site was chosen as the preferred alternative as it was the most cost effective and efficient, and would be designed to ensure sufficient capacity for project personnel. This option would also reduce traffic along Provincial Road 391 as commuting to the MacLellan site from the Town of Lynn Lake would not be required, would reduce interactions and potential conflicts between local inhabitants and project personnel, and would avoid potential adverse effects to infrastructure and services within the Town of Lynn Lake as work camp infrastructure would be independent of existing facilities. Workers assigned to the Gordon site would be transported by bus daily from the MacLellan site, further limiting potential project effects to traffic safety and volume along Provincial Road 391.

Diversion Channel (Gordon Site)

Two options were assessed for the new diversion channel to be constructed between Gordon and Farley Lakes. The first option, a channel approximately 1,450 metres long that would incorporate fish habitat features, was chosen as the preferred alternative. This option allows for a continued connection between Gordon and Farley Lakes and creation of a sufficient area of fish habitat to offset that lost through removal of the existing channel, without requiring additional disturbance to meet anticipated *Fisheries Act* offsetting requirements. The second option was an approximately 1,000 metre long constructed channel; however, this channel would not be designed with fish habitat features and would therefore not function as an offset for the removal of the existing channel. Both options would originate at Gordon Lake and terminate at a tributary to Farley Lake.

Groundwater Interception

Three alternatives were considered to mitigate groundwater inflow to the open pit at the Gordon site, including the use of a seepage cut-off wall, grout curtain, and an interceptor well system. The results of the alternatives assessment found that groundwater flow would bypass a seepage cut-off wall and grout curtain and would enter the open pit regardless, whereas interceptor wells were predicted to mitigate inflows to the open pit. The use of interceptor wells would also allow more flexibility in terms of placement and would be a temporary feature that could eventually be removed following operation. Use of a grout curtain and seepage cutoff wall would have also resulted in higher magnitude effects to lake levels in Gordon and Farley Lakes due to groundwater drawdown, whereas the use of interceptor wells would allow groundwater that would have discharged to the open pit to be discharged to these lakes to mitigate lake level reductions.

Mine Waste Disposal

Three options were considered for tailings disposal during operation at the MacLellan site, including conventional disposal (i.e. tailings disposal in a geomembrane-lined dam); dry stacking (i.e. disposal of dewatered tailings on a flat surface equipped with run-off and seepage collection ditches, ponds, and sumps to collect contact water for treatment prior to discharge); and co-disposal (i.e. mixing of mine rock and tailings to form one, more stable waste stream). Dry stacking was not chosen as it would be difficult to maintain, would incur additional costs to transport, place, process, and compact the tailings, and presented greater potential risks to the environment. Co-disposal was not selected as it would require the diversion of larger volumes of contact water compared to other methods and would require additional mitigation measures for the management of acid rock drainage and metal leaching. Therefore, conventional disposal was selected as the preferred method as it was considered to be more technically and economically efficient and would result in less potential risks to the environment.

Two alternatives were considered to manage potentially contaminated seepage from the Tailings Management Facility at the MacLellan site during operation, including the use of a full High Density Polyethylene liner beneath the Facility and bedrock grouting coupled with installation of seepage collection systems. Use of a full liner beneath the Tailings Management Facility was not selected as this option was not considered economically feasible, may reduce the long-term stability of tailings, and may increase the risk of embankment failure. Bedrock grouting coupled with installation of seepage collection systems, which was selected as the preferred alternative, would allow tailings to consolidate and gain strength, facilitating long-term stability and a more efficient closure/reclamation process. However, select areas of the Tailings Management Facility where seepage is expected to be highest would be lined, such as on the upstream slopes of the dams.

Three alternatives were considered to manage acid rock drainage and metal leaching from the mine rock storage areas at the Gordon and MacLellan sites during operation, including the use of a full High Density Polyethylene liner beneath the storage areas, blending of potentially acid generating and non-potentially acid generating materials, and use of dry or wet covers. The Proponent chose a combined approach of blending potentially acid generating and non-potentially acid generating materials and use of dry or wet covers, if required, as these methods would reduce the volume of contact water to manage, avoid the development of acidic “pockets” in the mine rock storage areas, and be the most cost-effective. Use of a full liner beneath the mine rock storage areas was not selected as this option was not considered economically feasible.

Two options were considered for disposal of mine rock at the Gordon and MacLellan sites and tailings at the MacLellan site following operation, including the use of a soil cover (i.e. soil from the overburden stockpiles) placed over the proposed mine rock storage areas and Tailings Management Facility, and backfilling of the open pit. Disposal of mine rock and tailings in the open pits was not considered economically feasible, given the high cost associated with recovering the mine rock and tailings and transportation to the open pits. This double handling of mine rock and tailings would also result in the generation of additional greenhouse gas and other air contaminant emissions from machinery exhaust, resulting in adverse effects to air quality. As such, use of a soil cover over the mine rock storage areas and Tailings Management Facility following operation was selected as the preferred option.

3.2.2 Views Expressed

Federal Authorities

Natural Resources Canada expressed concerns that the assessment of alternate means for mine rock and tailings disposal following project operation did not adequately consider the potential long term effects to water quality and related valued components due to seepage of metals and other contaminants of concern from the mine rock storage areas and Tailings Management Facility should the soil cover erode over time, reducing its effectiveness. Further, the Proponent did not consider that engineered soil covers may erode faster given the effects of climate change on precipitation patterns and extreme weather events. Natural Resources Canada recommended backfilling of the open pit to dispose of mine rock waste and tailings.

Indigenous Nations

Four main concerns were expressed by Indigenous nations related to alternative means:

- the assessment of alternative time frames for the life of the mine did not adequately consider potential economic benefits associated with an extended mine life (i.e. extension to 26 years by halving mine tonnage);
- the alternative means assessment for mine waste disposal did not adequately consider the potential effects of conventional tailings disposal on groundwater and surface water to inform the selection of this method as the preferred alternative;
- the alternative means assessment for management of seepage from the Tailings Management Facility and mine rock storage areas did not adequately consider potential effects to valued components, particularly effects that may occur if a full liner is not installed beneath these areas; and
- alternatives were evaluated and selected without Indigenous consultation.

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

3.2.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent considered the cost-effectiveness, technical feasibility, reliability, potential environmental effects, and feedback from federal authorities and Indigenous nations on the identified alternative means of carrying out the Project. The Agency recognizes that concerns remain regarding the assessment of alternative time frames for the mine life and the factors considered in determining the preferred mine life duration. The Agency is of the view that the Proponent adequately considered potential environmental and socio-economic factors, and the technical feasibility of various mine life durations in its selection of the preferred alternative. The Agency also recognizes that concerns remain regarding the Proponent's selection of the preferred alternatives for mine rock and tailings disposal, including long-term effects to water quality and other valued components. The Agency is of the view that the Proponent's assessment adequately considered potential environmental effects and the technical and economic feasibility of alternative means. Potential project effects to surface water and groundwater quality as a result of the storage of mine rock and tailings on the PDAs, and proposed key mitigation measures to address potential effects to these valued components, are further discussed in Chapter 6.2 (Groundwater) and Chapter 6.3 (Surface Water) of this EA Report.

The Agency understands that concerns remain regarding the level of engagement and consultation undertaken by the Proponent in conducting its alternative means assessment for the Project. The Agency understands that the Proponent committed to ongoing engagement with Indigenous nations throughout the life of the Project, including during the detailed design phase, and the establishment of an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations regarding the Project, its potential effects, and follow-up and monitoring programs. Further details regarding the Indigenous Environmental Advisory Committee 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 EA Report. The Agency highlights the importance of ongoing engagement and consultation with Indigenous nations to ensure that potential effects to Indigenous Peoples are identified and addressed, and to ensure the consideration of Indigenous knowledge.

Based on its review of the EIS and other information, the Agency is satisfied that the Proponent sufficiently assessed alternative means of carrying out the Project for the purposes of assessing the environmental effects of the Project 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 under section 35 of the *Constitution Act*, *1982*[2] (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 federal 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 federal Crown Consultation Coordinator to facilitate a whole-of-government approach to consultation. Indigenous nations 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 federal Crown consultation obligations, the Agency conducted Indigenous consultation in an integrated manner with the environmental assessment process.

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 any structure, site, or thing of historical, archaeological, paleontological, or architectural significance. Analysis of potential effects to Indigenous nations is presented in Chapter 7.4 (Indigenous Peoples – Current Use of Lands and Resources for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance), Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions), and Chapter 7.6 (Federal Lands) of this EA Report. An assessment of potential project impacts on Aboriginal and treaty rightss are discussed in Chapter 9 (Impacts on Aboriginal or Treaty Rights) of this EA Report.

[2] 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 this Act, the Aboriginal and treaty rights referred to in subsection (1) are guaranteed equally to male and female persons.

Indigenous nations identified for consultation include those with an interest in the Project due to proximity, traditional land use, and the extent of potential adverse effects on section 35 rights. The Agency consulted with:

- Barren Lands First Nation;
- Chemawawin Cree Nation;
- Hatchet Lake First Nation;
- the Manitoba Metis Federation;
- Marcel Colomb First Nation;
- Mathias Colomb Cree Nation;
- Métis Nation – Saskatchewan Northern Region 1;
- Métis Nation – Saskatchewan Eastern Region 1;
- Nisichawayasihk Cree Nation ;
- Northlands Denesuline First Nation;
- O-Pipon-Na-Piwin Cree Nation;
- Peter Ballantyne Cree Nation; and
- Sayisi Dene First Nation.

The Agency initially consulted with Pickerel Narrows Cree Nation regarding the Project; however, on March 13, 2018, Pickerel Narrows Cree Nation informed the Agency that the Nation would be represented by Mathias Colomb Cree Nation for the purpose of project-related consultation activities. In May 2020, Chemawawin Cree Nation expressed an interest in the Project and a desire to be consulted. The Agency began consultation with Chemawawin Cree Nation in May 2020.

The Agency supported participation of Indigenous nations through its Participant Funding Program. Funds were made available to reimburse eligible expenses of participating Indigenous nations. Eleven of the identified Indigenous nations applied for and were allocated a total funding of $727,918.25 through this Program.

The Agency provided Indigenous nations 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 federal Crown's understanding of the Project's potential environmental effects and potential impacts to section 35 rights and related interests, and the effectiveness of measures proposed to avoid or minimize those impacts. Indigenous nations received regular updates from the Agency to keep them informed of key developments and to solicit feedback. The Agency integrated the federal Crown's consultation and engagement activities throughout the environmental assessment process and invited Indigenous nations to review and provide written comments during formal comment periods on the documents listed in Table 2. Indigenous nations were also be provided an opportunity to review and provide comments on the draft EA Report and draft potential conditions.

Table 2 Public and Indigenous Nations Comment Opportunities during the Environmental Assessment Process

Subject of Consultation	Dates

Summary of the Project Description	July 20, 2017 – August 9, 2017
Draft Environmental Impact Statement Guidelines	September 1, 2017 – October 2, 2017
EIS Summary and EIS	August 16, 2020 – October 10, 2020
EIS Technical Review	October 11, 2020 – October 3, 2022
Draft EA Report and draft Potential Conditions	November 7, 2022 – December 7, 2022

The Agency met with and considered comments from Indigenous nations during the review of the EIS and the EIS Summary to formulate information requests to the Proponent. Indigenous nations were provided an opportunity to review and comment on the additional information provided by the Proponent. On March 29, 2021, Nisichawayasihk Cree Nation withdrew all objections to the Project and its participation in the environmental assessment process. On May 4, 2021, O-Pipon-Na-Piwin Cree Nation stated that they had no concerns in relation the Project and did not wish to be actively consulted at that time. The Agency continued to inform Nisichawayasihk Cree Nation and O-Pipon-Na-Piwin Cree Nation about opportunities to participate in the environmental assessment process, including engagement and consultation activities. The Agency incorporated concerns and input from Nisichawayasihk Cree Nation and O-Pipon-Na-Piwin Cree Nation in this EA Report but acknowledges that these concerns may have been addressed outside the environmental assessment process.

On December 5, 2022, O-Pipon-Na-Piwin Cree Nation expressed a renewed interest in participating in the environmental assessment process and the Agency resumed consultation activities with this Nation.

4.2 Proponent Indigenous Engagement Activities

The Proponent engaged with 13 Indigenous nations located in Manitoba and Saskatchewan. Engagement methods included phone calls, emails, written letters, and reports. The Proponent stated that they would continue to provide information and to solicit feedback on the Project, mitigation measures, monitoring, and follow-up programs from Indigenous nations throughout the life of the Project.

The Proponent's engagement with Marcel Colomb First Nation began in 2014. The Proponent's engagement activities expanded in 2017, following direction provided by the Agency in the *Guidelines for the Preparation of an Environmental Impact Statement* for the Project, to include the following Indigenous nations:

- Barren Lands First Nation;
- Hatchet Lake First Nation;
- the Manitoba Metis Federation;
- Marcel Colomb First Nation;
- Mathias Colomb Cree Nation;
- Métis Nation – Saskatchewan Northern Region 1;
- Métis Nation – Saskatchewan Eastern Region 1;
- Nisichawayasihk Cree Nation;
- Northlands Denesuline First Nation;

- O-Pipon-Na-Piwin Cree Nation;
- Peter Ballantyne Cree Nation; and
- Sayisi Dene First Nation.

In May 2020, Chemawawin Cree Nation expressed concerns about the Project and a desire to be engaged; the Proponent began engaging with the community in May 2020.

Key concerns raised by Indigenous nations during Proponent engagement included:

- impacts to rights, cultural experience, and the exercise of rights;
- incorporation of Indigenous knowledge and traditional land use studies;
- access and quality of traditional land and resource use, such as for fishing, hunting, trapping, and gathering, including access to the PDAs, and loss of and changes to wetlands;
- effects to Indigenous health, well-being, and access to and quality of country foods;
- effects on federal lands;
- effects to sites and resources of cultural and historical importance;
- potential for accidents and malfunctions;
- increased noise, dust, and air contaminants;
- changes to groundwater and surface water quantity and quality;
- changes to vegetation (i.e. culturally important species and the introduction of invasive and weed species) and the need for surveys, monitoring, reclamation, and revegetation;
- effects to wildlife, including migratory birds and culturally significant species (e.g. boreal caribou), such as effects to wildlife health and mortality, habitat loss and fragmentation, and changes to habitat connectivity and wildlife movement;
- the adequacy and anticipated effectiveness of the Proponent's proposed mitigation and follow-up and monitoring measures;
- the lack of capacity funding from the Proponent for review of key documents throughout the environmental assessment process; and
- the lack of meaningful Indigenous engagement by the Proponent to collect baseline data.

4.3 Public Participation

4.3.1 Public Participation Led by the Agency

Public engagement activities by the Agency included holding public comment periods, hosting virtual information sessions, and developing and issuing materials to share information and receive feedback about the Project.

The Agency provided five opportunities for the public to participate in the environmental assessment process, as outlined in Table 2, including an opportunity to provide input on the draft EA Report and the draft potential conditions. Printed copies of the draft EIS Guidelines and EIS Summary were made available upon request. Notices of opportunities to participate were posted on the Canadian Impact Assessment Registry Internet Site and advertised through local media (i.e. print, web, and radio).

The Agency made funding available through its Participant Funding Program to support the public in reviewing and providing comments. No requests for funding to support the public in participating in the environmental assessment for the Project were received.

The Agency received eight submissions from members of the public, community organizations, and municipal representatives throughout the environmental assessment process, including the Lynn Lake Chamber of Commerce, the Town of Lynn Lake, and the Northern Manitoba Sector Council. Below is a high-level summary of key concerns pertaining to areas of federal jurisdiction. This represents some of the issues, concerns, and views that were expressed and considered throughout the environmental assessment process.

Key issues raised by the public during Agency engagement include:

- federal environmental assessment timelines and process; and
- social and economic effects to the surrounding communities and local businesses, including employment and training opportunities.

The Agency recognizes that many members of the public, organizations, and other stakeholders are supportive of the Project and have requested expedited timelines.

4.3.2 Public Participation Activities by the Proponent

The Proponent carried out public engagement activities since March 2015, including project notifications, meetings with local businesses, municipalities, and other stakeholders, open houses, direct communications with individuals (e.g. written communications), and other activities. These have included four public open houses, site tours, and over 50 meetings with local businesses, development corporations, local services (i.e. hospitals, police and fire departments, and local utilities providers), non-government organizations, schools and academic organizations, and local towns and municipalities. The Proponent has also maintained a dedicated project office in the Town of Lynn Lake since January 2016 that is open to the public and a project email address to receive comments and feedback from stakeholders, address concerns, and answer questions.

Key concerns raised by the public during Proponent engagement include:

- employment, economic development, training, and education opportunities in local communities, including for local Indigenous Peoples;
- effects to the local economy after mine closure and the need for an economic exit plan;
- effects to the availability of housing, community services, health care and hospitals, and infrastructure;
- effects to surface water and groundwater, including water quality;
- effects to fish and fish habitat, including the quality of fish for consumption;
- effects to wildlife and wildlife habitat, such as moose, bears, and other wildlife species, including those used for consumption;
- effects to vegetation, including plants used for consumption and medicinal purposes;
- potential for the Project to result in increased substance abuse and violence due to an influx of income for some individuals;
- effects to the current use of lands and resources for traditional purposes by Indigenous Peoples;

- effects to the environment associated with potential accidents and malfunctions;
- tailings disposal and containment options; and
- site reclamation and remediation activities.

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 Boreal Shield Ecozone, Churchill River Upload Ecoregion, Reindeer Lake Ecodistrict, and High Boreal wetland region in northern Manitoba, which is characterized by a flat to gently undulating topography. The vegetation is generally comprised of black spruce (*Picea mariana*) dominated forests, permafrost and non-permafrost wooded bogs and patterned fens, and other wetland types which cover an estimated 37% of the High Boreal wetland region. Tamarack (*Larix laricina*) is typically found in richer peatland wetlands, while richer upland sites are forested with white birch (*Betula papyrifera*), jack pine (*Pinus banksiana*), and white spruce (*Picea glauca*). Common dandelion (*Taraxacum offincinale*) and quack-grass (*Elymus repens*) are typical weed species observed in the region.

Habitat types present in the Gordon and MacLellan site PDAs, such as conifer and mixed wood deciduous forests, shrublands, and wetlands, provide habitat for a diverse range of wildlife species, including migratory birds and species of conservation concern[3], such as boreal caribou, wolverine (*Gulo gulo*), and little brown myotis (*Myotis lucifugus*). The Proponent identified 163 migratory bird species and bird species at risk with the potential to occur in the RAA. The most common migratory birds observed in the RAA were Canada goose (*Branta canadensis)*, mallard (*Anas platyrhynchos*), common loon (*Gavia immer*), ruby-crowned kinglet (*Regulus calendula*), Tennessee warbler (*Leiothlypis peregrina*), and swamp sparrow (*Melospiza georgiana*). The RAA is also home to a wide range of species of importance to Indigenous nations for traditional and cultural purposes, including moose (*Alces alces*), black bear (*Ursus americanus*), beaver (*Castor canadensis*), gray wolf (*Canis lupus*), and American marten (*Martes americana*). With respect to boreal caribou, the MacLellan site PDA overlaps with the Manitoba North Range, an area delineated federally[4] as containing habitat for boreal caribou. The Gordon and MacLellan site PDAs also overlap with the Kamuchawie Management Unit, a provincially designated[5] geographic unit used to facilitate the management of boreal caribou ranges.

The Project would be located within the Hughes River, Lower Keewatin River, Lower Lynn River, and Cockeram Lake subwatersheds, which are part of the Granville Lake watershed. Surface water around the Gordon site drains southward into the Hughes River, via Farley Lake, Swede Lake, and Ellystan Lake, which discharge into Barrington River and Southern Indian Lake. Around the MacLellan site, water

[3] The Proponent described species of conservation concern as those species listed as special concern, threatened, or endangered under SARA; designated federally as special concern, threatened, or endangered by COSEWIC in Canada; listed provincially as threatened or endangered under Manitoba's *The Endangered Species and Ecosystems Act*; or ranked provincially as S1 to S3 by the Manitoba Conservation Data Centre.
[4] As identified in the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal Population* (2020).
[5] As identified in *Manitoba's Boreal Woodland Caribou Recovery Strategy* (2015).

flows south into the Keewatin River and southeast through Cockeram Lake and Sickle Lake before discharging into Granville Lake.

Gordon Lake, located west of the historical mine area at the Gordon site, is located at the upstream end of its watershed and formerly drained eastward to Farley Lake, which is located east of the historical mine site. As part of historical mining activities at the Gordon site, a diversion channel was constructed between Gordon and Farley Lakes and is currently located north of the historical open pits (i.e. the Wendy and East pits); these pits are currently flooded and not connected to surrounding lakes. The water level in Gordon and Farley Lakes is maintained at pre-development levels due to the construction of control structures at their outlets as part of closure activities associated with the historical mining operation that occurred between 2007 and 2012.

The Keewatin River, located west of the proposed MacLellan site, is one of the largest waterbodies in the watershed. The subwatershed to the west of the MacLellan site flows towards the Keewatin River, which ultimately converges with the Lynn River before entering Cockeram Lake. Five lakes surround the MacLellan site, including Payne Lake, which drains into the Keewatin River, Lobster Lake, Minton Lake, and two unnamed lakes. A shallow waterbody named East Pond is located approximately 200 metres east of the historical mine area at the MacLellan site and discharges to the Keewatin River via an unnamed tributary.

Most of the lakes near the Gordon and MacLellan sites are shallow (i.e. less than four metres deep) and do not stratify during the summer. Baseline surface water quality generally reflects geochemistry of the Precambrian shield (i.e. low in dissolved ions, soft, and neutral to slightly acidic pH) and contains naturally elevated levels of total phosphorus, aluminum, chromium, and iron that occasionally exceed federal and provincial water quality guidelines. Surface water quality samples collected at the outlet of Gordon Lake show no notable changes in water quality from background conditions, indicating that drainage from the historical reclaimed mine at the Gordon site has not affected water quality. Surface water quality data from Farley Lake and the East and Wendy pit lakes indicate elevated levels of some metals and other ions that may be attributable to historical mining at the Gordon site. The inactive historical mine at the MacLellan site does not appear to be affecting surface water quality in the Keewatin River.

Within the RAA, Dystric Brunisols are the dominant soils on sandy, acidic till, while Gray Luvisols dominate on well to imperfectly drained clay deposits. Granitic rock outcrops are co-dominant in the area and deep organic soils, such as Mesisols, Fibrisols, and Cryosols (i.e. permafrost-affected soils), are common in wetland-dominated areas. Within the PDAs, Brunisols occupy the largest proportion of the area, followed by Cryosols and Organic soils.

Groundwater flow in the region is strongly influenced by topography, which results in flow originating from high areas and flowing towards low areas. Recharge is associated with high areas and discharges to surface water features occur within low areas. Regional groundwater flow within the Gordon site LAA and RAA is generally to the east in the central and southern portions of the LAA and RAA and to the northeast in the northern portion of the LAA and RAA. Groundwater flow within the MacLellan site LAA and RAA is generally to the south and southeast over the entire area.

Overall, groundwater quality in the region meets federal and provincial drinking water quality standards except for dissolved iron and manganese; these parameters are typically elevated in groundwater within northern areas where reducing (i.e. anoxic) groundwater conditions exist. Some monitoring wells within the RAA show exceedances of drinking water quality guidelines for sulphate and dissolved lead and monitoring wells located within the historical mine areas for both the Gordon and MacLellan sites show exceedances for dissolved arsenic. Background groundwater quality in the region also meets the more

stringent federal and provincial water quality guidelines for the protection of aquatic life for all parameters except fluoride, total phosphorus, and dissolved aluminum, iron, phosphorus, and zinc. However, the Proponent did not identify any known groundwater well users within 30 kilometres of the Gordon site PDA or within the RAA for the MacLellan site.

Based on field surveys, a total of 17 fish species are known to occur in the lakes and streams near the Project, including brook stickleback (*Culaea inconstans*), northern pike (*Esox Lucius*), walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), lake whitefish (*Coregonus clupeaformis*), and burbot (*Lota lota*). Lake sturgeon, western Hudson Bay populations (*Acipenser fulvescens*; lake sturgeon), classified as "Endangered" by COSEWIC, may also be present in the Keewatin River and Hughes River.

Most lakes near the Gordon site are shallow (i.e. less than three metres deep) with soft substrates, such as sand or muck; hard substrates, such as boulders or cobbles, are also present although less common. Streams near and within the Gordon site PDA are generally small (i.e. 1.6 to 5.2 metres wide) with low gradients and substrates dominated by fines and organic materials. Overall, lakes and streams near the Gordon site provide spawning, rearing, foraging, and overwintering habitat for large- and small-bodied fish species. The existing diversion channel between Gordon and Farley Lakes also supports large- and small-bodied fish usage and the Wendy and East pit lakes on the Gordon site support self-sustaining populations of white sucker (*Catostomus commersonii*) and brook stickleback. Tributaries to Gordon Lake and Farley Lake, portions of which are located within the Gordon site PDA boundary, are likely to support fish species during the open water months of the year due to their connection to other fish-bearing waterbodies. However, as these tributaries typically freeze to the bottom during winter, they are unlikely to support fish during the winter months. Although portions of these tributaries lie within the Gordon site PDA boundary, they do not directly overlap with any project components.

Lakes near the MacLellan site are generally shallow (i.e. less than three metres deep) with substrates that range from fine organics to coarse gravel and exposed bedrock. Streams near and within the MacLellan site PDA, with the exception of the Keewatin River and Cockeram River, are generally small (i.e. less than five metres wide and less than one metre deep) with fine silt and organic substrates. The substrate of the Keewatin River and Cockeram River are dominated by boulders (i.e. riffle habitat) with some fine materials. Lakes and streams in the area generally provide spawning, rearing, foraging, and overwintering habitat for large-bodied and small-bodied fish species year round. Smaller streams near and within the MacLellan site PDA are likely to support fish species during the open water months of the year due to their connection to other fish-bearing waterbodies. However, as these tributaries typically freeze to the bottom during winter, they are unlikely to support fish during the winter months. Although portions of these smaller streams lie within the MacLellan site PDA boundaries, they do not directly overlap with any project components.

The Project would be located in a remote, sparsely populated region, where some mining activities, forestry, resource use (e.g. hunting, fishing, trapping, and gathering), and recreation or tourism-related activities are the primary activities. Air emissions are generally limited to local and highway traffic, emissions from forest fires, and other human activities, such as the use of wood stoves and open fires.

5.2 Human Environment

The Project would be located on previously disturbed provincial Crown lands within the territory of Treaty 5, the traditional territory of many First Nations and Métis Peoples, the Manitoba Metis Federation's Thompson Region, the Town of Lynn Lake's administrative area, and the Thompson Community and Regional Planning Area of northwest Manitoba. The Town of Lynn Lake and Marcel Colomb Cree

Nation's Black Sturgeon Reserve are located approximately 55 kilometres west and 5.6 kilometres southwest of the Gordon site, respectively, and eight kilometres southwest and 22 kilometres southeast of the MacLellan site, respectively. There is firm archaeological evidence that northern Manitoba, including the PDAs and LAAs, has been occupied by Indigenous Peoples for at least 9,500 years.

The Project would be located in a remote, sparsely populated, and rugged region where primary resource uses include mining activities and forestry. Hunting, trapping, sport fishing, hiking, camping, snowmobiling, canoeing, cross-country skiing, snowshoeing, dog-sled racing, and other forms of recreation and tourism also occur. The RAA falls within Manitoba Game Hunting Area 9 and Game Bird Hunting Zones 1 and 2, and there are four lodges and outfitters that operate in the RAA. Commercial fishing is a major source of income for people living in northern Manitoba. Fish species commercially caught from lakes in the RAA include walleye, northern pike, trout (*Oncorhynchus spp.*), and lake whitefish.

Federal Crown land encompasses approximately 3,139 hectares of the RAA and includes First Nation reserve lands and related Treaty Land Entitlement areas. Provincial Crown land includes Registered Trapline Districts and Community Interest Zones[6]. Approximately 133 hectares of Marcel Colomb First Nation's Black Sturgeon Reserve and its Community Interest Zones fall within the Gordon and MacLellan site LAAs. The Nisichawayasihk Cree Nation and O-Pipon-Na-Piwin Cree Nation also have four existing Treaty Land Entitlement areas within the RAA at Barrington Lake North, Barrington Lake/Brooks Island, Melvin Lake South, and Melvin Lake North. The nearest First Nation Reserve to the Gordon and MacLellan site s is the Black Sturgeon Reserve.

Through the Proponent's Indigenous engagement program, Mathias Colomb Cree Nation and Marcel Colomb First Nation indicated that their citizens continue to use the PDAs to support traditional and cultural activities. These activities include hunting and use of the area as a traditional access route to other sites of importance. Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation have also identified trails and travel routes, and hunting, fishing, plant gathering, trapping, and cultural and archaeological sites within the Gordon and MacLellan site LAAs and RAAs.

The Gordon and MacLellan site RAAs overlap with 20 registered traplines in the Pukatawagan and the Southern Indian Lake trapping areas. Six of the 20 registered traplines overlap with the LAAs and four of the 20 registered traplines overlap with the PDAs. These traplines are registered to members of Marcel Colomb First Nation and are used for the exercise of section 35 rights, traditional practices, including hunting, fishing, gathering, and ceremonial practices, and for the transmission of Indigenous knowledge, history, and culture. There are several remote cabins within the Gordon and MacLellan site LAAs, some of which are unoccupied, temporarily or seasonally used, or permanently used.

As part of Manitoba's Protected Areas Initiative, there are two Areas of Special Interest (ASI)[7] in the RAA, including the Eden Lake ASI, located approximately 14 kilometres southeast of the Gordon site, and the Goldsand Lake ASI, located approximately 13 kilometres northwest of the MacLellan site.

[6] Community Interest Zones are temporary areas of protected land adjacent to the main reserves of Entitlement First Nations. The intent is to protect such areas from development while a First Nation is involved in the selection or acquisition process.

[7] Areas of Special Interest are selected by the province to represent enduring features found within a natural region that still need to be captured to achieve adequate representation. They are for discussion purposes and are not protected in any formal manner.

There are two provincial parks located within the RAA, Burge Lake Provincial Park and Zed Lake Provincial Park, approximately five kilometres and 17 kilometres west of the MacLellan site PDA, respectively.

6 Predicted Changes to the Environment

6.1 Atmospheric Environment

The Agency summarized the Proponent's assessment of changes to the atmospheric environment with input from federal authorities and Indigenous nations. This summary supports the analysis of effects on 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, physical and cultural heritage, and sites of significance (Chapter 7.4), Indigenous Peoples' health and socio-economic conditions (Chapter 7.5), and federal lands (Chapter 7.6), included in this EA Report.

The Agency is of the view that the Proponent adequately considered potential effects of the Project on the atmospheric environment and that the Proponent's proposed mitigation measures, monitoring, and follow-up programs (Appendix D) are appropriate to address potential project effects to the atmospheric environment. 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 and Indigenous nations.

6.1.1 Proponent's Assessment of Environmental Effects

Air Quality and Odour Emissions

During construction, operation, and decommissioning/closure at the Gordon and MacLellan sites, sources of atmospheric contaminant emissions that could affect air quality include: diesel combustion emissions; emissions from explosives detonation (i.e. nitrogen oxides (NO_X), carbon monoxide (CO), and sulphur dioxide (SO_2)); fugitive dust emissions from mining equipment, haul trucks, light personnel vehicles, wind erosion of exposed soil, ore, and mine rock, and bulldozing and grading; and emissions from ore milling and processing. These activities could result in elevated concentrations of total suspended particulates, fine particulate matter ($PM_{2.5}$ and PM_{10}), NO_2, CO, SO_2, hydrogen cyanide (HCN), metals (i.e. arsenic, cadmium, copper, lead, nickel, and zinc), diesel particulate matter, and greenhouse gas (GHG) emissions, including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

While the Proponent did not directly model project-related air emissions during construction, annual emissions estimates, assuming a worst-case scenario with the highest potential emissions, of PM_{10}, NO_2, CO, and SO_2 during construction were predicted to be lower than emissions during operation (i.e. 65% to 85% less for the Gordon site and 20% to 65% less for the MacLellan site). Annual emissions of diesel particulate matter during construction were predicted to be 17% to 18% higher than operation due to the higher number of off-road diesel equipment expected on the PDAs during this phase. The Proponent predicted that, following the implementation of mitigation measures, potential effects to air quality due to air contaminant and fugitive dust emissions during construction would be negligible. During operation at the Gordon site, the Proponent predicted that the maximum 1-hour average NO_2, CO, and SO_2 concentrations and 24-hour average total suspended particulate and PM_{10} concentrations would exceed the Manitoba AAQC and CAAQS limits (Table 3). At the MacLellan site, maximum 1-hour average NO_2 and 24-hour average total suspended particulate and PM_{10} concentrations were predicted to exceed

Manitoba AAQC and CAAQS limits along the PDA boundary (Table 3). Beyond the PDA boundaries, the length of exceedances of the Manitoba AAQC or CAAQS limits would be one day or less per year. Maximum predicted concentrations for all other air contaminants, including metals and HCN, were predicted to be less than the applicable Manitoba AAQC or CAAQS limits for both sites.

Table 3 Air Contaminant Exceedances of Manitoba AAQC or CAAQs Limits During Operation

Air Contaminant Standard Averaging Time	Length of Exceedance of Manitoba AAQC or CAAQS Limits	
	Gordon site[1]	MacLellan Site[1]
1 hour average NO_2	99 days per year	79 days per year
1 hour average CO	One hour per year	No exceedance
1 hour average SO_2	5 days per year	No exceedance
24 hour average total suspended particulate	73 days per year	64 days per year
24 hour average PM_{10}	110 days per year	89 days per year

[1] At the PDA boundary.

The Proponent predicted that, during decommissioning/closure, the volume of atmospheric contaminants would be much lower than those during construction and operation, and would be managed with the implementation of mitigation measures. Therefore, potential effects to air quality due to emissions of air contaminants and fugitive dust during decommissioning/closure were predicted to be negligible.

Changes to odour levels during all project phases at the Gordon and MacLellan sites were predicted to result from NO_2 and diesel combustion emissions from off-road mining equipment, haul trucks, and light-duty personnel vehicles, and would occur within the PDAs and LAAs. As maximum NO_2 concentrations during all phases were predicted to be less than odour recognition thresholds[8] at receptor locations within the LAAs and odour emissions would occur in short periods of less than one hour, the Proponent predicted that project-related odour emissions would be unlikely to affect the general population in the LAAs and RAA. However, the Proponent acknowledged that the perception of and sensitivity to odour is individually subjective.

The Proponent concluded that, with the implementation of mitigation measures, residual project effects to air quality and odour levels at the Gordon and MacLellan sites during construction would be adverse, low in magnitude, short-term, irregular in frequency, reversible, and would occur within the LAAs. During operation, effects were predicted to be adverse, low to high in magnitude, medium-term, irregular in frequency, reversible, and would occur within the LAAs. Residual effects during decommissioning/closure were predicted to be adverse, negligible in magnitude, long-term in duration, irregular, reversible, and would occur within the LAAs.

Greenhouse Gas Emissions

[8] As described in the United States Environmental Protection Agency's *Reference Guide to Odour Thresholds for Hazardous Air Pollutants Listed in the Clean Air Act Amendments of 1990* (1992).

The estimated total project-related GHG emissions during the entirety of the construction, operation, and decommissioning/closure phases at the Gordon and MacLellan sites are presented in Table 4. The Proponent conservatively assumed a continuous release of the maximum possible GHG emission volumes for construction and operation. While GHG emissions were not directly calculated or modelled for decommissioning/closure, GHG emissions were estimated to be approximately 30% of predicted construction phase emissions due to similarities in the types of activities and equipment used.

Table 4 Estimated GHG emissions for the Gordon and MacLellan Sites

	Average Annual Project-related Emissions (kilotonnes of CO_2e[1)]	Total Project-related Emissions (kilotonnes of CO_2e[1])	Percent of Total Provincial GHG Emissions (2017)[2]	Percent of Total Federal GHG Emissions (2017)[2]
Construction				
Gordon Site	16	32	0.074	0.002
MacLellan Site	64.5	129	0.30	0.009
Gordon Site	22	132	0.17	0.005
MacLellan Site	47.6	619	0.32	0.009
Gordon Site	0.092	0.46	Negligible	Negligible
MacLellan Site	0.756	3.78	Negligible	Negligible

[1] Carbon dioxide equivalent

[2] Based on data from *Canada's* Official Greenhouse Gas Inventory.

The Proponent predicted that, with the implementation of mitigation measures, residual effects from project-related GHG emissions during construction and operation would be adverse, low in magnitude, short-term for construction and medium-term for operation, continuous, and irreversible. Residual effects during decommissioning/closure were expected to be adverse, negligible in magnitude, long-term in duration, irregular, and irreversible.

Light, Noise, and Vibration Levels

Project activities during all phases at the Gordon and MacLellan sites could result in an increase in ambient light levels from site lighting and equipment headlights, which could result in sensory disturbance and affect land users within the LAAs. The Proponent predicted that, with the implementation of mitigation measures, project-related increases in ambient light levels would be minor.

Project activities at the Gordon and MacLellan sites during all phases, including pile driving, land clearing and grading, ore milling and processing, mobile equipment and haul truck use, and blasting would result in elevated noise and vibration levels that could extend into the RAA. However, the noise and vibration levels at both sites during all project phases were predicted to comply with limits set out in Health Canada's *Guidance on Evaluating Human Health Impacts in Environmental Assessment: Noise*[9] and the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual*[10], respectively.

Residual project effects to noise levels at the Gordon and MacLellan sites for all project phases were predicted to be adverse, low to moderate in magnitude, short-term (i.e. construction and decommissioning/closure) and medium-term (i.e. operation), continuous, reversible, and would extend to the RAA, with the implementation of mitigation measures. Residual project effects on vibration levels for all project phases were predicted to be adverse, negligible to low in magnitude (i.e. construction and decommissioning/closure) and low to moderate in magnitude (i.e. operation), short-term (i.e. construction and decommissioning/closure) and medium-term (i.e. operation), reversible, regularly occurring, and would occur within the LAAs (i.e. construction and decommissioning/closure) and the RAA (i.e. operation). A residual effects analysis for project-related effects to ambient light levels was not provided.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to areas of federal jurisdiction, as described under section 5 of CEAA 2012, as a result of project-related changes to the atmospheric environment are described in Section 6.1.3 of this Chapter.

6.1.2 Views Expressed

Indigenous Nations

Peter Ballantyne Cree Nation, Chemawawin Cree Nation, and Sayisi Dene First Nation expressed concerns regarding the use of chemical dust suppressants to mitigate fugitive dust emissions, and associated potential effects on surface water quality and vegetation harvested by community members.

Chemawawin Cree Nation and Peter Ballantyne Cree Nation raised concerns regarding project-related odour emissions, noting that odour emissions may result in impacts to rights and effects to current use by affecting the experience of land users on the landscape and causing avoidance of certain areas due to real or perceived effects.

Peter Ballantyne Cree Nation and Mathias Colomb Cree Nation expressed concerns regarding project-related increases in noise and vibration levels, and any associated sensory disturbance, which may affect

[9] Health Canada. 2016. *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise*. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
[10] Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123.

the experience of land users on the landscape and current use by affecting the distribution of wildlife species of cultural and traditional importance.

Marcel Colomb First Nation and the Manitoba Metis Federation raised concerns that the noise and vibration threshold proposed by the Proponent that would trigger adaptive management may not adequately protect fish, migratory birds, and other wildlife species of traditional and cultural importance from sensory disturbance and other associated effects.

The Manitoba Metis Federation noted concerns that the Proponent compared the Project's anticipated GHG emissions to 2017 provincial and federal greenhouse gas emissions, and requested that the Proponent be required to provide further details regarding how the Project's GHG emissions relate to local and regional emissions and how project-related GHG emissions would be avoided or compensated for. Concerns were also raised that the Proponent's assessment of project-related GHG emissions was restricted to the PDAs, given that the effects of GHG emissions and climate change would affect a much broader area.

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

Federal Authorities

Environment and Climate Change Canada expressed concerns regarding project-related air contaminant and GHG emissions and recommended that the Proponent abide by Tier 4 emissions standards[11] for all phases of the Project and use Tier 4 engines in all equipment. Environment and Climate Change Canada also recommended that the Proponent consider the Strategic Assessment of Climate Change[12] in developing its GHG Management and Monitoring Plan, particularly as it relates to the selection of technically and economically feasible mitigation measures to address GHG emissions and of the establishment of emissions intensity targets. Health Canada recommended that every economically and technologically feasible mitigation measure be implemented by the Proponent to limit diesel exhaust emissions to the greatest extent possible.

Health Canada and Environment and Climate Change Canada expressed concerns regarding predicted project-related exceedances of the CAAQS limits for NO_2 and $PM_{2.5}$ and the lack of monitoring proposed to verify the results of the environmental assessment and the effectiveness of mitigation measures to limit NO_2 emissions. Environment and Climate Change Canada also noted that there may be inaccuracies in the baseline data (i.e. air quality modelling), leading to an underestimation of project-related NO_2 emissions by the Proponent. Health Canada and Environment and Climate Change Canada recommended that the Proponent be required to develop additional mitigation measures to reduce NO_2 and $PM_{2.5}$ concentrations to the extent possible, given that NO_2 and $PM_{2.5}$ are non-threshold contaminants which can cause adverse health effects at low concentrations.

[11] United States Environmental Protection Agency. 2022. *Regulations for Emissions from Vehicles and Engines*. Available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-emissions-air-pollution-nonroad

[12] Environment and Climate Change Canada. October 2020. *Strategic Assessment of Climate Change*. Available at: https://www.canada.ca/en/services/environment/conservation/assessments/strategic-assessments/climate-change.html

Environment and Climate Change Canada suggested that monitoring of NO_2 concentrations for the life of the Project be required to inform adaptive management. In consideration of concerns expressed by the Proponent regarding the economic feasibility of NO_2 monitoring, Environment and Climate Change Canada suggested that the Proponent conduct NO_2 monitoring for at least two months during year two of tproject operation. If project-related increases in NO_2 concentrations are detected, if monitoring results do not align with the predictions of the atmospheric dispersion model, or if monitoring detects exceedances of CAAQS limits for NO_2, NO_2 monitoring would be required during all project phases to inform whether the implementation of contingency measures is required.

Health Canada shared concerns regarding uncertainties in the Proponent's assessment of project-related risks to human health from increases in noise levels and the lack of detail provided to determine the adequacy of the proposed noise management and monitoring measures. Health Canada recommended that mitigation and monitoring measures be developed and implemented by the Proponent to address potential increases in noise. Health Canada also recommended that the Proponent develop a protocol to collect and resolve noise complaints when noise generating activities associated with the Project are anticipated.

Health Canada shared concerns that the baseline dust deposition rate used in the Proponent's assessment was based on a single year of data that does not represent the maximum dustfall rate that could be experienced at nearby receptor locations, including Indigenous receptors. This introduces uncertainty regarding project effects to dustfall rates and metals accumulation in soil, and associated effects to human health. Health Canada recommended that additional data be collected to validate predicted dustfall rates and metals accumulation in soil to verify the results of the environmental assessment.

6.1.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent adequately characterized potential effects of the Project to the atmospheric environment, including effects to air quality, noise and vibration levels, GHG emissions, and odours. The Agency recognizes that the Project would result in exceedances of the Manitoba AAQC and CAAQS for NO_2, CO, SO_2, PM_{10}, and total suspended particulates during construction and operation. The Agency is of the view that these exceedances would be unlikely to appreciably affect air quality at key receptor locations within the LAAs and RAA, given the mitigation measures proposed. The Agency agrees with the importance of follow-up and monitoring to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and inform the need for contingency measures.

The Agency acknowledges the concerns expressed by Indigenous nations regarding the use of chemical dust suppressants and potential risks associated with the use of these substances to surface water quality and vegetation. The Agency understands that the Proponent committed to not using chemical dust suppressants to mitigate fugitive dust emissions.

With respect to project-related effects to noise, vibration, and odour levels, the Agency is of the view that the mitigation, monitoring, and follow-up measures proposed, including compliance with Health Canada's *Guidance on Evaluating Human Health Impacts in Environmental Assessment: Noise* and the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual*, would adequately mitigate increases in noise, vibration, and odour levels. The Agency also understands that a complaint response protocol would be developed by the Proponent as part of the Noise Monitoring Program to

accept and resolve complaints regarding project-related noise. The Agency recommends that the Proponent engage with Indigenous nations during the development and implementation of follow-up and monitoring programs with respect to noise, vibration, and odour levels, including the selection of thresholds that would trigger the implementation of contingency measures and adaptive management.

The Agency agrees with the recommendations of Environment and Climate Change Canada and Health Canada with respect to the use of Tier 4 engines, requirements for NO_2 monitoring, implementation of additional mitigation measures to reduce NO_2 and $PM_{2.5}$ emissions to the extent possible to be protective of human health, and mitigation and monitoring for noise. The Agency also agrees with Health Canada that additional data be collected to verify predictions related to project effects to dustfall rates and metals accumulation in soil to verify the results of the environmental assessment and to determine whether additional mitigation measures are required.

The Agency is of the view that potential effects of the Project to the atmospheric environment would be adequately addressed, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) 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 the atmospheric environment. 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 nations.

Mitigation Measures

- To limit contaminant and fugitive dust emissions, policies will be developed and implemented prior to construction to reduce the fuel consumption of project equipment and vehicles, limit cold starts, and control the speed of mobile equipment within the PDAs, including through no-idling and limited cold start policies.
- GHG and air contaminant emissions reduction technologies and practices will be incorporated into the final design of the Project and implemented during all project phases.
    - If monitoring results indicate that $PM_{2.5}$ concentrations exceed CAAQS limits, additional mitigation measures will be developed, in consultation with Health Canada, Environment and Climate Change Canada, other relevant federal and provincial authorities, and Indigenous nations, to reduce $PM_{2.5}$ emissions to the greatest extent possible.
    - The principles of the Strategic Assessment of Climate Change and Environment and Climate Change Canada's *Technical Guidance on Reporting Greenhouse Gas Emissions* will be considered in developing GHG and air emissions reduction measures.
- Dust suppressants with the least potential for adverse environmental effects, including water on haul and access roads, will be applied during dry periods when dust generation is expected or is occurring, such as periods of drought and high winds, to control fugitive dust emissions. Chemical dust suppressants will not be used during any project phase to avoid potential effects to the environment and Indigenous Peoples.

- Oversized stationary machinery and equipment used for processing ore will be located indoors, where technically and economically feasible, including the Crushing Plant and conveyors feeding into the Ore Milling and Processing Plant, to limit fugitive dust and hydrogen cyanide emissions.
- All vehicles and equipment required for construction, operation, and decommissioning/closure of the Project will meet or exceed emission standards, including Tier 4 emission standards for off-road diesel equipment, applicable at the time of introduction, and will be operated, inspected, and maintained in accordance with any applicable engine instructions provided by the manufacturer to meet emissions standards pursuant to the *Off-Road Compression-Ignition (Mobile and Stationary) and Large Spark-Ignition Engine Emission Regulations.* Engines previously subject to the *Off-Road Compression-Ignition Engine Emission Regulations* will be required to comply with the emissions standards defined in that legislation.

Follow-up and Monitoring

- A follow-up program will be developed prior to construction, in consultation with relevant federal and provincial authorities and Indigenous nations, that outlines technically and economically feasible mitigation measures to manage and reduce GHG emissions throughout all phases of the Project. The Proponent will report annual project-related GHG emissions to the Agency, regardless of whether emissions are greater than the reporting threshold defined by Environment and Climate Change Canada as part of its annual reporting requirements, including emissions associated with site electricity production, mine production, incineration (i.e. waste emissions), blasting emissions, and fuel consumption for transportation activities. The Proponent will take into account Environment and Climate Change Canada's *Technical Guidance on Reporting Greenhouse Gas Emissions*.
- A follow-up program will be developed, prior to construction and in consultation with relevant federal and provincial authorities and Indigenous nations, regarding project-related effects to air quality, which will provide a framework for:
  - continuously monitoring ambient total suspended particulate, PM_{10}, NO_2, and $PM_{2.5}$ concentrations, taking into account 24-hour and 1-hour CAAQS thresholds, during construction and operation. Monitoring locations will include areas upwind and downwind of the PDAs and any other locations identified in consultation with Indigenous nations; and
  - monitoring meteorological conditions (e.g. wind speed, wind direction) upwind and downwind of the PDAs during project construction and operation.
- Dustfall rates will be monitored upwind and downwind of the PDAs and in any other locations identified in consultation with Indigenous nations during all project phases to verify model predictions of project effects to baseline dustfall rates. If project effects are more adverse than predicted, additional mitigation measures will be developed, in consultation with Indigenous nations, Health Canada, and other relevant federal and provincial authorities, to further limit project-related increases in dustfall rates.
- A follow-up program will be developed prior to construction, in consultation with relevant federal and provincial authorities and Indigenous nations, to monitor NO_2 concentrations for a period of at least two months during year two of the Project's operation phase to validate the predictions of the atmospheric dispersion model. If project-related increases in NO_2 concentrations are detected, if monitoring results do not align with the predictions of the atmospheric dispersion model, and/or if monitoring detects exceedances of CAAQS limits for NO_2, NO_2 monitoring will be conducted during all project phases to inform whether the implementation of contingency measures is required.

- Prior to construction, a follow-up program will be developed, in consultation with relevant federal and provincial authorities and Indigenous nations, to monitor project-related increases in noise and vibration levels at key receptor locations within the PDAs where effects to the health of Indigenous Peoples may occur to verify the accuracy of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures. Long-term continuous noise and vibration monitoring will occur during all project phases and monitoring reports will be submitted annually to regulatory authorities and shared with interested Indigenous nations and stakeholders.
    - A public complaints protocol will be developed to receive and address noise or vibration complaints in a timely manner. Information on this protocol and how to file a complaint will be made publically available online.
    - Noise levels will be monitored at key Indigenous receptor locations that have been identified in the EIS and in consultation with Indigenous nations, where human health may be affected, such as permanent or seasonal residences, to verify the environmental assessment and associated modelling, verify the effectiveness of mitigation measures, and inform the need for contingency measures

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to the atmospheric environment can be found in the following chapters of this EA Report: Indigenous Peoples – Health and Socio-economic Conditions (Chapter 7.5).

6.2 Groundwater

The Agency summarized the Proponent's assessment of changes to groundwater quantity and quality with input from federal authorities and Indigenous nations. This summary supports the analysis of potential project effects to fish and fish habitat (Chapter 7.1), the current use of lands and resources for traditional purposes, physical and cultural heritage, and sites of significance of Indigenous Peoples (Chapter 7.4), the health and socio-economic conditions of Indigenous Peoples (Chapter 7.5), and federal lands (Chapter 7.6), included in this EA Report.

The Agency is of the view that the Proponent adequately considered potential effects of the Project on groundwater quality and quantity and that the Proponent's proposed mitigation measures, monitoring, and follow-up programs (Appendix D) 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 and Indigenous nations.

6.2.1 Proponent's Assessment of Environmental Effects

Groundwater Quantity and Flow

Construction

Potential changes in groundwater levels and flow could occur at the Gordon and MacLellan sites due to site preparation activities and the construction and installation of project infrastructure. Temporary dewatering and contact water collection would be required during construction, given the presence of

seasonally shallow groundwater resources in the PDAs, which may result in local changes to groundwater flow direction, a reduction in groundwater levels, and a decrease in groundwater discharge to surface water features. Dewatering during construction activities was expected to be temporary and only undertaken as needed. Compaction of ground surfaces, construction of project infrastructure, stripping of topsoil, and vegetation removal may result in reduced infiltration and groundwater recharge rates, changes in evapotranspiration rates, and changes to runoff patterns, particularly for areas overlain by impervious surfaces. This may result in lower groundwater levels and changes in flow; however, the Proponent inferred that these changes would have a limited effect on groundwater resources.

Dewatering of the historical Wendy and East pit lakes and the installation of groundwater interceptor wells may affect groundwater levels and flow due to an expected increase in the rate of groundwater flow towards the pit lakes. The Proponent predicted that groundwater levels in the area of the Wendy and East pit lakes would be lowered by up to 40 metres near the pit lakes and by one metre or more within 800 metres of the pit lakes by the end of construction. This was expected to result in a reduction in groundwater discharge rates to surface waterbodies in the Gordon site LAA (Table 5).

Table 5 Changes to Groundwater Discharge Rates to Surface Waterbodies in the Gordon and MacLellan site LAAs

Surface Waterbody	Construction (cubic metres per day)[1]	Operation (cubic metres per day) [1]	Decommissioning/Closure (cubic metres per day) [1]
Gordon Site			
Gordon Lake	-513	-956	Negligible[2]
Farley Lake	-844	-1,456	Negligible[2]
Marie Lake	-227	-246	Negligible[2]
MacLellan Site			
Keewatin River	+518	Negligible[2]	Negligible[2]
Payne Lake	Negligible[2]	+268	Negligible[2]
Minton Lake	Negligible[2]	+259	Negligible[2]
Unnamed Lake 2	Negligible[2]	+95	Negligible[2]
Unnamed Lake 3	Negligible[2]	+147	Negligible[2]
East Pond	Not calculated	Completely dewatered	Not calculated

[1] Relative to baseline conditions.

[2] Negligible change is defined as less than 86 cubic metres per day, relative to baseline conditions.

At the MacLellan site, Tailings Management Facility start-up activities and dewatering of the new open pit and historical underground workings during construction may affect groundwater levels, flow, and groundwater-surface water interactions. The Proponent calculated that groundwater levels would be

lowered by approximately one metre or more at a distance of 200 metres from the new open pit by the end of construction. The Tailings Management Facility was predicted to cause a rise in groundwater levels by approximately 0.5 metres at a distance of 900 metres from the Facility due to mounding of the water table[13]. Mounding was expected to increase groundwater discharge to the Keewatin River (Table 5). Timing, including natural seasonal variations in precipitation, may affect dewatering rates at the Gordon and MacLellan sites, particularly during the spring when higher groundwater levels were expected.

The Proponent anticipated that, with the implementation of mitigation measures, changes to groundwater quantity and flow at the Gordon and MacLellan sites during construction would be adverse, would extend into the RAA, medium-term in duration, continuous, reversible, and high in magnitude, as changes to groundwater levels during this phase would exceed five metres in some locations.

Operation

The Project could result in changes to groundwater quantity and flow at the Gordon site through the progressive development of the mine rock storage area and continued dewatering of the Wendy and East pit lakes as they are gradually developed into the new open pit. Groundwater interceptor wells would remain in place during operation to control groundwater inflows to the open pit during active mining. Dewatering was predicted to lower the water table by more than ten metres at a distance of 600 metres from the open pit and up to one metre at a distance of 1,200 metres from the open pit, as development of the open pit progresses. Further, groundwater drawdowns greater than ten metres were predicted to occur beneath a small portion of wetlands located north to northwest of the Gordon site PDA; effects to wetlands are further discussed in Chapter 6.4 (Terrestrial Landscape) of this EA Report. These activities may reduce groundwater discharge to Gordon Lake, Farley Lake, and Marie Lake (Table 5). Changes to groundwater discharge rates for the remaining waterbodies within the Gordon site LAA were predicted to be relatively minor compared to baseline conditions.

At the MacLellan site, the Project could affect groundwater quantity and flow through dewatering of the open pit, operation of the Tailings Management Facility, and operation of seepage collection systems. Dewatering of the open pit would lower the water table elevation by ten metres or more within 600 metres of the open pit and up to one metre within 800 metres of the open pit. Operation of the Tailings Management Facility would continue to cause mounding of the water table, resulting in a water table elevation rise of approximately 0.5 metres to a distance of up to 1,000 metres from the Facility; this was predicted to result in increased discharges to Payne Lake, Minton Lake, Unnamed Lake 2, and Unnamed Lake 3. Water table drawdowns associated with operation of seepage collection systems around the perimeter of the Tailings Management Facility and mine rock storage area were predicted to lower the water table by up to one metre in the immediate vicinity of the seepage collection systems. East Pond, located directly adjacent to the open pit, would be dewatered completely during operation due to lowering of the water table and project-related changes to runoff patterns. This would result in reduced flow in a small fish-bearing tributary of the Keewatin River, which currently receives surface water inputs from East Pond. Groundwater drawdowns of up to one metre were also predicted to occur beneath wetlands located south of the MacLellan site PDA due to the influence of the seepage collection systems and the Tailings Management Facility; effects to wetlands are further discussed in Chapter 6.4 (Terrestrial

[13] Mounding refers to a localized rise in the water table elevation where water entering the subsurface exceeds the rate at which groundwater can migrate through the subsurface material.

Landscape) of this EA Report. For the remaining waterbodies located within the MacLellan site LAA, changes to groundwater discharge were predicted to be minor relative to baseline conditions.

The Proponent did not expect project-related groundwater drawdown to affect groundwater supply wells, despite the predicted changes to groundwater levels and flow at the Gordon and MacLellan sites, as there are no known groundwater well users within the Gordon and MacLellan site LAAs and RAA.

The Proponent predicted that, with the implementation of mitigation measures, effects to groundwater quantity and flow during operation at the Gordon and MacLellan sites would be adverse, would extend into the RAA, medium-term in duration, continuous, irreversible, and of high magnitude at the Gordon site (i.e. the change in groundwater levels would be greater than five metres) and low magnitude at the MacLellan site (i.e. the change in groundwater levels would be less than five metres).

Decommissioning/Closure

Dewatering of the open pits at the Gordon and MacLellan sites would cease during decommissioning/closure and the open pits would fill with water to a level equivalent to the depth of the local groundwater table. Filling of the open pits at the Gordon and MacLellan sites was anticipated to take 11 years and 21 years, respectively, after which the Proponent anticipated groundwater levels and flow would stabilize and return to near baseline conditions. Groundwater interceptor wells would continue to operate at the Gordon site during the initial phases of decommissioning/closure; however, their use would decrease over time as water levels in the open pit rise and inputs are no longer required to mitigate the effect of groundwater drawdown on Gordon and Farley Lakes.

Seepage collection systems around the mine rock storage areas, and ore and overburden stockpiles at the Gordon and MacLellan sites, and around the Tailings Management Facility at the MacLellan site would remain in place during decommissioning/closure until surface water quality meets applicable regulatory discharge requirements. Groundwater levels were predicted to rise following the removal of the seepage collection systems near the end of decommissioning/closure and, due to water table mounding, result in groundwater levels approximately 0.5 to one metre higher than baseline levels. The effects of water table mounding were anticipated to extend up to 2,400 metres from the Tailings Management Facility. Groundwater-surface water interactions were predicted to return to near baseline conditions during decommissioning/closure (Table 5) due to the anticipated recovery of groundwater levels to near baseline conditions.

The Proponent predicted that, with the implementation of mitigation measures, effects to groundwater quantity and flow at the Gordon and MacLellan sites during decommissioning/closure would be adverse, would extend into the RAA, long-term in duration, continuous, irreversible, and of low magnitude, as the change in groundwater level would be less than one metre.

Groundwater Quality

Construction

The Project may affect groundwater quality at the Gordon and MacLellan sites during construction through site preparation activities; construction of project infrastructure, including initial development of the open pits; and water management activities.

At the Gordon site, construction of the new open pit would include the removal of approximately 37% of the historical south mine rock storage area as it is located within the new open pit footprint. The relocation

of these materials to the new mine rock storage area would result in a reduction in the potential mass loading from the historical south mine rock storage area to groundwater; therefore, improved groundwater quality was anticipated. Seepage from the new mine rock storage area was not anticipated during construction as the time expected for the mine rock storage area to reach a steady-state saturation condition[14] would be greater than the duration of construction. Further, any seepage that currently occurs from the historical north and south mine rock storage areas would be redirected from Gordon Lake and Farley Lake to the open pit and the settling pond due to operation of the groundwater interceptor wells. If required, treatment of this water would occur prior to discharge to Gordon and Farley Lakes, thereby reducing contaminant inputs to these surface waterbodies.

At the MacLellan site, initial construction of the Tailings Management Facility and mine rock storage area may affect groundwater quality through infiltration of precipitation and subsequent seepage of contaminated water into groundwater. However, groundwater recharge from the Tailings Management Facility and mine rock storage area was anticipated to discharge primarily to the open pit and contact water collection systems due to changes in groundwater flow associated with dewatering of the new open pit and historical underground workings. This water would be pumped back to the Tailings Management Facility or to a settling pond to be treated, if required, prior to discharge to the surrounding environment. Further, it was expected that the time required for the mine rock storage area at the MacLellan site to reach a steady-state saturation condition would exceed the duration of construction; therefore, effects to groundwater quality were not predicted.

During later stages of construction, seepage from the Tailings Management Facility may occur. However, seepage was not anticipated to discharge to surface waterbodies during the two year construction period, except for Payne Lake (i.e. located north of the MacLellan site PDA), which may receive some groundwater discharge during construction. The amount of discharge was considered negligible, however, given that the majority of groundwater from the Tailings Management Facility was predicted to discharge to the open pit after construction. Further, as no groundwater supply wells are known to be located within the MacLellan site PDA and seepage from the Tailings Management Facility was not anticipated to affect areas where groundwater supply users are known to be located within the LAAs ands RAA, the Proponent did not anticipate that seepage from the Tailings Management Facility would affect groundwater users.

At the MacLellan site, the historical mine rock storage area was not anticipated to affect groundwater as mine rock from this area would be excavated and relocated to the new mine rock storage area during construction as it overlaps entirely with the footprint of the new open pit. The Proponent predicted that, due to removal and relocation of historical mine rock, which currently results in elevated levels of sulphate and arsenic in groundwater, construction of the Project may improve groundwater quality at the MacLellan site.

The Proponent predicted that, with the implementation of mitigation measures, residual effects to groundwater quality at the Gordon and MacLellan sites during construction would be positive, short-term, would extend into the RAA, continuous, irreversible, and of moderate magnitude, as relocation of the historical mine rock storage areas was predicted to result in temporary improvements to groundwater quality in the LAAs and RAA relative to baseline conditions.

[14] A steady-state saturation condition refers to the point at which the volume of water from precipitation infiltrating into material results in an equal amount of seepage or recharge from the base of the material pile.

Operation

The Project may affect groundwater quality during operation at the Gordon and MacLellan sites through open pit mining, mine rock storage, water management activities, ore milling and processing (i.e. MacLellan site only), and tailings management (i.e. MacLellan site only). The historical mine rock storage areas at the Gordon site and the new mine rock storage areas at the Gordon and MacLellan sites could also cause residual adverse effects to groundwater quality during operation through infiltration of precipitation and seepage of contaminant-laden water from the base of the material piles. However, seepage rates from the historical mine rock storage areas were predicted to remain unchanged from current baseline conditions. This seepage was expected to result in concentrations of sulphate, antimony, arsenic, sodium, and uranium in groundwater at the Gordon site and nitrate, nitrite, sulphate, antimony, and arsenic in groundwater at the MacLellan site in excess of the *Guidelines for Canadian Drinking Water Quality* (GCDWQ) and the *Manitoba Water Quality Standards, Objectives, and Guidelines* (MWQSOG). Seepage from the Tailings Management Facility at the MacLellan site was predicted to result in concentrations of total cyanide, sulphate, antimony, arsenic, cobalt, iron, and sodium in groundwater in excess of the GCDWQ and the MWQSOG. Adverse effects to groundwater quality were not predicted as a result of ore stockpiling as the life of the ore stockpiles would be shorter than the onset time for acid rock drainage and metal leaching.

The Proponent predicted that concentrations of select contaminants in source seepage to groundwater would exceed federal and provincial water quality guidelines, but would not exceed thresholds for the quality of groundwater discharge to surface water that are protective of aquatic receptors[15]. The Proponent was of the view that this assessment was conservative, as it did not account for physical or chemical attenuation processes along the groundwater flow path; therefore effects of seepage to groundwater were not predicted to affect surface water quality. At the Gordon site, the predicted groundwater flow pathway of seepage from the historical mine rock storage areas and new mine rock storage area at the end of operation would be towards the open pit and Susan Lake, located southwest of the PDA. Groundwater from the MacLellan site mine rock storage area would primarily discharge to Minton Lake and the unnamed tributary of the Keewatin River, with lesser amounts discharging to the open pit and the Keewatin River directly. The minimum travel time of groundwater would be one to three years to Minton Lake and the Keewatin River tributary, and greater than 14 years to reach the remaining surface waterbodies considered. Groundwater from the Tailings Management Facility at the MacLellan site would primarily discharge to Minton Lake and the unnamed tributary of the Keewatin River, with smaller contributions to a tributary of Payne Lake, the Keewatin River, the open pit, and Cockeram Lake. The minimum travel time of groundwater would be five years for Minton Lake, two years for the Keewatin River tributary, and greater than 90 years for the remaining surface waterbodies considered. As no groundwater supply wells are known to be located within the PDAs, effects to groundwater users as a result of the Project were not anticipated.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to groundwater quality at the Gordon and MacLellan sites during operation would be adverse, long-term, would extend into the RAA, continuous, irreversible, and of moderate magnitude, as changes to groundwater quality would be unlikely to affect groundwater supply users beyond the PDAs.

[15] Ground Water and Sediment Standards for Use under Part XV.1 of the *Ontario Environmental Protection Act*.

Decommissioning/Closure

Groundwater quality may be adversely affected during decommissioning/closure as a result of seepage from the mine rock storage areas at the Gordon and MacLellan sites and from the Tailings Management Facility at the MacLellan site. During this phase, the mine rock storage areas were predicted to reach fully saturated conditions, with all infiltration resulting in either toe seepage or groundwater recharge. This seepage was expected to result in concentrations of sulphate, antimony, arsenic, sodium, and uranium in groundwater at the Gordon site and sulphate, aluminum, antimony, and arsenic in groundwater at the MacLellan site in excess of the GCDWQ and the MWQSOG. Seepage from the Tailings Management Facility was also predicted to result in concentrations of total cyanide, sulphate, aluminum, antimony, arsenic, and sodium in groundwater in excess of the GCDWQ and the MWQSOG.

Similar to project operation, the Proponent predicted that concentrations of select contaminants in source seepage to groundwater would exceed federal and provincial water quality guidelines for the protection of aquatic life. However, exceedances of thresholds for the quality of groundwater discharge to surface water[15] were not predicted. This assessment also did not factor in physical and chemical attenuation processes along the groundwater flow path, therefore the predictions were considered conservative.**Error! Bookmark not defined.** The predicted groundwater flow pathway from the mine rock storage areas at the Gordon and MacLellan sites and the Tailings Management Facility at the MacLellan site during decommissioning/closure was predicted to be similar to operation, with the exception of groundwater flow from the Gordon site mine rock storage area, which would also begin discharging to Gordon and Farley Lakes. Groundwater discharge to surface waterbodies from these areas was expected to double in volume following the removal of seepage collection systems around the Tailings Management Facility and mine rock storage areas near the end of decommissioning/closure. A soil cover would be added to the mine rock storage areas and the Tailings Management Facility during decommissioning/closure to reduce infiltration of precipitation and improve the quality of seepage over time.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to groundwater quality at the Gordon and MacLellan sites during decommissioning/closure would be adverse, long-term, would extend into the RAA, continuous, irreversible, and of moderate magnitude, as changes to groundwater quality would be unlikely to affect groundwater supply users beyond the PDAs and no existing groundwater users are located in areas where groundwater contaminant exceedances were predicted.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to areas of federal jurisdiction, as described under section 5 of CEAA 2012, as a result of changes to groundwater quality and quantity are described in Section 6.2.3 of this Chapter.

6.2.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada noted concerns regarding the introduction of contaminants to groundwater through seepage and recommended that the Proponent be required to monitor potential groundwater contamination at multiple locations and depths throughout all project phases, and should

include an adaptive management framework with defined threshold values to prevent residual adverse effects to groundwater and other associated valued components. Environment and Climate Change Canada also recommended that the Proponent maintain seepage collection systems throughout the decommissioning/closure and post-closure phases until surface water quality meets applicable federal and provincial regulatory discharge requirements for a sufficient duration to demonstrate that removal of the seepage collection systems would not cause adverse effects on fish and fish habitat.

Environment and Climate Change Canada recommended that groundwater quality be monitored near Pump Lake, as it is located down gradient of the PDAs and closer in proximity to the PDAs than Susan Lake.

Natural Resources Canada noted concerns that, as groundwater flows through bedrock slowly, residual project effects on groundwater quantity and quality may not be observable at groundwater monitoring wells during operation. Natural Resources Canada recommended that the Proponent be required to monitor groundwater seepage intercepted by the seepage collection systems throughout operation to assist in the timely identification of residual effects to groundwater and to inform whether contingency measures are required. To validate and transiently calibrate the groundwater model for the Gordon site, Natural Resources Canada recommended that the Proponent use the results of ongoing monitoring, including long-term pumping tests, to support the design of the interceptor well system. To validate and transiently calibrate the groundwater model for the MacLellan site, the quantity of groundwater inflow to the open pit should be monitored and monitoring data used to update the groundwater model if differences between the monitoring data and the conceptual model are observed.

Natural Resources Canada noted concerns that the interceptor wells may not be able to collect sufficient groundwater volumes to offset lake level drawdown in Gordon and Farley Lakes after the first two years of operation and that limited to no pumping could occur during the summer months. As such, additional water from another source may be required to offset surface water drawdown in Gordon and Farley Lakes as a result of groundwater discharge to the open pit or additional mitigation measures, such as deepening of the interceptor well system, may be required.

Indigenous Nations

Multiple Indigenous nations provided comments and views on the potential effects of the Project to groundwater and related effects on current use, physical and cultural heritage, and health and socio-economic conditions. Feedback and concerns from Indigenous nations related to groundwater included:

- the Manitoba Metis Federation and Mathias Colomb Cree Nation expressed concerns regarding potential effects on groundwater quantity and quality, including changes to the rate of groundwater discharge to surface waterbodies, and how the Proponent will monitor project-related changes throughout all project phases;
- Marcel Colomb First Nation noted that the East pit lake at the Gordon site may be hydraulically connected to Farley Lake via a historical buried stream channel. This may provide a conduit for contaminants in the East pit lake to migrate to and contaminate Farley Lake;
- Chemawawin Cree Nation and Mathias Colomb Cree Nation expressed concerns that the Proponent's assessment of effects to groundwater quantity and quality was based on effects to existing groundwater users in the vicinity of the Project and did not include consideration of other environmental effects that may occur as a result of changes to groundwater quantity or quality and potential impacts to rights;

- Chemawawin Cree Nation, Sayisi Dene First Nation, Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted concerns regarding the potential for long-term seepage from the Tailings Management Facility and the mine rock storage areas, and migration of contaminants into groundwater and surface water;
- the Manitoba Metis Federation requested that the Proponent consider lining the Tailings Management Facility, mine rock storage areas, and low-grade ore stockpiles with an impermeable foundation to minimize surface water-groundwater interactions in these areas;
- Chemawawin Cree Nation, the Manitoba Metis Federation, Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation, and Sayisi Dene First Nation emphasized the importance of the involvement of Indigenous nations in the development and implementation of follow-up and monitoring activities for the Project; consideration of Indigenous knowledge in developing follow-up and monitoring plans and mitigation measures; the need for opportunities to be provided for Indigenous nations to review and comment on follow-up and monitoring plans related to groundwater prior to implementation; and for groundwater monitoring data to be shared with Indigenous nations as it becomes available;
- the Manitoba Metis Federation noted concerns that the response triggers identified by the Proponent for groundwater may not be sensitive enough to allow for a timely response and corrective action to protect other valued components from adverse effects; and
- the Manitoba Metis Federation expressed concerns regarding the effectiveness of the interceptor well system at mitigating project-related changes to lake levels in Gordon and Farley Lakes as a result of groundwater drawdown.

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

6.2.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent adequately characterized potential project effects on groundwater quantity and quality. The Agency acknowledges that the Project may result in changes to groundwater quantity and quality, which may affect surface water, vegetation and wetlands, and surface water-dependent traditional uses within the LAAs and RAA. The Agency acknowledges that, while effects to current groundwater users is 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 quality and quantity. Potential interactions of project-related changes to groundwater quality and quantity with other valued components, including surface water quality and quantity, fish and fish habitat, migratory birds, species at risk, and Indigenous Peoples, are presented in Chapter 6.3 (Surface Water), 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), and Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report.

The Agency acknowledges that the Project may adversely affect groundwater quantity and flow and that effects would persist throughout construction, operation, and the early phases of decommissioning/closure. The Agency understands that effects to groundwater quantity would likely be reversible following the cessation of mining activities and reclamation of the Gordon and MacLellan site PDAs. The Agency also acknowledges that uncertainty remains as to the effectiveness of the interceptor well system at mitigating project-related changes to lake levels in Gordon and Farley Lakes as a result of

groundwater drawdown. 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 Environment and Climate Change Canada and the Manitoba Metis Federation's concerns regarding predicted project effects to groundwater quality, particularly the predicted exceedances of the GCDWQ and the MWQSOG for several contaminants. The Agency recommends that the Proponent implement additional mitigation measures to ensure that project-related increases in contaminant concentrations in groundwater do not exceed CWQG-FAL, *Federal Environmental Quality Guidelines* (FEQGs), and MWQSOG limits. The Agency also recommends that the Proponent implement mitigation measures to reduce contaminant concentrations to the greatest extent possible for contaminants whose concentrations are in excess of the CWQG-FAL, FEQGs, and MWQSOG under baseline conditions.

The Agency acknowledges that a hydraulic connection may exist between the existing East pit lake and Farley Lake at the Gordon site. The Agency recommends that the Proponent undertake long-term groundwater monitoring at locations adjacent to and down-gradient of the Tailings Management Facility, mine rock storage areas, and contact water and seepage collection systems. Such monitoring should be implemented to identify and mitigate potential contaminant transport to surface water, and to validate predictions with respect to potential effects to surface water through a groundwater pathway. The Agency also recommends that the Proponent monitor groundwater collected by seepage collection systems to assist in the timely identification of groundwater contamination and retain seepage collection systems during decommissioning/closure and post-closure until monitoring demonstrates that removal of seepage collection systems would not result in adverse effects to surface water quality.

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 (Appendix D) 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 nations.

Mitigation Measures

- Groundwater flowing toward the open pits at the Gordon site will be intercepted and/or redirected by interceptor wells or other mitigation measures, as applicable, prior to discharge at the pit wall. Intercepted water will be returned to Gordon and Farley Lakes to offset potential effects to lake levels due to groundwater drawdown. Water from the newly formed open pit will be discharged to Farley Lake to offset potential effects to lake levels. Intercepted water will be treated in accordance with federal and provincial regulatory requirements prior to discharge.

  - If monitoring indicates that the return of intercepted water to Gordon and Farley Lakes, and the return of water from the open pit to Farley Lake after treatment are not effectively mitigating project-related changes to lake levels in Gordon and Farley Lakes, additional mitigation measures will be implemented. The Proponent will submit these measures to the Agency prior to implementing them.
- Contact water, effluent, and seepage, including groundwater that flows into the open pits, will be collected and managed in accordance with the MDMER and subsection 36(3) of the *Fisheries Act* prior to discharge to the receiving environment during all phases. Contact water will be treated to meet CWQG-FAL, MWQSOG, and FEQGs requirements, prior to discharge, as necessary.
- Project-related contaminant inputs into groundwater, including from the Tailings Management Facility, mine rock storage areas, and overburden and ore stockpiles, will not result in exceedances of MWQSOG, CWQG-FAL, and FEQG limits. For contaminants whose concentrations are in excess of the MWQSOG, CWQG-FAL, and FEQG limits in groundwater reserves under baseline conditions, the Proponent will reduce project-related contaminant inputs to groundwater to the greatest extent possible.

Follow-up and Monitoring

- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities to provide a framework for monitoring project-related changes in groundwater quantity and quality and verifying the effectiveness of mitigation measures implemented to protect groundwater quantity and quality. The groundwater monitoring results will also be used to verify the results of the environmental assessment, including model predictions, and inform adaptive management decisions. The groundwater follow-up program will be implemented during all project phases and will include:
  - monitoring of groundwater quality near the open pits, Gordon Lake, Farley Lake, Susan Lake, Pump Lake, Minton Lake, the unnamed lakes northeast of Minton Lake (i.e. Lake 2 and Lake 3), Payne Lake, the Keewatin River, and the unnamed tributary of the Keewatin River, and up- and down-gradient from the Tailings Management Facility, mine rock storage areas, ore and overburden stockpiles, and seepage collection system, for all parameters that may have adverse effects on fish and fish habitat, including arsenic, antimony, sulphate, iron, sodium, and uranium at the Gordon site and aluminum, arsenic, total cyanide, antimony, sulphate, iron, lead, sodium, nitrate, nitrite, and cobalt at the MacLellan site;
  - monitoring of groundwater levels, gradients, and hydraulic conductivity of all hydrogeological units specified in the groundwater model from near surface to a minimum of 115 metres below ground surface, at locations near the open pits, Tailings Management Facility, mine rock storage areas, and ore and overburden stockpiles; and
  - 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 CWQG-FAL or the MWQSOG limits, whichever is most protective of fish and fish habitat, and baseline concentrations identified by the Proponent during baseline studies conducted as part of the EIS..

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 (Chapter 6.3), 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), Federal Lands (Chapter 7.6), and Accidents and Malfunctions (Chapter 8.1).

6.3 Surface Water

The Agency summarized the Proponent's assessment of project-related changes to surface water quantity and quality, with input from federal authorities and Indigenous nations. This summary supports 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), included in this EA Report.

The Agency is of the view that the Proponent adequately considered potential effects of the Project on surface water and that the Proponent's proposed mitigation measures, monitoring, and follow-up programs (Appendix D) 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 and Indigenous nations.

6.3.1 Proponent's Assessment of Environmental Effects

Gordon Site

Changes to Surface Water Quantity and Flow

The Project may cause changes to surface water quantity and flow at the Gordon site during construction and operation through site preparation activities, construction of infrastructure, and water management activities, including dewatering activities, operation of groundwater interceptor wells, ongoing site water collection, storage, and discharge, and realignment of the existing diversion channel. Site preparation and construction activities would require vegetation and topsoil removal, ground compaction, and installation of infrastructure with impermeable surfaces. These activities may result in reduced infiltration rates, increased runoff, changes to evapotranspiration rates, and changes to local drainage patterns. Water management activities during construction and operation may alter shallow groundwater levels, recharge rates, and groundwater flow paths. This may affect water levels and flow in hydraulically connected surface waterbodies by altering the amount and timing of groundwater discharge. The Proponent did not anticipate that the new diversion channel would alter surface water quantity and flow to adjacent waterbodies as effects to groundwater and surface water patterns would be similar to the existing diversion channel between Gordon and Farley Lakes.

During decommissioning/closure, removal of project infrastructure and reclamation of the Gordon site PDA were predicted to reverse effects to surface water quantity and flow associated with ground compaction and changes to runoff patterns. However, as groundwater interceptor wells and contact water collection systems would continue to operate until the open pit is filled (i.e. approximately 11 years), associated effects to surface water quantity would persist until these wells are removed. After the open pit is filled, contact water collection systems would be removed, re-contoured, and revegetated to re-establish surface water drainage patterns to the extent feasible. The diversion channel would remain in place permanently to maintain connectivity between Gordon and Farley Lakes, therefore resulting in

permanent changes to groundwater flow patterns and discharge, and associated changes to surface water quantity and flow.

Predicted project-related changes in mean annual flows and lake levels for waterbodies within the Gordon site LAA are outlined in Table 6.

Table 6 Changes to Surface Water Quantity and Flows for Waterbodies in the Gordon Site LAA

Location	Construction	Operation	Decommissioning/ Closure	Post-Closure
Changes to Mean Annual Flows[1]				
Gordon Lake Inlet	-29% (-0.002 m^3/s)	-29% (-0.002 m^3/s)	-29%	-29%
Gordon Lake Outlet	+7% (+0.001 to 0.003 m^3/s)	+7% (+0.002 m^3/s)	-11%	-16%
Farley Lake Inlet	-27%	-27% (-0.02 m^3/s)	-27%	-27%
Farley Lake Outlet	+66% (+0.064 m^3/s)	+43% (+0.002 to 0.039 m^3/s)	-6%	-8% to -2%
Swede Lake Inlet	No change	+20%	No change	No change
Swede Lake Outlet	+31%	+20%	-3%	+1%
Ellystan Lake Inlet	No change	+13%	No change	No change
Ellystan Lake Outlet	+19%	+13%	-2%	+1%
Minton Lake Outlet	-11% to 26%	-11 to 26%	-11 to 26%	No change
Farley Creek	January to April: +137 to 359% May to September: +42 to 71% October to December: +33% to 81%	January: +74% February to April: +112 to 135% May to December: +10 to 31%	January to December: <10% change	January to April: +11 to 27% May to December: <10% change
Changes to Mean Annual Lake Levels[2]				
Farley Lake	+15% (+0.14 m)	+12% (+0.11 m)	-1%	+1%
Gordon Lake	<10%	No change	No change	No change
Minton Lake	-0.02 m	-0.021 m	-0.025 m	No change

[1] Percent change relative to baseline (absolute change relative to baseline in cubic metres per second (m^3/s)).

[2] Percent change relative to baseline (absolute change relative to baseline in metres (m)).

The Proponent predicted that residual effects to surface water quantity and flow at the Gordon site during construction and operation would be adverse, short- to medium-term in duration, continuous, reversible,

high in magnitude, and would occur within the LAA, following the implementation of mitigation measures. Residual effects during decommissioning/closure were predicted to be adverse, long-term, continuous, irreversible, negligible in magnitude, and would occur within the LAA.

Changes to Surface Water Quality

The Project may affect surface water quality at the Gordon site during all phases through dewatering activities, discharge of groundwater collected by interceptor wells, discharge of contact water from contact water collection systems, and discharge of water from the filled open pit during post-closure. As a result, fluoride and total phosphorus concentrations were predicted to increase in waterbodies within the Gordon site LAA. Concentrations of all other contaminants and parameters of concern were expected to change by less than 20% compared to baseline. The Proponent also did not anticipate that changes in water levels in lakes and streams on or near the Gordon site during any project phase would result in the methylation of inorganic mercury, or that changes in water quality as a result of project activities would affect the Barrington River.

Fluoride is naturally occurring in the LAA in bedrock; therefore, fluoride levels are naturally elevated in groundwater and in the existing Wendy and East pit lakes. During construction and operation, fluoride concentrations in the west end of Farley Lake were predicted to exceed the Canadian Water Quality Guidelines – Freshwater Aquatic Life (CWQG-FAL) limit for fluoride (Table 7). Fluoride concentrations during decommissioning/closure and post-closure in Farley Lake would not exceed CWQG-FAL limits. Gordon Lake, the east end of Farley Lake, and Swede Lake were also predicted to experience increases in fluoride concentrations during all project phases; however, concentrations would be equivalent to or would not exceed CWQG-FAL limits.

Phosphorus concentrations in surface water and groundwater in the PDA and LAA are also naturally elevated; therefore, water within the existing pit lakes contain phosphorus concentrations in excess of the Manitoba Water Quality Standards, Objectives, and Guidelines – Freshwater Aquatic Life (MWQSOG-FAL). Phosphorus concentrations in the west end of Farley Lake were predicted to increase as a result of the Project but would not exceed the MWQSOG-FAL during construction; during operation, they were predicted to decrease relative to baseline (Table 7). During decommissioning/closure and post-closure, phosphorus concentrations in Farley Lake would exceed the MWQSOG-FAL when water from the newly formed pit lake begins discharging into it. The Proponent did not anticipate that phosphorus levels in the east end of Farley Lake or Gordon Lake would be affected by the Project.

Table 7 Predicted Changes in Surface Water Quality for Waterbodies within the Gordon Site LAA

Location	Construction[1]	Operation[1]	Decommissioning/ Closure[1]	Post-Closure[1]
Annual Average Fluoride Concentrations				
Farley Lake – West End	+200% (>CWQG-FAL[2])	+103% (>CWQG-FAL)	+68% (=CWQG-FAL)	+53% (<CWQG-FAL)
Farley Lake – East End	+61% (<CWQG-FAL)	+77% (<CWQG-FAL)	+73% (<CWQG-FAL)	No change
Gordon Lake	+101% (=CWQG-FAL)	+102% (=CWQG-FAL)	+102% (<CWQG-FAL)	No change

Swede Lake	No change	+38% (<CWQG-FAL)	+37% (<CWQG-FAL)	No change
Annual Average Phosphorus Concentrations				
Farley Lake – West End	Negligible (<MWQSOG-FAL[3])	-9% (<MWQSOG-FAL)	+19% (>MWQSOG-FAL)	+11% (>MWQSOG-FAL)
Farley Lake – East End	No change	No change	No change	No change
Gordon Lake	No change	No change	No change	No change

[1] Percent change relative to baseline conditions

[2] Canadian Water Quality Guidelines – Freshwater Aquatic Life

[3] Manitoba Water Quality Standards, Objectives, and Guidelines – Freshwater Aquatic Life

Baseline surveys showed that iron and hexavalent chromium concentrations in Gordon Lake currently exceed CWQG-FAL limits. Therefore, intercepted water by groundwater interceptor wells and released to Gordon Lake could further increase iron and hexavalent chromium levels. The Proponent predicted that, following the implementation of mitigation measures, including aeration to promote the precipitation of metals, project effects to iron and hexavalent chromium levels in Gordon Lake would be minimal. Intercepted groundwater may be released to the Hughes River (i.e. due to its large assimilative capacity) should treatment methods be ineffective and measures (e.g. bedrock grouting) would be implemented to reduce the volume of groundwater to be intercepted. Site-specific water quality objectives for iron and hexavalent chromium would be established prior to construction to allow monitoring and adaptive management of project effects.

Deposition of fugitive dust during all project phases may affect surface water quality. However, this pathway of effect was not assessed as the Proponent was of the view that mitigation measures proposed to limit fugitive dust emissions (see Chapter 6.1 (Atmospheric Environment) of this EA Report) would prevent appreciable changes in surface water quality in nearby waterbodies. The release of contaminated groundwater from the mine rock storage area may affect surface water quality in Gordon Lake, Farley Lake, and Susan Lake; however, this potential pathway of effect was not assessed as groundwater travel times to these lakes were predicted to exceed 800 years.

The Project may affect the pH and turbidity of lakes and streams within the Gordon site LAA through increased erosion and sedimentation in all project phases; the release of contact and non-contact water with high concentrations of suspended solids during construction and operation; and the release of effluents and groundwater seepage with high amounts of suspended solids or that has come into contact with mine rock or tailings during operation. While total suspended solids concentrations in waterbodies within the PDA and LAA may occasionally exceed the CWQG-FAL and MWQSOG-FAL during construction and operation, the Proponent predicted that the frequency and duration of these exceedances would be irregular and short-term. No changes to pH in waterbodies in the PDA or LAA were predicted with the implementation of mitigation measures, including compliance with the *Metal and Diamond Mine Effluent Regulations* (MDMER) effluent discharge limits. If exceedances persist, additional treatment methods prior to effluent discharge would be implemented.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to surface water quality at the Gordon site during construction and operation would be adverse, medium-

term in duration, regularly occurring, reversible, occurring within the LAA, and of moderate magnitude. Residual effects during decommissioning/closure were predicted to be adverse, long-term, regularly occurring, irreversible, moderate in magnitude, and would occur within the LAA.

MacLellan Site

Changes to Surface Water Quantity and Flow

Surface water quantity may be affected during all project phases at the MacLellan site through site preparation activities, construction of infrastructure with impermeable surfaces, and water management activities, including dewatering of underground workings and the open pit, stockpiling and storage of ore, mine rock, and overburden, and tailings management. Site preparation and construction activities may result in reduced infiltration rates, increased runoff, changes to evapotranspiration rates, and changes to local drainage patterns. Water management activities during construction and operation may alter shallow groundwater levels, recharge rates, and groundwater flow paths, which may affect water levels and flow in hydraulically connected surface waterbodies by altering the amount and timing of groundwater discharge.

Contact water collected from open pit dewatering, runoff from the Ore Milling and Processing Plant area, and seepage from ore and overburden stockpiles, the mine rock storage area, and the Tailings Management Facility would either be permanently stored in the Tailings Management Facility or temporarily stored in the contact water collection pond during operation until it can be safely discharged to the Keewatin River. As the Tailings Management Facility would be designed to prevent discharge to the surrounding environment, storage of this water may affect surface water quantities and flow in surrounding waterbodies by limiting the volume of runoff inputs. The Proponent predicted that these effects would be partially offset by seepage from the Tailings Management Facility during all phases except post-closure, as the Tailings Management Facility would act as a source of groundwater recharge and may increase groundwater discharges to some surface waterbodies.

Ore milling and processing during operation would require surface water inputs, which would primarily be met by recycling contact water from the Tailings Management Facility and the new open pit. However, during the first year of operation, additional make-up water from the Keewatin River would be required. Fresh water would also be extracted from the Keewatin River throughout operation to supply potable water to site facilities at the Gordon and MacLellan sites and for other uses, such as dust suppression and fire protection. However, flows in the Keewatin River downstream of the MacLellan site were predicted to remain within 2% or less of baseline flows at all times during operation.

Removal and reclamation of project infrastructure, re-establishment of drainage patterns, and filling of the open pit to form a pit lake during decommissioning/closure may affect surface water quantity and flow. Removal of project infrastructure and reclamation of the PDA, including grading and replacement of topsoil and vegetation, would decrease runoff and increase infiltration and evapotranspiration rates. During this phase, dewatering of the open pit would cease and the open pit would begin to fill with groundwater inflow, direct precipitation, and surface water runoff. Temporary trenches used in place of water management systems during this phase would divert seepage from the mine rock storage area, Tailings Management Facility, and overburden stockpile to the open pit, affecting groundwater levels and gradients and resulting in positive changes to natural surface water quantity and flow in adjacent waterbodies. These changes were expected to persist into post-closure and reach a steady state condition when the open pit is filled with water (i.e. approximately 21 years). At this point, water from the open pit would begin discharging to the unnamed tributary of the Keewatin River, increasing streamflows.

Temporary trenches would be filled and re-contoured to restore the original drainage paths, to the extent possible, after pit lake water quality meets acceptable discharge criteria.

Project effects to mean annual flows for waterbodies in the MacLellan site LAA are presented in Table 8.

Table 8 Predicted Changes in Surface Water Quantity for Waterbodies in the MacLellan Site LAA

Location	Construction[1]	Operation[1]	Decommissioning/ Closure[1]	Post-Closure[1]
Changes to Mean Annual Flows				
Unnamed Keewatin River Tributary	Spring to Fall: -64% Winter: No change[2]	Spring to Fall: -64% Winter: No change[2]	-56%	+99%
Keewatin River	<10%	<10%	<10%	<10%
Minton Lake Outlet	-19%	-20%	-22%	-22%

[1] Percent change relative to baseline levels.

[2] Due to frozen conditions.

The Proponent predicted that, following the implementation of mitigation measures, effects to surface water quantity and flow at the MacLellan site during construction and operation would be adverse, short- to medium-term, continuous, reversible, negligible to high in magnitude (i.e. depending on the waterbody), and would occur within the LAA. Residual effects during decommissioning/closure were predicted to be adverse, long-term, continuous, irreversible, occurring within the LAA, and of high magnitude during the period where the open pit is filling. Once the open pit is filled and discharging to the unnamed tributary of the Keewatin River, the magnitude of effects would continue to be high in this tributary (i.e. changes in flows would be greater than 30%); moderate at the outlet of Minton Lake (i.e. changes in flows would be approximately 20%); and negligible at all other locations throughout the LAA.

Changes to Surface Water Quality

The Project could affect surface water quality at the MacLellan site during all phases through the discharge of contact water to the Keewatin River, runoff from the ore and overburden stockpiles, and seepage of contaminated water from the Tailings Management Facility and mine rock storage area into groundwater and its subsequent release to hydraulically connected surface waterbodies. Continued seepage from the mine rock storage area and Tailings Management Facility, and discharge from the open pit to the unnamed tributary of the Keewatin River during post-closure were also predicted to result in substantial increases in contaminant concentrations in nearby waterbodies. Effluent discharges from the Sewage Treatment Plant were not predicted to exceed federal and provincial effluent quality criteria, as total suspended solids, ammonia, and phosphorus concentrations would be reduced and the MWQSOG-FAL standards for fecal coliform bacteria would be met.

During construction and operation, contaminant concentrations in the Tailings Management Facility may exceed MDMER limits, including for cyanide, un-ionized ammonia, copper, nickel, aluminum, arsenic, cadmium, fluoride, phosphorus, chromium, iron, and mercury. Direct effects to surface water quality from the Tailings Management Facility were not predicted during construction and operation as it would be

designed to prevent release of effluents to the surrounding environment, including through installation of partial liners under the facility dams and a seepage collection system to reduce the risk of groundwater contamination. During decommissioning/closure, the Tailings Management Facility would be partially capped (i.e. to limit infiltration of precipitation and ingress of oxygen) and runoff from the Facility would be directed to the open pit until it is filled, after which water from the pit lake, and therefore the decommissioned Tailings Management Facility, would begin discharging to the surrounding environment. Acid rock drainage in the Tailings Management Facility was not anticipated during construction and operation as tailings beaches would be maintained to prevent the development of acidic conditions. However, acidic conditions may develop in the Tailings Management Facility during post-closure due to the presence of potentially acid generating materials, which may result in metal leaching and elevated concentrations of nickel and copper that may exceed MDMER limits.

Aluminum, arsenic, total and dissolved cadmium, copper, fluoride, and phosphorus concentrations were predicted to increase in waterbodies within the MacLellan site PDA and LAA, including the Keewatin River downstream of the PDA, the unnamed tributary of the Keewatin River, and Minton Lake (Table 9) as a result of the activities described above. Concentrations of all other contaminants and parameters of concern were expected to change by less than 20% relative to baseline conditions and effects to other waterbodies within the MacLellan site LAA and RAA were not predicted. The Proponent also did not anticipate that changes in water levels in lakes and streams on or near the MacLellan site during any project phase would result in the methylation of inorganic mercury.

Table 9 Changes to Average Contaminant Concentrations in Waterbodies in the MacLellan Site LAA

Location	Construction[1]	Operation[1]	Decommissioning/ Closure[1]	Post-Closure[1]
Annual Average Fluoride Concentrations				
Unnamed Tributary of the Keewatin River	+9% (<CWQG-FAL[2])	+9% (<CWQG-FAL)	+9% (<CWQG-FAL)	+173% (<CWQG-FAL)
Annual Average Phosphorus Concentrations				
Unnamed Tributary of the Keewatin River	No change	No change	No change	-17% (<CWQG-FAL)
Annual Average Aluminum Concentrations				
Keewatin River	+59% (<CWQG-FAL)	+59% (<CWQG-FAL)	+59% (<CWQG-FAL)	Negligible
Unnamed Tributary of the Keewatin River	+30% (<CWQG-FAL)	+30% (<CWQG-FAL)	+30% (<CWQG-FAL)	1,222% (>CWQG-FAL)
Minton Lake	Negligible	Negligible	Negligible	Negligible
Annual Average Arsenic Concentrations				
Unnamed Tributary of the Keewatin River	+9% (<CWQG-FAL)	+9% (<CWQG-FAL)	+9% (<CWQG-FAL)	+689% (>CWQG-FAL)

Annual Average Copper Concentrations				
Unnamed Tributary of the Keewatin River	+14% (<CWQG-FAL)	+14% (<CWQG-FAL)	+14% (<CWQG-FAL)	+853% (<CWQG-FAL)
Annual Average Total Cadmium Concentrations				
Unnamed Tributary of the Keewatin River	+6% (<CWQG-FAL)	+6% (<CWQG-FAL)	+ <5% (<CWQG-FAL)	+1,394% (<CWQG-FAL)
Minton Lake	+4% (<CWQG-FAL)	+3% (<CWQG-FAL)	+ <5% (<CWQG-FAL)	+347% (<CWQG-FAL)
Annual Average Dissolved Cadmium Concentrations				
Unnamed Tributary of the Keewatin River	+6% (<CWQG-FAL)	+6% (<CWQG-FAL)	+ <5% (<CWQG-FAL)	+1,323% (<CWQG-FAL)

[1] Percent change relative to baseline conditions.

[2] Canadian Water Quality Guidelines – Freshwater Aquatic Life

Annual average total and dissolved cadmium, copper, fluoride, and phosphorus concentrations were not predicted to exceed CWQG-FAL limits during post-closure (Table 9); however, annual maximum concentrations of these contaminants in the Keewatin River, the unnamed tributary of the Keewatin River, and Minton Lake were predicted to increase to levels in excess of CWQG-FAL limits for some or most of the year (Table 10). Maximum total antimony, dissolved hexavalent chromium, total selenium, and total zinc concentrations in the unnamed tributary of the Keewatin River were also predicted to increase as a result of the Project during post-closure to levels that would exceed the MWQSOG for drinking water quality (i.e. total antimony) and CWQG-FAL limits (i.e. hexavalent chromium, selenium, and zinc). The Proponent considered these exceedances to be minor as exceedances would only occur for two months during the entirety of the post-closure phase.

Table 10 Changes to Maximum Contaminant Concentrations in Waterbodies in the MacLellan Site LAA

Location	Post-Closure[1]	Percent Exceedance of CWQG-FAL Limits[2]	Frequency of Maximum Concentration
Annual Maximum Fluoride Concentrations			
Unnamed Tributary of the Keewatin River	+698%	+193%	Varies per year (i.e. 1 month per year to up to 10 months per year)
Annual Maximum Phosphorus Concentrations			
Unnamed Tributary of the Keewatin River	+23%	+28%	3 months per year
Annual Maximum Aluminum Concentrations			
Keewatin River	+72%	<CWQG-FAL	1 month per year

Unnamed Tributary of the Keewatin River	+1,220%	+98%	1 month per year
Annual Maximum Arsenic Concentrations			
Unnamed Tributary of the Keewatin River	+3,582%	+710%	2 times during entire post-closure phase
Annual Maximum Copper Concentrations			
Unnamed Tributary of the Keewatin River	+2,453%	+117%	3 to 6 months per year annually (up to Year 89)
Annual Maximum Total Cadmium Concentrations			
Unnamed Tributary of the Keewatin River	+20,639%	+104%	2 months per year annually
Minton Lake	+771%	<CWQG-FAL	4 months per year annually
Annual Maximum Dissolved Cadmium Concentrations			
Unnamed Tributary of the Keewatin River	+20,639%	+57%	2 months per year annually

[1] Percent change relative to baseline conditions.

[2] Canadian Water Quality Guidelines – Freshwater Aquatic Life

The Project may affect the pH and turbidity of lakes and streams within the MacLellan site LAA during all phases through the deposition of fugitive dust, and the release of mine effluent and groundwater that has come into contact with mine rock or tailings, or that contain high amounts of suspended solids. No changes in pH were predicted following the implementation of mitigation measures, including treatment of effluents to ensure compliance with the MDMER. The frequency and duration of exceedances of CWQG-FAL and MWQSOG-FAL limits for total suspended solids in waterbodies within the LAA were predicted to be irregular and short-term, following the implementation of mitigation measures. However, additional treatment methods would be implemented if guideline exceedances were to persist.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to surface water quality at the MacLellan site during construction, operation, and decommissioning/closure would be adverse, medium-term, regularly occurring, reversible, occurring within the LAA, and of low magnitude, as predicted changes in surface water quality would be less than 20% relative to baseline levels or were not expected to exceed applicable federal and provincial water quality guidelines. Residual effects during post-closure were predicted to be adverse, long-term, regularly occurring, irreversible, occurring within the LAA, and of low to moderate magnitude as several contaminants would exceed baseline concentrations by 20% or more but were not expected to result in adverse effects to aquatic life and/or would be less than maximum observed baseline concentrations.

The Proponent's proposed mitigation, monitoring, and follow-up measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to areas of federal jurisdiction, as described under section 5 of CEAA 2012, are described in Section 6.3.3 of this Chapter.

6.3.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada noted concerns regarding the potential for release of contact water to the Hughes River, in the event that treatment options are ineffective. Environment and Climate Change Canada recommended that the Proponent prioritize source control and contingency treatment options for contact water and intercepted groundwater over discharging effluents to waterbodies within the Gordon site LAA; the potential effects of contingency options should be assessed prior to implementation. Environment and Climate Change Canada also identified concerns regarding the planned release of contact water from the pit lakes at the Gordon and MacLellan sites during post-closure. Environment and Climate Change Canada recommended that the Proponent be required to monitor contaminant levels in the pit lakes during post-closure to ensure that federal and provincial water quality guidelines are consistently being met prior to release of this water to the surrounding environment.

Environment and Climate Change Canada expressed concerns regarding potential water quality guideline exceedances at and downstream of the edge of mixing zones and recommended that the Proponent implement additional mitigation measures to ensure that water quality in these areas meets CWQG-FAL limits. In cases where contaminant concentrations are elevated under baseline conditions, Environment and Climate Change Canada noted the importance of ensuring that the Project does not exacerbate baseline exceedances to such a degree as to adversely affect aquatic life.

Natural Resources Canada expressed concerns regarding residual effects to surface water quality and the aquatic environment from potentially acid generating rock during operation. Natural Resources Canada recommended that the Proponent conduct monitoring and testing of mine rock prior to construction and throughout operation to identify potentially acid generating rock and rock with metal leaching potential to support effective management. Natural Resources Canada was also concerned about the Proponent's proposed approach of blending non-potentially acid generating rock with potentially acid generating rock to limit the development of acid rock drainage and metal leaching, as the success of this approach is uncertain (i.e. blending potentially acid generating and non-potentially acid generating rock requires a detailed understanding of the acid rock drainage potential of all mined materials produced throughout operation). Natural Resources Canada recommended that the Proponent be required to confirm that all construction materials, including any used for grading and earthworks, are not acid generating, potentially acid generating, or metal leaching substances. Natural Resources Canada also recommended that the Proponent carry out sequential mining of the open pits and backfill the open pits with mine rock as opposed to stockpiling to limit potential effects to surface water.

Indigenous Nations

Mathias Colomb Cree Nation highlighted concerns regarding the Proponent's decision to establish its own water quality benchmarks for iron and hexavalent chromium in Gordon Lake above the CWQG-FAL limits, noting that the decision is inconsistent with the precautionary principle and fails to consider how selected benchmarks would be protective of Indigenous Peoples. The Manitoba Metis Federation raised concerns that the cause of existing exceedances of federal and provincial water quality guidelines in waterbodies in the PDAs and LAAs under baseline conditions is unclear and recommended that conservative effluent quality targets be set for these contaminants to ensure that existing exceedances are not exacerbated by the Project.

Marcel Colomb First Nation and the Manitoba Metis Federation expressed concerns regarding acid rock drainage and effects to surface water quality. The Manitoba Metis Federation specifically noted concerns regarding potential effects to Métis land users due to project effects to the Keewatin River and Farley

Lake from acid rock drainage and metal leaching from the Tailings Management Facility and mine rock storage areas, and highlighted that the Proponent's water quality model and effects assessment for acid rock drainage and metal leaching were not sufficiently conservative to predict actual project effects. The Manitoba Metis Federation also noted that insufficient information was provided regarding contingency measures that would be implemented if the Proponent's mitigation measures to address acid rock drainage and metal leaching are not successful. The Nation highlighted the need for a robust monitoring program to ensure that blending of potentially acid generating and non-potentially acid generating materials is successful at mitigating the effects of acid rock drainage and noted concerns regarding the lack of information provided by the Proponent regarding existing concentrations of metals and metal accumulation in the environment.

The Manitoba Metis Federation asserted that project-related changes to water quality in the Keewatin River could adversely affect Métis citizens that fish in Cockeram Lake (i.e. located downstream of the confluence of the Lynn River and the Keewatin River). Mathias Colomb Cree Nation raised concerns regarding potential effects to the Keewatin River as a result of project-related water withdrawals, and noted the importance of minimizing water withdrawals and ensuring that effluents are not released into the River. Mathias Colomb Cree Nation also noted concerns that contingency measures to address project effects to flows in the Keewatin River were not identified.

Marcel Colomb First Nation highlighted concerns regarding elevated contaminant concentrations in the Keewatin River, particularly during post-closure, as a result of seepage from the Tailings Management Facility and mine rock storage areas, and the release of water from the pit lakes to the surrounding environment. Marcel Colomb First Nation noted that the lack of modelling completed by the Proponent to inform pit lake water chemistry during post-closure resulted in uncertainty and a potential risk for downstream Indigenous land users.

O-Pipon-Na-Piwin Cree Nation disagreed with the Proponent's assertion that water flows within the Berrington River system would not be affected, and expressed concerns regarding potential long-term effects to the Barrington River system as a result of project-related activities and associated effects to Indigenous Peoples' health, cultural practices, and exercise of section 35 rights by members of O-Pipon-Na-Piwin Cree Nation.

Marcel Colomb First Nation, and the Manitoba Metis Federation expressed concerns regarding potential increases in mercury methylation as a result of the Project due to fluctuating water levels in wetlands and surface waterbodies, and resulting potential effects to fish and Indigenous Peoples' health. Marcel Colomb First Nation, the Manitoba Metis Federation, and Mathias Colomb Cree Nation recommended that the Proponent be required to monitor methylmercury concentrations in potentially affected waterbodies within the Gordon and MacLellan site LAAs and identify mitigation measures to be implemented if methylation of inorganic mercury were to occur.

Marcel Colomb First Nation recommended that the Proponent be required to implement mitigation measures to limit or prevent the introduction of selenium into the surrounding environment and commit to the identification of selenium sinks and sources within the LAAs and RAA.

Chemawawin Creen Nation noted concerns regarding the lack of engagement by the Proponent regarding project-related surface water management. Sayisi Dene First Nation also noted concerns regarding the insufficient level of engagement by the Proponent regarding the selection criteria for phosphorus, fluoride, and selenium that would trigger treatment of contact water in collection ponds or

treatment of effluents. Sayisi Dene First Nation emphasized the importance of their involvement in all phases of the Project to address their concerns regarding selection criteria for the treatment of water.

Mathias Colomb Cree Nation requested that the Proponent consider Indigenous traditional and cultural land and resource use, and cultural values when establishing thresholds to inform when to implement contingency measures to address project effects to surface water quantity. The Manitoba Metis Federation also noted concerns that the Proponent did not consider Métis land and resource use when developing water quality thresholds that would be used to inform when water could be discharged from the pit lakes during post-closure. The Manitoba Metis Federation requested that the Proponent meaningfully engage with their Nation to determine appropriate water quality thresholds that would be protective of Métis land users.

The Manitoba Metis Federation expressed concerns regarding the effluent treatment methods proposed by the Proponent that would be implemented if MDMER effluent limits are exceeded and regarding the potential release of effluents from the Tailings Management Facility, as adverse effects to water quality could still occur after treatment.

The Manitoba Metis Federation highlighted the need for collaboration with the Proponent during the development of follow-up and monitoring plans and adaptive mitigation strategies regarding surface water, particularly as it relates to surface water quality and contaminant management.

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

6.3.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent adequately described potential project effects to surface water quality and quantity and recognizes that groundwater is a potential pathway through which contaminants of concern may move from the Project to surface waterbodies beyond the post-closure phase. 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 within the Gordon and MacLellan site PDAs and LAAs.

The Agency agrees with Environment and Climate Change Canada's concerns regarding potential discharges of contact water to waterbodies within the Gordon site LAA, such as the Hughes River, and recommends that the Proponent prioritize source control and contingency treatment options for contact water and intercepted groundwater over discharging effluents to waterbodies within the Gordon site LAA. The Agency also agrees with Environment and Climate Change Canada's recommendation that the Proponent monitor surface water quality at and downstream of the edge of mixing zones and implement additional mitigation measures if contaminant concentrations in these areas exceed CWQG-FAL limits.

The Agency agrees with the Manitoba Metis Federation's concerns regarding the potential for the Project to further increase the concentration of contaminants that are in excess of federal and provincial water quality guidelines under baseline conditions. The Agency recommends that the Proponent implement mitigation measures to reduce project-related increases in contaminant concentrations to the greatest extent possible.

The Agency agrees with the Marcel Colomb First Nation's concerns regarding the release of water from the pit lakes during post-closure and with Environment and Climate Change Canada's recommendation

that water quality in the pit lakes at the Gordon and MacLellan sites be monitored throughout decommissioning/closure and post-closure until monitoring consistently demonstrates that federal and provincial water quality guidelines are not being exceeded; water should not be released from the pit lakes to the surrounding environment until monitoring demonstrates compliance with federal and provincial water quality guidelines.

The Agency recognizes that uncertainty remains regarding the success of blending non-potentially acid generating rock with potentially acid generating rock to limit the development of acid rock drainage and metal leaching. The Agency accepts that sequential mining and backfilling the open pits may not be technically or economically feasible for the Proponent, given the volume of materials to be handled. The Agency recommends that the Proponent use construction materials that are not acid generating, potentially acid generating, or metal leaching, unless not technically or economically feasible; test mine rock prior to construction and throughout operation to identify potentially acid generating material requiring management; continuously monitor areas where potentially acid generating rock is to be stored for signs of acid rock drainage and metal leaching; and implement mitigation measures to prevent adverse effects to surface water quality if acid rock drainage or metal leaching are detected, including seepage and runoff collection and treatment.

The Agency recognizes that seepage and runoff from the Tailings Management Facility, mine rock storage areas, and the collection systems for seepage and contact water could result in adverse effects to surface water quality. The Agency is of the view that the key mitigation measures proposed in Chapter 6.2 (Groundwater) of this EA Report would reduce effects to surface water from these components. The Agency highlights the importance of follow-up and monitoring with respect to surface water quality to monitor for and prevent project-related exceedances of CWQG-FAL limits.

The Agency agrees with the Proponent that modelled surface water quantity predictions demonstrate minimal effects to surface waterbodies down-gradient of the PDAs. However, the Agency understands that uncertainty remains regarding the extent to which the Project may contribute to fluctuating water levels or temporary flooding of areas that may promote mercury methylation, and recommends that the Proponent develop a plan to conduct regular methyl-mercury monitoring in environmental (e.g. surface water) and fish tissue samples to verify the results of the environmental assessment.

The Agency acknowledges that there are outstanding concerns regarding potential increases in selenium concentrations in the surrounding environment, particularly given the potential for bioaccumulation. The Agency recommends that the Proponent conduct selenium monitoring in environmental (e.g. surface water) and fish tissue samples during all project phases to verify the results on the environmental assessment, the effectiveness of mitigation measures, and to inform the need for contingency measures. The Agency highlights the importance of follow-up and monitoring to verify on-site and off-site water quality model predictions, and the application of adaptive management to ensure that project effects to surface water quantity and other related valued components align with the predictions and assumptions described in the EIS.

The Agency highlights the importance of engagement with Indigenous nations 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 (Appendix D) 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 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 nations.

Mitigation Measures

- During all project phases, the Proponent will implement mitigation measures, including collection and treatment of contact water and seepage before discharge to the receiving environment, to prevent project-related exceedances of the CWQG-FAL in all surface waterbodies within the Gordon and MacLellan site PDAs, LAAs, and RAA, including for fluoride, iron, hexavalent chromium, phosphorus, aluminum, arsenic, copper, cyanide, antimony, and total and dissolved cadmium. For waterbodies with contaminant concentrations in excess of the CWQG-FAL under baseline conditions, mitigation measures will be implemented to reduce project-related increases in contaminant concentrations to the greatest extent possible. Mitigation measures will be developed in consultation with Indigenous nations, Environment and Climate Change Canada, and other relevant federal and provincial authorities.
- Prior to construction and throughout operation, the Proponent will characterize the acid rock drainage and metal leaching potential of overburden, mine rock, and tailings. Geochemical testing will be conducted to verify acid rock drainage and metal leaching potential and the environmental assessment predictions for site effluent quality. Development of acid rock drainage and metal leaching will be limited during all project phases, and waste, including waste rock within the Tailings Management Facility, will be covered during decommissioning/closure in a manner determined by a qualified individual.
- Materials that are acid generating, potentially acid generating, or metal leaching will not be used during construction, including for grading and earthworks, unless not technically or economically feasible. If the use of acid generating, potentially acid generating, or metal leaching materials is required, the Proponent will ensure that water and oxygen ingress is precluded.
- The rate of discharge of water to Gordon and Farley Lakes from dewatering the existing Wendy and East pit lakes and the interceptor wells will be adjusted to maintain lake levels within the range of natural variability predicted in the EIS.
- Prior to release to the receiving environment, water in the pit lakes will be treated in accordance with the CWQG-FAL. If pit lake water quality is not suitable for release to the surrounding environment, additional treatment options will be implemented to improve water quality to comply with the CWQG-FAL, MDMER limits, and subsection 36(3) of the *Fisheries Act*.

Follow-up and Monitoring

- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities, and implemented during all phases, which will provide a framework for monitoring potential changes in surface water quantity and quality; verifying the results of the environmental assessment and the effectiveness of mitigation measures; and informing the need for the implementation of contingency measures to protect surface water quantity and quality. This follow-up program will be used to monitor the following parameters, at a minimum: instantaneous flows; total suspended solids and turbidity; lake levels; pH levels; and concentrations of contaminants identified in the MDMER, including fluoride, iron, hexavalent chromium, phosphorus, selenium, aluminum, arsenic, copper, cyanide, antimony, and total and dissolved cadmium, calcium, and magnesium. The follow-up program will include a description, at a minimum, of:
    - monitoring locations for Gordon Lake, Farley Lake, Minton Lake, Cockeram Lake, Swede Lake, Ellystan Lake, Arbor Lake, Burge Lake, the Keewatin River, the unnamed tributary of the Keewatin River, the Hughes River, Payne Lake, Susan Lake, the newly formed pit lakes (i.e. following operation), the Tailings Management Facility, mine rock storage areas, and contact water collection ponds;
    - analytical parameters to be monitored and monitoring frequency;
    - thresholds that will trigger the implementation of contingency measures; and
    - contingency measures that will be implemented to address potential project effects to surface water quality and quantity.
- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations, Natural Resources Canada, and other relevant federal and provincial authorities, to test mine rock, prior to construction and during operation, to identify and monitor potentially acid generating rock, including for the mine rock storage areas, ore stockpiles, and the Tailings Management Facility, for signs of acid rock drainage and metal leaching, and to verify the effectiveness of the soil covers that will be placed over these areas throughout decommissioning/closure, as predicted in the Environmental Impact Statement.
- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations, Environment and Climate Change Canada, and other relevant federal and provincial authorities, to monitor surface water quality at the edge and downstream of the edge of mixing zones; the location and extent of mixing zones will be determined prior to construction. If monitoring indicates that project-related discharges are resulting in exceedances of the CWQG-FAL limits for fluoride, iron, hexavalent chromium, phosphorus, aluminum, arsenic, copper, cyanide, antimony, or total and dissolved cadmium at or downstream of the edge of mixing zones, additional mitigation measures will be developed and implemented, in consultation with Indigenous nations, Environment and Climate Change Canada, and other relevant federal and provincial authorities.
- Monitoring of pit lake water quality will continue throughout the decommissioning/closure and post-closure phases of the Project until water quality in the pit lakes is stable and improving, and any contact water or seepage potentially released meets CWQG-FAL and MWQSOG limits to allow unabated discharge to the surrounding environment. After that time, monitoring and maintenance will cease.
- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities, to monitor methyl-mercury and selenium concentrations in both environmental (e.g. surface water) and fish tissue samples throughout the life of the Project and to mitigate and manage any detected methyl-mercury and selenium spikes. The

threshold that would trigger the implementation of mitigation measures will, at a minimum, align with the thresholds for methyl-mercury and selenium identified in the MDMER.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to surface water quality and quantity can be found in the following chapters of this 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), Federal Lands (Chapter 7.6), and Accidents and Malfunctions (Chapter 8.1).

6.4 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 nations. This summary supports the analysis of effects on 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, physical and cultural heritage, and sites of significance (Chapter 7.4), and Indigenous Peoples' health and socio-economic conditions (Chapter 7.5), included in this EA Report.

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 (Appendix D) 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 and Indigenous nations.

6.4.1 Proponent's Assessment of Environmental Effects

Construction and Operation

Changes in Plant Species, Community, and Landscape Diversity

Vegetation clearing in the Gordon and MacLellan site PDAs during construction would result in the direct loss of native upland habitat, fragmentation of native plant communities, and the loss of plant species of cultural importance to Indigenous Peoples. Use of herbicides to control vegetation within the PDAs would also result in direct loss of vegetation and may change plant species composition and distribution.

Project activities at both sites during operation, including road use, drilling, blasting, and mine rock removal from the open pits, could result in the generation of particulate matter (i.e. fugitive dust) and other gaseous contaminant emissions, which may be deposited onto terrestrial and aquatic areas and absorbed by vegetation through their leaves and roots. This may cause changes to plant species composition and distribution at the community level, as gaseous contaminants and contaminants associated with fugitive dust may affect metabolic processes of plants (i.e. flower, berry, and seed production). The Proponent was uncertain how different plant species would respond to atmospheric contaminants; therefore, the extent and severity of effects were unknown.

Noxious weeds (i.e. dandelion and quack grass) currently occur within the Gordon site PDA. Construction and operation activities could result in the spread of existing weed species or the introduction and spread of other weed species through disturbance of native plant communities and the introduction and spread of weed plant seeds by equipment. This could affect plant species diversity at the individual and population level, as weed species may outcompete native vegetation. 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 were not expected.

As a result of project activities during construction and operation, the Proponent predicted that a total of 119.4 hectares and 490.4 hectares of native upland vegetation at the Gordon and MacLellan sites, respectively, would be disturbed within the LAAs.

The Proponent predicted that, following the implementation of mitigation measures, residual effects on landscape diversity at the Gordon and MacLellan sites during construction and operation would be adverse, low in magnitude, reversible, long-term in duration, would occur through a single event, and would occur within the RAA. Residual effects to community diversity would be adverse, low in magnitude, long-term in duration, continuous, irreversible, and would occur within the PDAs. Residual effects to plant species diversity were predicted to be adverse, moderate to high in magnitude, long-term in duration, irreversible, continuous, and would occur within the PDAs and LAAs.

Changes in Wetland Area and Functions

Vegetation clearing during construction would 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. This may result in the loss of or changes to wetland plant communities and functions (e.g. nutrient cycling, carbon sequestration) through changes to water levels and nutrient and mineral inputs. Areas of discontinuous permafrost also exist within the Gordon site LAA; project-related changes in surface water flow may result in the creation of flow channels that may result in localized permafrost thaw. Dewatering and permafrost thaw in fens would result in decomposition of peat and lowering of the peat profile, reducing carbon sequestration.

The Proponent predicted that approximately 437.4 hectares and 1,263 hectares of wetlands would be directly and indirectly lost, respectively, within the Gordon and MacLellan site PDAs and LAAs. However, the Proponent did not expect a total loss of wetland functions in the RAA and indirect effects to wetland functions resulting from groundwater drawdown would begin to recover ten (i.e. Gordon site) to 50 years (i.e. MacLellan site) following reclamation, as groundwater levels were predicted to return to near baseline conditions. The direct removal of wetlands was considered irreversible as these areas would be reclaimed as upland terrestrial habitat following operation.

Following the implementation of mitigation measures, the Proponent predicted that residual effects to wetland area and functions would be adverse, moderate in magnitude, continuous, long-term in duration, partially reversible, and would occur within the LAAs.

Decommissioning/Closure

During decommissioning/closure, the Proponent would reclaim upland and wetland areas directly disturbed by the Project to upland plant communities, other than the open pits and the site access roads, which would be filled with water and maintained for site access, respectively. The mine rock storage

areas at both sites and approximately 75% of the Tailings Management Facility at the MacLellan site, would be capped with borrow material and revegetated. The Tailings Management Facility would be seeded with an upland seed mix (i.e. including non-native plant species) to promote rapid revegetation; all other areas at both project sites would be seeded with an upland native seed mix. While plant composition and species abundance would likely differ from existing conditions, reclaimed communities, other than the Tailings Management Facility, would be dominated by native plant species. As such, the loss of entire upland plant communities in the LAAs was not expected. The Proponent predicted that disturbed areas would be self-sufficient approximately ten years after reclamation; if monitoring indicates that disturbed areas are not self-sufficient, additional revegetation efforts would be carried out.

Following reclamation, the Proponent predicted that the Project would result in a net gain in the area of upland vegetation of 37.3 hectares and 353.7 hectares within the Gordon and MacLellan site LAAs, respectively. As wetlands directly removed during construction would not be reclaimed, the Project would result in the permanent loss of 307.9 hectares of wetlands within the LAAs.

The Proponent predicted that, following the implementation of mitigation measures, residual project effects following decommissioning/closure would be both positive (i.e. landscape diversity) and adverse (i.e. community and species diversity, and wetland functions), low to moderate in magnitude, long-term in duration, continuous, partially reversible, and would occur within the LAAs (i.e. species diversity and wetland functions), PDAs (i.e. community diversity), and RAA (i.e. landscape diversity).

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to areas of federal jurisdiction, as described under section 5 of CEAA 2012, as a result of project-related changes to the terrestrial landscape, are described in Section 6.4.3 of this Chapter.

6.4.2 Views Expressed

Indigenous Nations

Sayisi Dene First Nation noted concerns that the Proponent has not engaged with their Nation to determine the location of sensitive wetland and vegetation areas of traditional and cultural importance. Sayisi Dene First Nation and Chemawawin Cree Nation noted that potential changes in the distribution of plant species of importance for traditional and cultural purposes were not considered in the assessment of effects to vegetation and wetlands and raised concerns regarding the lack of mitigation measures proposed by the Proponent to protect these species and areas. Chemawawin Cree Nation raised concerns that their Nation may not be provided control of or opportunities to provide input regarding management decisions related to vegetation and wetland habitats within or in close proximity to the PDAs.

The Manitoba Metis Federation highlighted concerns regarding potential project effects to migratory birds as a result of effects to riparian and wetland habitat due to changes in surface water and groundwater levels and flows.

Mathias Colomb Cree Nation expressed concerns that the proposed length of wetland and vegetation monitoring may not be adequate to fully capture project-related changes. The Nation requested the Proponent develop a process to collect and incorporate Indigenous knowledge, concerns, and feedback

regarding project effects to vegetation and wetlands into continued adaptive management and monitoring strategies for plant species of importance to Indigenous nations.

Marcel Colomb First Nation and Mathias Colomb Cree Nation noted concerns regarding potential indirect project effects to vegetation, including plant physiology, as a result of dust deposition. Mathias Colomb Cree Nation raised concerns regarding potential indirect project effects to vegetation through edge effects, groundwater drawdown, and the introduction and spread of weed species. The Nation also noted that vegetation surveys conducted for the Project were not designed to target plant species of importance to Indigenous nations and, as such, baseline data may not be representative of the actual total or relative abundance of these species in the study areas.

Chemawawin Cree Nation, Sayisi Dene First Nation, and Peter Ballantyne Cree Nation expressed concerns regarding direct and indirect project-related wetland losses and noted that the time required for wetlands to recover may significantly disrupt Indigenous harvesting activities. Peter Ballantyne Cree Nation and Sayisi Dene First Nation highlighted the importance of monitoring potential project effects to swamps within the PDAs and LAAs, as these areas are important for the practice of cultural and traditional use activities. Peter Ballantyne Cree Nation also expressed doubts regarding the Proponent's ability to reclaim affected wetlands.

Sayisi Dene First Nation and Chemawawin Cree Nation requested that the Proponent involve their Nations in the development of vegetation and wetland mitigation, monitoring, and adaptive management plans, including the Vegetation and Weed Management Plan and the selection of native seed mixes to be used for reclamation. Marcel Colomb First Nation and Peter Ballantyne Cree Nation raised concerns regarding reclamation success and whether it will be possible to fully reclaim the PDAs.

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

Federal Authorities

Environment and Climate Change Canada noted concerns that mitigation measures specific to plant species of cultural and traditional importance to Indigenous nations were not proposed.

6.4.3 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 and the temporary and permanent loss of wetlands and wetland functions. The Agency understands that effects to terrestrial vegetation and wetlands would be partially reversible through reclamation and following the cessation of water management activities. While some project-related wetland losses would be permanent, the Agency agrees that, following the implementation of mitigation measures, these losses would result in a negligible change in the availability and overall distribution of wetland types and wetland functions in the RAA.

The Agency agrees that project-related effects to wetlands may affect migratory birds, species at risk, and Indigenous Peoples, such as current use and the exercise of section 35 rights. The Agency recommends that the Proponent establish a 30 metre buffer around wetlands within and adjacent to the PDAs for which removal is not required to allow construction of the Project prior to work in these areas to limit project effects on wetlands that provide habitat for migratory birds and that support current use and the exercise

of section 35 rights by Indigenous Peoples. The Agency is of the view that this mitigation measure would also mitigate effects to species at risk.

The Agency agrees with Peter Ballantyne Cree Nation and Sayisi Dene First Nation's recommendation that the Proponent monitor effects to wetlands within the PDAs and LAAs that may be affected by the Project during all phases, particularly during decommissioning/closure, to ensure that wetlands recover from indirect project effects, as predicted, and to inform the need for contingency measures. The Agency also agrees with Sayisi Dene First Nation's recommendation that the Proponent provide an opportunity for Indigenous nations to be involved in the development and implementation of follow-up and monitoring programs related to wetlands.

The Agency recognizes that uncertainty remains regarding potential project effects to vegetation and wetland areas of importance to Indigenous nations. The Agency recommends that the Proponent engage with Indigenous nations prior to construction to identify the location of sensitive wetland and vegetation areas, including the location of plant species of traditional and cultural importance, within or near the PDAs that may be affected by the Project, and develop mitigation measures, in consultation with Indigenous nations, to mitigate project effects to these areas and species.

The Agency understands that the Proponent committed to using a native seed mix to reclaim areas disturbed by the Project, with the exception of access roads, the open pits, and the Tailings Management Facility. The Agency recommends that the Proponent engage with Indigenous nations regarding species to be included in native seed mixes to ensure that vegetation species of cultural and traditional importance to Indigenous nations are included.

The Agency understands that the Proponent committed to engaging with Indigenous nations regarding the development and implementation of follow-up and monitoring plans and will invite Indigenous nations to participate in an Indigenous Environmental Advisory Committee to support continued engagement and information sharing. Additional information regarding the Indigenous Environmental Advisory Committee is available in 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 highlights the importance of the continued participation of Indigenous nations in the development and implementation of mitigation, follow-up, and monitoring measures to ensure that Indigenous knowledge is adequately considered and potential effects to areas of importance to Indigenous nations are addressed.

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 (Appendix D) 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 nations.

Mitigation Measures

- Following operation, the Proponent will undertake, in consultation with Indigenous nations and relevant federal and provincial authorities, reclamation of areas disturbed by project activities.
- Native upland seed mixes will be used to re-seed areas disturbed by project activities through progressive reclamation to reduce the establishment of weed species, restore native species assemblages, and to reduce erosion of exposed soils.
    - Indigenous nations will be engaged regarding the selection of native seed mixes to be used to revegetate the project sites.
- Performance standards for reclaimed areas, including that the areas be self-sustaining, would be developed in consultation with Indigenous nations and monitored for five years beginning in post-closure or until performance standards are met.
- A 30 metre buffer will be established around wetlands within and adjacent to the PDAs for which removal is not required for construction of the Project. The buffer will be established prior to work in these areas to limit project effects on wetlands that provide habitat for migratory birds, and that support current use and the exercise of section 35 rights by Indigenous Peoples, unless not technically or economically feasible. If work within 30 metres of wetlands is required, weight-distributing materials will be used under machinery to limit soil compaction and existing access routes will be used, if available.
- Equipment will be inspected and cleaned to ensure that no soil or vegetative debris is attached, to limit the introduction and spread of weed species within the PDAs.

Additional mitigation, monitoring, and follow-up measures applicable to the terrestrial landscape are discussed in the following chapters of this EA Report: Atmospheric Environment (Chapter 6.1), Groundwater (Chapter 6.2), Surface Water (Chapter 6.3), Fish and Fish Habitat (Chapter 7.1), Migratory Birds (Chapter 7.2), 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 Predicted Effects on 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 fish species at risk designated by COSEWIC, through habitat loss or alteration, changes in water levels and streamflows, 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 on fish and fish habitat, including fish species at risk, after taking into account the 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 and provincial authorities and Indigenous nations.

7.1.1 Proponent's Assessment of Environmental Effects

The Proponent predicted that adverse project effects to fish and fish habitat may occur through changes to fish habitat and 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 LAAs during baseline studies and their life history and habitat requirements were considered representative of fish species present within the PDAs, LAAs, and RAA: northern pike, lake whitefish, walleye, and a group of forage fish species, including brook stickleback. Walleye were not present in any of the waterbodies potentially affected by the Project within the PDAs and LAAs; therefore, effects to walleye were? not discussed further. Potential effects to lake sturgeon and burbot were also assessed given the conservation status of lake sturgeon and the cultural importance of lake sturgeon and burbot to Indigenous Peoples. The fish species supported during one or more life history stage by each waterbody and watercourse potentially affected by the Project and within the Gordon and MacLellan site PDAs and LAAs are listed in Table 11.

Loss or Alteration of Fish Habitat

Dewatering of the East and Wendy pit lakes (i.e. Gordon site); removal of the existing diversion channel between Gordon and Farley Lakes (i.e. Gordon site); and installation of intake and effluent pipes in Gordon and Farley Lakes (i.e. Gordon site) and the Keewatin River (i.e. MacLellan site) to extract fresh water and discharge contact water could result in the harmful alteration, disruption, or destruction of fish habitat. Project-related changes in lake levels, streamflows, and groundwater levels could result in indirect effects to fish habitat at the Gordon and MacLellan sites, particularly for East Pond and its outlet (i.e. the unnamed tributary of the Keewatin River) at the MacLellan site and fish-bearing wetlands within the Gordon and MacLellan site PDAs and LAAs, which may be dewatered during construction and operation. The amount of fish habitat that may be directly or indirectly affected by the Project is presented in Table 12.

Table 11 Fish Species Present in Waterbodies Potentially Affected by the Project

Waterbody or Watercourse	Fish Species										
	Northern Pike (*Esox lucius*)	Brook Stickleback (*Culaea inconstans*)	White Sucker (*Catostomus commersonii*)	Yellow Perch (*Perca flavescens*)	Slimy Sculpin (*Cottus cognatus*)	Burbot (*Lota lota*)	Lake Sturgeon (*Acipenser fulvescens*)	Longnose Sucker (*Catostomus catostomus*)	Lake Chub (*Couesius plumbeus*)	Longnose Dace (*Rhinichthys cataractae*)	Lake Whitefish (*Coregonus clupeaformis*)
Gordon Site											
Farley Creek[2]	✓	✓	✓		✓	✓					
Farley Lake[2]	✓		✓	✓							
Gordon Lake[2]		✓	✓								
East Pit[1]		✓	✓								
Wendy Pit[1]		✓	✓								
Existing Diversion Channel[1]	✓	✓									
Wetlands[2]		✓									
MacLellan Site											
Keewatin River[2]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unnamed Tributary of Keewatin River[1]		✓									
East Pond[1]		✓									
Minton Lake[2]	✓	✓									
Wetlands[2]		✓									

[1] Waterbodies located within the PDA.
[2] Waterbodies located within the LAA.

Table 12 Direct and Indirect Fish Habitat Losses within the Gordon and MacLellan site PDAs and LAAs

Activity	Habitat Losses (square metres) – Gordon site	Habitat Losses (square metres) – MacLellan site
Dewatering of East and Wendy pit lakes	109,000	--
Removal of existing diversion channel	8,800	--
Installation of intake and effluent pipes	2,900	108
Dewatering of East Pond	--	37,000
Dewatering of the unnamed tributary of the Keewatin River (i.e. outlet of East Pond)	--	8,900
Partial or complete dewatering of fish-bearing wetlands	104,570	165,080
APPROXIMATE TOTAL	265,800	185,388

Installation of intake and effluent pipes at the Gordon and MacLellan sites and installation of a stilling basin at the MacLellan site would also result in the temporary disturbance of approximately 64 square metres, 363 square metres, and 42 square metres of riparian habitat near Gordon Lake, Farley Lake, and the Keewatin River, respectively. However, these areas were expected to naturally revegetate and recover within one to two years, except for habitat areas directly overlain by the discharge and effluent pipes and stilling basin, which would remain disturbed for the duration of construction and operation.

The Proponent concluded that effects to fish and fish habitat from dewatering of the existing East and Wendy pit lakes would not affect broader fish populations in the LAAs and RAA, as the pit lakes are isolated from other natural waterbodies in the region and do not support fish species that are part of a recreational or Indigenous fishery. The Proponent considered the fish habitat in the existing diversion channel that would be removed to be poor quality due to the small amount of vegetation present, coarse substrates, and low water velocities, with use primarily limited to rearing for large-bodied fish and year-round use for small-bodied fish, such as brook stickleback. Further, habitat losses in the existing channel were expected to be fully offset by construction of the new diversion channel, which would include habitat enhancement features to increase its suitability for fish species known to inhabit Gordon and Farley Lakes. Removal of the existing diversion channel was not expected to interrupt surface water flows and fish migration between Gordon and Farley Lakes as the new diversion channel would be constructed prior to isolation of the existing channel.

The Proponent did not anticipate that the presence of the intake and effluent pipes at the Gordon and MacLellan sites during operation would affect fish habitat or the upstream or downstream movement of fish in Gordon and Farley Lakes or the Keewatin River due to the small in-water footprint of the pipes after installation (i.e. less than one square metre and approximately 2.5 square metres, respectively) and

the short time period that the pipes would be present. Culvert installation and upgrades to bridge crossings were not anticipated to affect fish habitat as culverts would be sized to accommodate a 1:100 year precipitation event and installed to allow fish passage at all flow rates. Upgrades to the existing clear-span bridge over the Hughes River at the Gordon site would involve replacement of timber and planks only; no alteration to the bridge abutments or abutment armouring would be required.

Project-related changes in lake levels, streamflows, and groundwater levels at the Gordon and MacLellan sites would result in indirect fish habitat losses in East Pond, its outlet, and fish-bearing wetlands within the PDAs and LAAs (Table 12). For Gordon Lake, although project-related water level changes would occur during all phases, the area of shoreline fish habitat was predicted to remain unchanged and effects to dissolved oxygen concentrations during winter were not predicted to measurably affect the ability of fish to overwinter relative to baseline. Effects to dissolved oxygen concentrations during the summer months were not predicted to occur.

Predicted increases in water levels in Farley Lake during construction and operation were expected to result in an increase in the availability of shoreline spawning habitat for northern pike and yellow perch (i.e. typically spawn in flooded riparian areas). Predicted water level decreases in Farley Lake during decommissioning/closure would have a negligible effect on fish populations. However, there may be a one to two-year transition period in the post-closure phase as water levels return to near baseline conditions and aquatic vegetation adapts to the lower lake levels. This transition period may affect northern pike due to their reliance on aquatic vegetation for spawning, rearing, and foraging. However, due to the short duration of this transition period, the Proponent anticipated no measurable change to spawning success, recruitment, or population size. Project activities were not predicted to affect dissolved oxygen concentrations in Farley Lake in any season or phase; therefore, effects to the ability of fish species in Farley Lake to overwinter were not predicted to occur.

During construction and operation, project-related increases in winter and spring flows in Farley Creek (i.e. an outlet of Farley Lake) may coincide with the spawning period for white sucker, brook stickleback, burbot, and northern pike, and may displace some aquatic vegetation. These changes were not expected to have a measurable effect on the spawning success of brook stickleback and northern pike due to the abundance of flooded aquatic vegetation in Farley Creek and the likely dissipation of the increased flows across its wide floodplain. Predicted changes in water depth and velocity were not anticipated to affect brook stickleback as spawning is dependent on the availability of organic debris and aquatic vegetation, which are unlikely to be affected. Predicted changes in flows were not anticipated to affect burbot spawning, as burbot spawning in Farley Creek is likely limited due to its silty, organic substrates and the abundance of more suitable spawning habitat in Swede Lake. Potential effects to white sucker may occur, given the higher possibility of scouring of gravels and cobbles, where white sucker prefer to spawn. However, measurable effects to white sucker at the population level were considered unlikely as other spawning habitat is available in Swede Lake and its tributaries. Further, during fish baseline studies, white suckers were observed to spawn in a variety of substrates and water depths; therefore, white suckers may be able to adapt to the predicted flow alterations. Given the limited sampling data available for Farley Creek, uncertainty remains regarding fish species presence and abundance, particularly in the upstream-most reach of the creek where sampling could not occur (i.e. due to safety concerns).

The Proponent predicted that, during decommissioning/closure, changes to flows in Farley Creek would be unlikely to result in detectable effects to fish or fish habitat, as flows would remain within 30% of mean annual discharge, aside from months where flows are naturally less than this threshold, and flow changes

were not predicted to exceed criteria described in Fisheries and Oceans Canada's *Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada*. Adverse effects to fish and fish habitat in waterbodies downstream of Gordon Lake, Farley Lake, and Farley Creek (i.e. Swede Lake, Ellystan Lake, and the Hughes River) were not predicted as the magnitude of flow changes would be sufficiently attenuated by natural run-off from the surrounding watershed and the storage effects of Swede and Ellystan Lakes.

Project-related changes to water levels in Minton Lake during the open water season during all project phases were not expected to result in a substantial change in the availability of shoreline fish habitat, as the amount of aquatic vegetation would remain unchanged relative to baseline. Further, water levels in Minton Lake are highly moderated by beaver dams present at its outlet and beaver activity would not be affected by the Project. Predicted decreases in water levels in Minton Lake during winter were considered unlikely to reduce the quality or quantity of overwintering habitat, given that the majority of this lake would continue to be sufficiently deep to prevent freezing to the bottom. Any reductions in dissolved oxygen concentrations during winter would be unlikely to affect northern pike and brook stickleback, as these species are tolerant of low dissolved oxygen levels.

Project-related changes in streamflow in the Keewatin River during all phases were not predicted to result in a measurable effect on the quantity or quality of fish habitat present as flows downstream of the MacLellan site PDA would remain within 2% or less of baseline conditions at all times and the channel width, depth, and water velocity of the Keewatin River would not be affected.

The Proponent concluded that, following the implementation of mitigation measures, including fish habitat offsetting that would be required as part of a *Fisheries Act* authorization, residual project effects to fish habitat at the Gordon site would be adverse, high in magnitude, restricted to the LAA, medium-term in duration, continuous, reversible, and would occur during all phases. Residual effects to fish habitat at the MacLellan site were predicted to be adverse, low in magnitude, restricted to the LAA, short-term in duration, regularly occurring, reversible, and would occur during all phases.

Effects to Fish Health, Growth, and Survival

Effects of Blasting, Intake Pipes, Fishing Pressure, and Temperature Changes

The use of explosives during open pit mining at the Gordon and MacLellan sites may result in shock waves (i.e. rapidly increasing and decreasing pressure) which may kill or injure fish and damage fish eggs. As the effects of blasting vary depending on the size and location of the blast, fish species, size, and life history stage, and other factors, effects would vary for each waterbody and species of fish. Noise produced by explosives may also affect fish behaviour, including through startle and avoidance responses, with fish moving out of the affected area for multiple days. This may affect spawning success, overwintering, and feeding; however, these responses are typically temporary. Elevated noise levels may result in the inability of fish to hear prey or predators, affecting their ability to feed or avoid mortality, and may result in a "freeze" response. These effects can be temporary or may become long-term if high intensity underwater noise or prolonged exposure to lower intensity noise damages fish hearing. The Proponent predicted that, with the implementation of mitigation measures, including the development of site-specific blasting protocols, blasting at the Gordon and MacLellan sites during operation would result

in few, if any, fish mortalities; therefore residual effects to the abundance of fish was anticipated to be negligible.

During operation, fish (i.e. particularly juveniles and species that are weak swimmers) may become entrained or impinged by water intake pipes. The Proponent predicted that, following the implementation of mitigation measures, including limiting water withdrawal rates and the use of screens on intake pipes, effects to fish survival due to entrainment or impingement would be negligible; therefore measurable changes in fish population abundance, structure, and health were not predicted.

Due to the number of employees required to construct and operate the Project, personnel and contractors may be sourced from outside the Town of Lynn Lake or nearby communities. An increase in recreational fishing by project personnel and contractors could increase fishing pressure at the Gordon and MacLellan sites in nearby waterbodies. No measurable change in fish population size or age structure were predicted with the implementation of recreational fishing restrictions for non-local project personnel, in combination with Manitoba's recreational fishing quotas and size restrictions.

Dewatering and discharge of water from the East and Wendy pit lakes to Farley Lake during construction and groundwater interceptor well discharges to Gordon and Farley Lakes during operation may result in substantial changes in water temperatures in these lakes and Farley Creek. This may affect physiological and biological processes that may adversely affect the health, growth, and survival of fish and primary and secondary producers, upon which fish depend for food. Water temperature changes may also affect spawning, particularly winter spawning fish with narrow thermal tolerances (i.e. burbot), or overwintering of fish by affecting important behavioural cues. The Proponent predicted that, with the implementation of mitigation measures prior to discharge, the Project would result in a less than 2ºC change in water temperatures in the affected waterbodies during all phases. As this change is unlikely to be biologically significant, adverse effects to fish health, growth, and survival were not anticipated.

Effects of Changes to Water Quality

Project-related increases in total suspended solids concentrations may adversely affect fish by impeding visual predators, suffocating eggs deposited on substrates, obscuring and reducing the quality of spawning habitats, and injuring fish through gill abrasion. While total suspended solids concentrations in waterbodies near the Gordon and MacLellan sites may occasionally exceed provincial and federal water quality guidelines for the protection of aquatic life, the frequency and duration of these occurrences were predicted to be irregular and short-term. The Proponent predicted that, with the implementation of mitigation measures and monitoring, residual effects to fish would be negligible.

Project activities at the Gordon site during all phases and at the MacLellan site during post-closure may result in elevated concentrations of fluoride in Gordon Lake, Farley Lake, Farley Creek, Swede Lake, and the unnamed tributary of the Keewatin River that would exceed CWQG-FAL limits. The Proponent predicted that fish toxicity and disruption of migration behaviours could occur at concentrations above 0.5 milligrams per litre[16], however data is limited regarding the effects of fluoride on fish. As maximum predicted fluoride concentrations in waterbodies and watercourses within the LAAs were not expected to exceed this threshold during any project phase, adverse residual effects on fish health, growth, and survival were not expected. Project-related increases in phosphorus concentrations in Farley Lake during

[16] Damkaer, D.M. and D.B. Dey. 1989. *Evidence for Fluoride Effects on Salmon Passage at John Day Dam, Columbia River, 1982-1986*. North American Journal of Fisheries Management. 9:154-162.

construction, which may also exceed CWQG-FAL limits, could result in eutrophication and shifts in the trophic status of the Lake, leading to decreased dissolved oxygen levels and fish death. However, the Proponent predicted that changes in phosphorus concentrations would be unlikely to change the trophic status of Farley Lake as guideline exceedances were only predicted in three of the 24 months of the construction phase; phosphorus concentrations would otherwise remain below CWQG-FAL limits.

Project activities at the MacLellan site may result in elevated concentrations of aluminum, arsenic, total and dissolved cadmium, copper, antimony, hexavalent chromium, selenium, and zinc in waterbodies within the PDA and LAA. The Proponent was of the view that, while aluminum concentrations in the Keewatin River and its unnamed tributary may exceed MWQSOG-FAL and CWQG-FAL limits during post-closure, these guideline limits do not factor in the effects of pH, water hardness, and dissolved organic carbon on aluminum toxicity and are therefore overly conservative. Therefore, the toxicity threshold for aluminum[17] defined by the United States Environmental Protection Agency (US EPA) was used for the assessment. For the Keewatin River and its unnamed tributary, adverse effects to the health, growth, and survival of fish and aquatic biota were not predicted as exceedances of the US EPA toxicity threshold for aluminum would not occur. Arsenic and copper concentrations in the unnamed tributary of the Keewatin River were predicted to exceed CWQG-FAL limits during post-closure. The Proponent indicated that adverse effects to fish and aquatic biota are typically observed at concentrations between 0.3 and one milligram per litre[18]; however toxicity thresholds for arsenic vary throughout literature sources. Adverse effects to fish and aquatic biota were not predicted as maximum arsenic concentrations would not exceed these thresholds in any phase. For copper, the Proponent was of the view that the CWQG-FAL is overly conservative and does not adequately account for the effect of water hardness on copper toxicity; therefore, while exceedances of CWQG-FAL limits would occur, project-related increases in copper concentrations were not predicted to be toxic to fish and aquatic biota.

The Proponent did not expect adverse effects to fish or aquatic biota to occur, despite predicted exceedances of the MWQSOG-FAL and CWQG-FAL limits for maximum antimony, hexavalent chromium, selenium, and zinc levels in the unnamed tributary of the Keewatin River, due to the low frequency of exceedances (i.e. a total of two months during post-closure). The Proponent predicted that adverse effects to the health, growth, and survival of fish and aquatic biota would not occur as a result of project-related increases in total cadmium (i.e. in Minton Lake and unnamed tributary of the Keewatin River) and dissolved cadmium (i.e. in the unnamed tributary of the Keewatin River), as dissolved cadmium levels (i.e. the more biologically available form) would not exceed the US EPA's toxicity threshold for this contaminant. Total and dissolved cadmium concentrations were predicted to decrease below MWQSOG-FAL and CWQG-FAL limits following pit filling in the post-closure phase.

[17] United States Environmental Protection Agency. 2018. *Aquatic Life Ambient Water Quality Criteria for Aluminum in Freshwater*. Available at https://www.federalregister.gov/documents/2018/12/21/2018-27745/aquatic-life-ambient-water-quality-criteria-for-aluminum-in-freshwater.
[18] Canadian Council of Ministers of the Environment. 2001. *Canadian Water Quality Guidelines for the Protection of Aquatic Life – Arsenic*. CCME, Hull, QC. Available at http://ceqg-rcqe.ccme.ca/download/en/143/.

The Proponent predicted that project activities at the Gordon and MacLellan sites would not result in adverse effects to fish migration or local movements. Project-related increases in mercury methylation rates that could adversely affect fish health were also not predicted to occur.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to fish health, growth, and survival at the Gordon and MacLellan sites would be adverse, negligible in magnitude, restricted to the LAAs, long-term in duration, irreversible, regularly occurring, and would occur during all project phases for the Gordon site and only during post-closure for the MacLellan site.

Fish Species at Risk

One fish species at risk, lake sturgeon, listed as "Endangered" by COSEWIC, is present in the Hughes River and Keewatin River. The Proponent was of the view that the life history and habitat requirements of lake sturgeon, which was not selected as a focal species for the assessment of effects to fish and fish habitat, were represented by the focal fish species selected.

Adverse effects to lake sturgeon at the Gordon site were not predicted as effects to the Hughes River were considered unlikely, given its distance (i.e. approximately nine kilometres) downstream of the Gordon site PDA relative to the predicted extent of project effects. At the MacLellan site, installation of intake and effluent pipes in the Keewatin River would result in the loss of approximately 108 square metres of spawning, rearing, foraging, overwintering, and migration habitat for lake sturgeon; effects to lake sturgeon habitat as a result of changes to streamflow in the Keewatin River were considered unlikely.

The Proponent indicated that, while project-related changes to water quality in the Keewatin River were not expected to result in adverse effects to the health, growth, or survival of focal fish species and aquatic biota, recent research has shown that lake sturgeon may be more sensitive to metal toxicity than other fish species. However, research is limited so the sensitivity of lake sturgeon to metal toxicity remains uncertain at this time. Due to their low spawning frequency, lake sturgeon are also particularly vulnerable to overfishing; therefore any project-related increases in fishing pressure in the RAA could adversely affect lake sturgeon. The Proponent did not anticipate that adverse effects to lake sturgeon would occur, given the mitigation measures proposed.

Proponent Conclusions

The Proponent predicted that residual effects to fish habitat and fish health, growth, and survival at the Gordon and MacLellan sites would not be significant, following the implementation of mitigation measures. Changes to fish habitat were not predicted to be of sufficient magnitude, frequency, or duration to result in measurable effects to the productivity of fish populations, and any permanent habitat losses would be offset. While changes in flow and associated effects to fish habitat in Farley Creek would pose a risk to fish populations, this change was not expected to result in a measurable reduction in the productivity of fish populations, as suitable spawning habitat is abundant in the Gordon site LAA. Further, mitigation measures proposed for both sites were predicted to be effective at reducing changes in water quality and effects associated with other sources of acute or chronic fish mortality, such that no measurable reductions in the abundance, community composition, or population structure of focal fish populations in the LAAs were expected to occur.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. 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

Manitoba Environment, Climate, and Parks – Technical Advisory Committee

The Wildlife and Fisheries department of Manitoba Agriculture and Resource Management expressed concerns that project-related effects to surface water and groundwater and the direct alteration of fish-bearing waterbodies would have long-term direct and indirect effects on fish and fish habitat, both during the project life and in perpetuity following decommissioning/closure. This may result in population-level effects to fish, to the extent that they are no longer able to support current and historical fishing activities.

The Drainage and Water Rights Licensing Division of Manitoba Environment, Climate, and Parks expressed concerns regarding potential effects to fish eggs and fish in the larval stage due to water withdrawals from the Keewatin River, as end of pipe protection screens do not protect eggs and fish in this stage of development. As such, the Proponent's assessment of effects to fish health, growth, and survival may have underestimated effects to fish at the individual and population level. It was also recommended that the Proponent limit blasting during fish spawning periods to mitigate percussive injuries to fish, given the proximity of proposed blasting sites to fish-bearing waterbodies. Consideration must also be given to provincial fisheries management objectives in determining appropriate measures to mitigate harmful alteration, disruption, or destruction of fish habitat.

Federal Authorities

Change in Fish Habitat

Fisheries and Oceans Canada noted concerns that the Proponent may have underestimated usage and the availability of fish habitat in Farley Creek at the Gordon site due to the lack of available baseline data for this watercourse. Fisheries and Oceans Canada recommended that the Proponent collect data regarding fish usage and habitat availability in Farley Creek, particularly its upper reaches, prior to construction to inform fish habitat offsetting. Fisheries and Oceans Canada also stated that potential project-related changes to flows in Farley Creek, and associated effects to fish habitat that may affect fish species assemblage and life history processes, were not adequately considered in the Proponent's assessment.

Fisheries and Oceans Canada expressed concerns regarding the modelling methods and assumptions used to predict project-related changes to flows in Farley Creek, and resultant inaccuracies in the predictions of effects to fish and fish habitat. Fisheries and Oceans Canada recommended that the Proponent conduct a comprehensive flow monitoring program for Farley Creek prior to and during construction and operation, focussing on the collection of in-situ hydrometric data across a variety of flows; monitoring to track potential changes in flow, hydraulic conditions, and fish habitat and utilization; and monitoring to determine whether effects to fish and fish habitat are occurring. However, Fisheries and Oceans Canada recognized that the Proponent proposed sufficient mitigation measures to address

potential project effects to Farley Creek and resultant effects to fish and fish habitat, which would be applied through an adaptive management framework.

Fish Health, Growth, and Survival

Environment and Climate Change Canada expressed concerns regarding the quality and amount of baseline data provided regarding plankton, periphyton, and benthic invertebrate communities, and recommended that the Proponent collect additional data prior to construction to inform follow-up and monitoring. Environment and Climate Change Canada also noted concerns that the focal fish species selected for the assessment of effects to fish and fish habitat may not be representative of more sensitive fish species that may be present within the LAAs, and therefore the Proponent's assessment may have underestimated potential effects to these species.

Environment and Climate Change Canada expressed concerns with respect to predicted exceedances of the CWQG-FAL limits for arsenic in the unnamed tributary of the Keewatin River during post-closure and the Proponent's rationale that effects to fish and fish habitat would not occur despite these exceedances. As the CWQG-FAL limit takes into consideration arsenic levels that may result in long-term/chronic effects to fish, the Proponent must evaluate further options to reduce arsenic concentrations in the receiving environment.

Environment and Climate Change Canada noted concerns with the Proponent's conclusion that, although copper concentrations in the unnamed tributary of the Keewatin River would exceed the hardness dependent CWQG-FAL limits, no adverse effects to the health, growth, and survival of fish and aquatic biota would occur, given water hardness predictions for this waterbody in the post-closure phase. Environment and Climate Change Canada recommended that the Proponent include verification of water hardness in the monitoring program for the Project; update copper toxicity predictions, as necessary, to reflect actual water hardness in the unnamed tributary of the Keewatin River; and develop contingency measures to mitigate exceedances of the CWQG-FAL limits for copper if there are changes in water hardness that may result in copper toxicity that is higher than predicted.

Fisheries and Oceans Canada noted that burbot monitoring may not be feasible for the Project due to the low population density of burbot within the PDAs and LAAs, and as current methodologies to monitor burbot may result in increased mortality risk.

Fish Habitat Offsetting

Fisheries and Oceans Canada indicated that insufficient biological data has been provided to justify the suitability of the Proponent's proposed fish habitat offset measures and noted that the Proponent is required to collect detailed biological information (e.g. fish productivity, fish habitat use) to validate the proposed offset measures and to ensure that the quantification of habitat lost and gained is adequate. Further, additional follow-up is required to characterize the full extent of effects to fish-bearing wetlands due to project-related groundwater drawdown. Despite this, Fisheries and Oceans Canada noted that there are likely no technical barriers that would prevent the Proponent from developing an adequate offsetting plan that balances project effects to fish habitat.

Fisheries and Oceans Canada stated that, following confirmation of fish habitat offset measures for the Project, an assessment of effects to the environment and Indigenous Peoples of said offset measures will need to be conducted and any adverse effects mitigated. Fisheries and Oceans Canada also expressed

concerns regarding the level of Proponent engagement with Indigenous nations and provincial fisheries managers regarding proposed fish habitat offset measures.

Fish Species at Risk

Fisheries and Oceans Canada advised that the level of detail provided by the Proponent regarding potential project effects to lake sturgeon is sufficient for the purpose of the environmental assessment. Fisheries and Oceans Canada also indicated that they are satisfied that the Proponent's proposed fish habitat offsetting would adequately address potential effects to lake sturgeon.

Indigenous Nations

Mathias Colomb Cree Nation expressed concerns that the focal fish species selected for the assessment of effects to fish and fish habitat may not be reflective of the unique life history, ecology, and habitat requirements of culturally important fish species, including lake sturgeon and burbot. Therefore, potential project effects to these species may have been underestimated and improperly or inadequately mitigated. Peter Ballantyne Cree Nation highlighted the need for the Proponent to develop mitigation measures specific to species of cultural importance to Indigenous nations, including lake sturgeon.

Marcel Colomb First Nation noted concerns that baseline studies conducted for fish and fish habitat did not include important fishing locations used by members of Marcel Colomb First Nation. Therefore, effects to their Nation may not be accurately reflected in the EIS. Marcel Colomb First Nation also raised concerns regarding the potential disappearance of lake whitefish and other fish species of traditional and cultural importance to their Nation, due to project-related increases in contaminant concentrations in fish-bearing waterbodies within the PDAs and LAAs.

Peter Ballantyne Cree Nation noted concerns that monitoring of plankton and periphyton was not included as part of the Proponent's monitoring plans. As changes in plankton and periphyton abundance and distribution are indicative of changes in nutrient levels and water toxicology, monitoring could serve as an early indicator of adverse project effects to surface water quality and fish and fish habitat.

Marcel Colomb First Nation requested that the Proponent be required to provide their Nation with ongoing opportunities to provide input during the development and implementation of aquatic, benthic, and invertebrate follow-up and monitoring plans, including the selection of monitoring locations, the need for and selection of contingency measures, and reporting.

Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation expressed concerns regarding potential effects to fish and fish habitat in Farley Creek as a result of project-related changes in flow and channel morphology, including effects to habitat variability and sedimentation of spawning habitat. These Nations indicated that mitigation measures, including offsetting, to address predicted changes in flow and channel morphology, and resulting effects to fish and fish habitat, were not identified. Mathias Colomb Cree Nation noted that uncertainty remains regarding the amount of fish habitat that may be disturbed in Farley Creek as a result of project activities. The Manitoba Metis Federation highlighted the need for monitoring and adaptive management during all project phases to ensure effects to fish and fish habitat in Farley Creek are adequately mitigated.

The Manitoba Metis Federation expressed concerns regarding potential effects to the Hughes River as a result of upgrades to the Hughes River bridge at the Gordon site, as this river provides important spawning habitat for fish. Concerns were also raised regarding the lack of consideration by the Proponent of potential effects to fish species other than brook stickleback in Gordon Lake. While brook stickleback may be the only fish species that is able to overwinter in Gordon Lake, this lake may provide important rearing and nursery habitat for large-bodied fish and may act as a movement corridor.

Mathias Colomb Cree Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation expressed concerns regarding the lack of detail provided regarding the fish habitat offsetting plan for the Project, and noted the need for a net gain in fish habitat and ongoing involvement of Indigenous nations in the development and implementation of offsets to ensure that fish habitat losses, including for fish species of cultural importance, are adequately offset. The Manitoba Metis Federation requested that the Proponent provide a draft copy of the fish habitat offsetting plan to their Nation for review at least 30 days prior to submission to Fisheries and Oceans Canada, and that Métis citizens be provided an opportunity for involvement in the construction of fish habitat offsets.

The Manitoba Metis Federation and Mathias Colomb Cree Nation stated concerns regarding predicted exceedances of the CWQG-FAL limits for arsenic, cadmium, copper, aluminum, fluoride, and phosphorus in fish-bearing waterbodies within the Gordon and MacLellan site PDAs and LAAs, and potential effects to fish, noting that the conservative nature of these guidelines should not be used as a rationale to conclude that effects to fish and aquatic biota would not occur despite exceedances. The Manitoba Metis Federation noted specific concerns regarding potential effects to fish due to arsenic exceedances during post-closure in the unnamed tributary of the Keewatin River, and expressed that, given the uncertainty of arsenic toxicity in aquatic environments, the potential for bioaccumulation, and the anticipated long-term nature of the exceedance, additional mitigation measures must be implemented to further reduce arsenic concentrations below the CWQG-FAL limit.

Mathias Colomb Cree Nation expressed concerns regarding potential effects to fish as a result of blasting, noting the importance of avoiding blasting and drilling activities during restricted activity timing windows for fish to avoid adverse effects to individuals and populations, and requested that the Nation be engaged regarding blasting and drilling protocols as detailed engineering plans are developed.

Mathias Colomb Cree Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted the importance of the involvement of Indigenous nations in the development and implementation of follow-up and monitoring plans and mitigation measures related to fish and fish habitat to ensure that Indigenous knowledge and views are adequately considered. This must include engagement on the development of adaptive management triggers, thresholds, and actions; the provision of relevant training to allow participation in monitoring activities; and the provision of sufficient time and resources to support meaningful participation. Mathias Colomb Cree Nation and the Manitoba Metis Federation expressed a desire for their Nations to have a meaningful role in the decision-making process with respect to follow-up and monitoring plans, mitigation measures, and adaptive management frameworks, and Peter Ballantyne Cree Nation expressed interest in co-development of monitoring and management plans, provided that reasonable capacity support is provided. The Manitoba Metis Federation recommended that the Proponent develop distinctions-based monitoring and advisory committees to facilitate participation of Indigenous nations in follow-up and monitoring.

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

7.1.3 Agency Analysis and Conclusions

Change in Fish Habitat

The Agency recognizes that the Project would result in the direct and indirect loss of or changes to fish habitat within the Gordon and MacLellan site PDAs and LAAs, and is of the view that residual effects to fish habitat may change fish abundance and distribution within the PDAs and LAAs. 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 agrees with Fisheries and Oceans Canada that insufficient information has been provided regarding the location, nature, and biological suitability of habitat offsets to conclude that project-related fish habitat losses would be adequately offset. 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 is therefore of the view that project-related fish habitat losses would be adequately addressed and unlikely to result in a significant change in fish abundance and distribution within the LAAs 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 nations in the development and implementation of the fish habitat offsetting plan for the Project. The Agency recommends that the Proponent complete, prior to implementing the fish habitat offsetting plan, an assessment of potential effects of the selected fish habitat offsetting measures on the environment and Indigenous Peoples, and develop mitigation measures to avoid or minimize those effects, in consultation with Indigenous nations and relevant federal and provincial authorities.

The Agency recognizes that uncertainty exists regarding fish habitat presence and utilization in Farley Creek, and potential project effects to fish in Farley Creek as a result of changes to flow and channel morphology. 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 Farley Creek, and conduct a comprehensive flow and fish and fish habitat monitoring program for Farley Creek to verify the results of the hydraulic model. However, given safety concerns for project personnel regarding the required data collection program, the Agency recommends that the monitoring program for Farley Creek be based on flow and habitat metrics rather than fish utilization. The Agency understands that there are outstanding concerns from Indigenous nations regarding potential project effects to Farley Creek and the fish and fish habitat present. The Agency is of the view that the mitigation, follow-up, and monitoring measures proposed by the Proponent would adequately address potential project effects to fish and fish habitat present in Farley Creek. The Agency highlights the importance of follow-up and monitoring for Farley Creek 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 uncertainty exists regarding habitat availability and utilization in Gordon Lake for large-bodied fish species and that outstanding concerns exist regarding potential project effects to the Hughes River, particularly as a result of upgrades to the existing clear span bridge crossing the river. The Agency is of the view that the Proponent's proposed mitigation measures would be adequate to mitigate potential project effects to fish and fish habitat in Gordon Lake and the Hughes River. The Agency is also of the view that, as upgrades to the Hughes River bridge would involve the replacement of timber and planks only and would not involve any works below the high water mark, potential effects to fish and fish habitat would be unlikely. 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.

Fish Health, Growth, and Survival

The Agency recognizes that the Project may result in effects to fish health, growth, and survival as a result of entrainment by water intake pipes and increased fishing pressure by project personnel and contractors. The Agency is of the view that, with the implementation of mitigation measures, residual effects to fish from these activities would be negligible. Compliance with provincial fishing regulations, which are established annually, would also aid in preventing adverse effects to fish associated with potential overfishing.

The Agency agrees with the Proponent's conclusion that the Project is not likely to appreciably affect dissolved oxygen concentrations in surface waterbodies within the Gordon and MacLellan site PDAs and LAAs, given the mitigation measures proposed. The Agency is of the view that project-related contact water may affect surface water at the point of discharge and recommends that the Proponent implement mitigation measures to ensure that lake temperatures at the point of release are maintained within baseline temperature variations to protect winter spawning habitat for fish, unless otherwise authorized by Fisheries and Oceans Canada. The Agency agrees that, while the Project could result in increased total suspended solids concentrations in waterbodies within the PDAs and LAAs, given the limited frequency and duration of these occurrences and the mitigation measures proposed, residual effects to fish would likely be negligible. 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 agrees with Manitoba Environment, Climate, and Parks and Mathias Colomb Cree Nation that the use of explosives during operation at the Gordon and MacLellan sites may result in fish mortality or injury and damage to fish eggs, and agrees that 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 recognizes that project-related changes to the hydrological regime of waterbodies within the Gordon and MacLellan site PDAs and LAAs may result in the direct or indirect death of or harm to fish. The Agency is of the view that, while fish mortality is irreversible, a change in the status of fish populations within the RAA, including their abundance and distribution, is not likely. 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 channel morphology (see Chapter 6.3 of this EA Report), in consultation with federal and provincial

authorities and Indigenous nations. Therefore, the Agency is of the view that potential effects to fish survival as a result of project-related changes to hydrological regimes within the PDAs and LAAs would be adequately mitigated.

The Agency recognizes that project effects to surface water quality could result in adverse effects to fish health, growth, and survival. The Agency is of the view that the key mitigation measures proposed in Chapter 6.2 (Groundwater) and Chapter 6.3 (Surface Water) of this EA Report to limit the introduction of contaminated seepage and runoff into groundwater and surface water would address potential effects to fish. The Agency agrees with Environment and Climate Change Canada's recommendation that the Proponent conduct water hardness monitoring in the unnamed tributary of the Keewatin River to verify predictions regarding copper toxicity.

The Agency agrees with Peter Ballantyne Cree Nation and Environment and Climate Change Canada's recommendation that the Proponent be required to monitor plankton, periphyton, and benthic invertebrates to monitor changes in nutrient and contaminant levels and potential effects to food web dynamics that could affect fish. The Proponent will collect data regarding chlorophyll a concentrations in periphyton communities in streams and plankton communities in lakes, and will monitor benthic invertebrates in streams and lakes prior to construction to enable detection of project-related changes to the aquatic environment. The Agency agrees with Marcel Colomb First Nation's recommendation that Indigenous nations be engaged regarding the development of the monitoring program for plankton, periphyton, and benthic invertebrate communities.

The Agency acknowledges that the Proponent's assessment may not have specifically considered potential project effects to all fish species of cultural importance to Indigenous nations or that may be more sensitive to project effects than the focal fish species selected, which may affect the certainty of conclusions regarding potential effects to these species. The Agency acknowledges that the Proponent assessed potential project effects to lake sturgeon and burbot, two species identified as culturally important to local Indigenous nations during the technical review of the EIS. The Agency also acknowledges the concerns raised by Marcel Colomb First Nation regarding the waterbodies surveyed by the Proponent during baseline studies and recommends that Indigenous nations, including Marcel Colomb First Nation, be engaged regarding the selection of waterbodies and the fish species assemblages to be included in the Proponent's follow-up and monitoring program for fish and fish habitat to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and inform the need for contingency measures. The Agency understands that monitoring of burbot within the PDAs and LAAs may be difficult given the species' low population levels and that monitoring could result in increased mortality risk for the species. The Agency encourages the Proponent to reconsider burbot monitoring in the future should new monitoring methods emerge that would not increase burbot mortality risk.

The Agency recognizes the importance of the involvement of Indigenous nations 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 committed to establishing an Indigenous Environmental Advisory Committee, which would provide a forum to share project information, obtain input and feedback from potentially affected

Indigenous nations, and establish communication and reporting protocols. The Indigenous Environmental Advisory Committee 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 EA Report.

Fish Species at Risk

The Agency acknowledges that the Project may affect lake sturgeon and its habitat and that uncertainty exists regarding the abundance and distribution of lake sturgeon habitat and populations within the Keewatin River and Hughes River, which may affect the certainty of conclusions with respect to project effects. The Agency understands that the Proponent committed to conducting or supporting research related to the spawning success, juvenile recruitment, and genetic composition of lake sturgeon populations in the Hughes River and Keewatin River, and that Indigenous nations will be engaged regarding the development and implementation of this research program. The Agency also understands that the Proponent committed to working with Indigenous nations and Fisheries and Oceans Canada to identify appropriate mitigation measures to address project-related effects to lake sturgeon and its habitat. The Agency recommends that the Proponent consider the results of the lake sturgeon research and monitoring program in the development and implementation of follow-up and monitoring programs and in determining the need for contingency measures to prevent adverse project effects to lake sturgeon. The Agency is of the view that offsetting under a *Fisheries Act* authorization will ensure that residual effects of the Project to lake sturgeon habitat are counterbalanced through positive contributions.

The Agency recognizes that the *Manitoba Lake Sturgeon Management Strategy*, a conservation program led by the Conservation and Water Stewardship Fisheries Branch of Manitoba Environment, Climate, and Parks and which aims to ensure that existing lake sturgeon populations are protected from depletion and, in areas with suitable habitat, restore lake sturgeon, may also aid in addressing potential effects to lake sturgeon populations within the RAA, in parallel with the Proponent's proposed mitigation measures and the key mitigation measures identified below.

Conclusions

The Agency is of the view that the Project is not likely to cause significant adverse effects on fish and fish habitat, including fish species at risk, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) 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 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 nations.

Mitigation Measures

- A 30 metre buffer from the high water mark will be established around fish-bearing waterbodies, including wetlands, within and adjacent to the PDAs for which removal is not required for construction of the Project. The buffer will be established prior to work in these areas to limit disturbance and will

be maintained during all phases, in accordance with any provisions and prohibitions authorized under the *Fisheries Act*.

- Prior to construction, the Proponent will develop, in consultation with Indigenous nations and relevant federal and provincial authorities, mitigation measures to reduce the potential for project-related erosion and sedimentation, including the following:.
  - intake pipes will be screened, in accordance with Fisheries and Oceans Canada's *Freshwater Intake End-of-Pipe Fish Screen Guideline* and in a manner consistent with the *Fisheries Act* and its regulations, to prevent fish impingement or entrainment; and
  - effluent discharge pipes will be equipped with diffusers to slow water velocity at the discharge point. The ends of intake and effluent pipes will be pointed upwards to avoid scouring and disturbing sediments.
- Prior to discharge of water from the Wendy and East pit lakes to Farley Lake during construction, contact water collection ditches to Farley Lake during construction, operation, and decommissioning/closure, and groundwater interceptor wells and the open pit to Farley Lake and Gordon Lake during operation, water will be released in a manner that maintains lake temperature at the point of release within baseline temperature variations to protect winter spawning habitat, unless authorized by Fisheries and Oceans Canada.
- Water from the existing Wendy and East pit lakes, prior to dewatering, will be aerated to encourage precipitation of oxide-forming elements, break down thermal and chemical stratification, and increase dissolved oxygen concentrations prior to release of this water to Gordon and Farley Lakes. Groundwater collected by interceptor wells will be treated, as necessary, including by aeration, to meet federal and provincial regulatory requirements prior to discharge to Gordon and Farley Lakes.
- Fish rescues will be conducted prior to any dewatering activities, including for East Pond, the Wendy and East pit lakes, the existing diversion channel, and locations where in-water works may be required. The Proponent will determine the interest of Indigenous groups to participate in fish salvage and relocation programs, and will identify opportunities for Indigenous groups to participate during all phases of the Project.
- 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* when required, and in accordance with any other mitigation measures stipulated by Fisheries and Oceans Canada in the *Fisheries Act* authorization for the Project.
- Project employees and contractors who reside outside of the RAA will be prohibited from fishing in waterbodies within the PDAs or within waterbodies accessed using the PDAs, unless an employee or contractor is provided access by the Proponent for exercising Aboriginal rights.
- A fish habitat offsetting plan that is compliant with the *Authorizations Concerning Fish and Fish Habitat Protection Regulations* pursuant to the *Fisheries Act* will be developed, in consultation with relevant provincial and federal authorities and Indigenous nations, 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 nations at least 30 days prior to formal submission to Fisheries and Oceans Canada. The Proponent will submit the approved offsetting plan to the Agency prior to implementation.

Follow-up and Monitoring

- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities, to monitor changes to surface water quality, and statistically significant changes in fish tissue residue concentrations and fish habitat metrics downstream of the Gordon and MacLellan sites 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 will align with Environment and Climate Change Canada's *Metal Mine Technical Guidance for Environmental Effects Monitoring*.
    - At a minimum, monitoring will be conducted in Farley Lake, Gordon Lake, Farley Creek, Minton Lake, the new diversion channel, the Keewatin River, and in any additional locations determined in consultation with Indigenous nations and relevant authorities during review of final monitoring plans. If discharge of water to the Hughes River is required during any phase of the Project, the Hughes River will be included as a monitoring location.
    - The list of fish species to be monitored will be developed in consultation with Fisheries and Oceans Canada, Indigenous nations, and other relevant federal and provincial authorities and, at a minimum, will include northern pike, lake whitefish, and white sucker.
- Prior to construction, flow and habitat metrics for Farley Creek at the Gordon site will be monitored to establish a baseline to inform follow-up and monitoring programs.
- Prior to construction, plankton, periphyton, and benthic invertebrate communities present in Farley Lake, Gordon Lake, Farley Creek, the Hughes River, the Keewatin River, Minton Lake, the new diversion channel, and any additional locations determined in consultation with Indigenous nations and relevant federal and provincial authorities during review of final monitoring plans, will be monitored to establish a baseline to inform follow-up and monitoring, including the detection of project-related changes in nutrient and contaminant levels. Benthic invertebrate monitoring parameters will include total invertebrate density, taxon richness, Simpson's Evenness Index, and Bray-Curtis Index. Plankton and periphyton communities will be monitored through chlorophyll a concentrations.
- Water temperatures in Gordon Lake, Farley Lake, Farley Creek, Minton Lake, the Hughes River, the Keewatin River, the new diversion channel, and any additional locations determined in consultation with relevant authorities during review of final monitoring plans will be monitored during all project phases to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and inform the need for contingency measures.
- Surface water and groundwater level monitoring in fish-bearing wetlands within the Gordon and MacLellan site PDAs and LAAs that may be directly or indirectly affected by the Project will be conducted during all phases to monitor the effects of groundwater drawdown on fish habitat and effects to fish health, growth, and survival, to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and inform the need for contingency measures.
- Prior to construction, a follow-up program to monitor surface water flows in Farley Creek throughout all project phases will be developed, in consultation with Indigenous nations, Fisheries and Oceans Canada, and other relevant federal and provincial authorities. This data will be used to verify the results of the environmental assessment, verify the Farley Creek hydraulic model, verify the effectiveness of mitigation measures, and inform the need for contingency measures.
- Community members from potentially affected Indigenous nations will be provided opportunities to participate in the development and implementation of follow-up and monitoring programs, including participation in monitoring and development of adaptive management triggers, thresholds, and

actions. The Proponent will provide relevant training to Indigenous nation members to support participation in monitoring activities.

Additional mitigation measures, monitoring, and follow-up programs applicable to project-related effects to fish and fish habitat can be found the following chapters of this EA Report: Groundwater (Chapter 6.2), Surface Water (Chapter 6.3), 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).

7.2 Migratory Birds

The Project could cause residual adverse effects on 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, changes in bird mortality risk, and changes in bird health.

The Agency is of the view that the Project is not likely to cause significant adverse effects on migratory birds or bird species at risk, after taking into account the 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 and Indigenous nations.

7.2.1 Proponent’s Assessment of Environmental Effects

The Proponent observed 67 migratory bird species within the RAA during baseline studies. Bird species at risk with the potential to occur in the RAA based on known species ranges are listed in Table 13. Three of these bird species at risk were directly observed within the RAA during baseline studies: common nighthawk (*Chordeiles minor*), olive-sided flycatcher (*Contopus cooperi*), and barn swallow (*Hirundo rustica*). These species, along with rusty blackbird (*Euphagus carolinus)*, were selected as focal species at risk for the assessment of effects as they were considered the most likely to be affected by the Project. The Proponent considered the remaining bird species at risk listed in Table 1 to be unlikely to occur in the RAA and unlikely to be affected by the Project.

Table 13 Bird Species at Risk with the Potential to Occur in the RAA

Species			Status		Federal Recovery Strategy
Common Name	**Scientific Name**	**Observed or Potential Location**	**SARA (Schedule 1)**	**COSEWIC**	
Birds					

Rusty blackbird	*Euphagus carolinus*	LAA/RAA	Special Concern	Special Concern	No
Short-eared owl	*Asio flammeus*	RAA	Special Concern	Special Concern	No
Migratory birds as defined by the *Migratory Birds Convention Act, 1994*					
Horned grebe	*Podiceps auritus*	RAA	Special Concern	Special Concern	Yes
Common nighthawk	*Chordeiles minor*	LAA/RAA	Threatened	Threatened	Yes
Yellow rail	*Coturnicops noveboracensis*	RAA	Special Concern	Special Concern	No
Olive-sided flycatcher	*Contopus cooperi*	LAA/RAA	Threatened	Special Concern	Yes
Bank swallow	*Riparia riparia*	RAA	Threatened	Threatened	Yes
Barn swallow	*Hirundo rustica*	LAA/RAA	Threatened	Threatened	No
Evening grosbeak	*Coccothraustes vespertinus*	RAA	Special Concern	Special Concern	No

Changes in Habitat

Site preparation activities (e.g. vegetation clearing, removal of existing buildings, realignment of the existing diversion channel), water management activities, and activities that may result in sensory disturbance and habitat avoidance through increased noise, vibration, and light levels could cause residual effects to migratory bird and bird species at risk habitat and habitat use during all project phases. Open pit mining and storage and stockpiling of ore, overburden, and mine rock during operation could also result in a direct loss of habitat if additional vegetation clearing is required to expand the area of the stockpiles or open pits. The Proponent predicted that the Project would result in the direct loss of 1,207.3 hectares of habitat (i.e. 609.8 hectares of upland habitat, 435.6 hectares of wetland habitat, 17.5 hectares of open water habitat, and 144.4 hectares of man-made infrastructure that may be used as habitat) as a result of site preparation and construction activities at both the Gordon and MacLellan sites.

Changes to surface water and groundwater levels and flows at the Gordon site from water management activities (i.e. dewatering of the existing Wendy and East pit lakes and operation of groundwater interceptor wells) could result in indirect changes to the availability of riparian and wetland habitat near Gordon and Farley Lakes and Farley Creek for migratory birds and bird species at risk. At the MacLellan site, dewatering of East Pond, the unnamed tributary of the Keewatin River, and surrounding wetlands due to groundwater drawdown would also result in indirect losses of habitat. Further information regarding changes to groundwater and surface water as a result of the Project is presented in Chapter 6.2 (Groundwater) and Chapter 6.3 (Surface Water) of this EA Report.

Indirect effects to migratory bird and bird species at risk habitat usage and suitability due to sensory disturbance may extend into the RAA. Effects associated with indirect habitat loss from habitat fragmentation and edge effects were not predicted as habitat areas outside of the PDAs (i.e. within the LAAs and RAA) would remain intact, and habitat fragmentation and edge effects already exist from

historical mine disturbance at the Gordon and MacLellan sites. The distribution line right of way would utilize existing roads and trails where possible to limit the disturbance footprint; therefore, the Project's contribution to fragmentation and edge effects was predicted to be minor.

The area of direct and indirect habitat loss during construction and operation for focal bird species at risk is presented in Table 14. An estimate of the amount of habitat losses for barn swallow was not available due to the difficulty in identifying and quantifying their habitat. The Proponent noted that it would be unlikely that the Gordon site PDA provides habitat for barn swallow due to the absence of anthropogenic structures and dense forest, whereas, at the MacLellan site, historical mine infrastructure may provide roosting and nesting habitat. Therefore, the removal of existing buildings and infrastructure during construction may cause habitat losses at the MacLellan site for barn swallow.

Table 14 Bird Species at Risk Habitat Losses within the Gordon and MacLellan Site LAAs

Species	Area of Habitat Loss		
Common Name	Direct Habitat Loss – Gordon Site (hectares)[1]	Direct Habitat Loss – MacLellan Site (hectares)[1]	Total Direct and Indirect Habitat Loss (hectares)[1]
Rusty blackbird	105 (-1%)	622 (-25%)	836 (-7%)
Common nighthawk	117 (-2%)	525 (-27%)	644 (-9%)
Olive-side flycatcher	122 (-1%)	713 (-27%)	961 (-8%)

[1] The number in parentheses represents the percent change in available habitat relative to the amount of habitat available in the Gordon or MacLellan site LAA under baseline conditions.

The Proponent predicted that some migratory bird and bird species at risk habitat losses may be reversible following reclamation of the PDAs and recovery of groundwater levels to near baseline conditions in decommissioning/closure and post-closure. However, some habitat losses would be permanent, such as wetland losses resulting from direct removal, as wetland areas would be reclaimed as upland habitat upon mine closure. The removal of project infrastructure during decommissioning/closure may adversely affect some bird species at risk, such as barn swallow, as they may establish nesting sites in infrastructure and buildings during operation.

The Proponent predicted that, following the implementation of mitigation measures, residual effects on migratory bird and bird species at risk habitat during construction and operation would be adverse, short-term (i.e. construction) to medium-term (i.e. operation), reversible, low in magnitude, single in frequency (i.e. construction) and continuous (i.e. operation), and would occur within the RAA. Residual effects during decommissioning/closure were predicted to be adverse and positive (i.e. following reclamation and revegetation), low in magnitude, limited to the LAAs, long-term, continuous, and partially reversible.

Changes in Mortality Risk

Vegetation clearing within the PDAs and along the proposed distribution line right of way in the LAAs during construction may result in the direct mortality of individuals and the destruction of nests, which may contain eggs or juveniles. If vegetation clearing coincides with sensitive breeding and nesting periods, effects would be greater due to a higher probability of direct effects on active nests. The presence of project infrastructure and increased vehicle traffic within the PDAs and LAAs could result in an increased probability of collisions with migratory birds and bird species at risk that could lead to mortality. These effects would occur during all project phases; however, mortality risk as a result of vehicle and infrastructure strikes would substantially decline throughout decommissioning/closure and was not anticipated to result in an appreciable change in the abundance or distribution of migratory birds and bird species at risk within the RAA.

The Tailings Management Facility at the MacLellan site and contact water collection systems at the Gordon and MacLellan sites, which would be present during operation, could increase the risk of migratory bird and bird species at risk fatalities through potential consumption of or contact with tailings and contact water, which would contain high concentrations of potentially toxic contaminants (e.g. cyanide). Exposure pathways may include landings on the Tailings Management Facility and contact water collection ponds, which may result in exposure to contaminants through dermal contact or ingestion, or through the consumption of contaminated aquatic plants or fauna. However, the Proponent did not anticipate that the Project would result in a meaningful change in the abundance or distribution of migratory birds and bird species at risk in the LAAs as a result of interactions with tailings and contact water, following the implementation of mitigation measures.

Increased hunting pressure from the influx of project personnel during construction and operation could increase migratory bird and bird species at risk mortality risk. However, the Proponent predicted that, following the implementation of mitigation measures, including establishment of a worker code of conduct for project personnel, potential increases in migratory bird and bird species at risk mortality would be minimal. During post-closure, increased access to the PDAs by humans and predators due to the presence of linear disturbances, the cessation of project activities that may otherwise deter use of areas on and near the PDAs, and the removal of access restrictions to the PDAs may result in increased hunting pressure and shifts in predator-prey relationships that may increase migratory bird and bird species at risk mortality. These effects were not predicted to result in a measurable change in the abundance and distribution of migratory birds and bird species at risk within the LAAs.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to migratory bird and bird species at risk mortality risk during construction and operation would be adverse, low in magnitude, limited to the LAAs, short- to medium-term in duration, irregularly occurring, and reversible. Residual effects during decommissioning/closure were predicted to be adverse, limited to the LAAs, irregular, long-term, reversible, and low in magnitude.

Changes in Health

Atmospheric emissions, including fugitive dust, rock dust that may contain heavy metals, and other atmospheric contaminants, during construction and operation could result in adverse effects to migratory bird and bird species at risk health through direct inhalation or ingestion of dust and contaminants deposited onto nearby waterbodies, soil, or vegetation. The deposition of atmospheric emissions in the surrounding environment may also lead to bioaccumulation of contaminants and long-term adverse

effects to health. The Proponent also noted the possibility of changes in health from ingestion or contact with solid or liquid wastes (e.g. garbage, sewage) present within the PDAs and contact water or tailings in the contact water collection ponds and Tailings Management Facility. The Proponent concluded that, given the mitigation measures proposed to manage atmospheric emissions, manage wastes on the PDAs, and to deter use of the Tailings Management Facility and contact water collection ponds by wildlife, project-related contaminant concentrations would likely be too low to result in appreciable bioaccumulation and adverse effects to migratory bird and bird species at risk health would not result in population level effects.

The pathways described for changes in migratory bird and bird species at risk health during construction and operation were expected to initially remain the same during the early phases of decommissioning/closure, but would decrease once project infrastructure is removed, the PDAs are reclaimed, and sources of emissions, wastes, and contaminants are removed.

Residual effects to migratory bird and bird species at risk health during construction, operation, and decommissioning/closure were predicted to be adverse, negligible to low in magnitude, limited to the LAAs, long-term in duration, continuous, and reversible, following the implementation of mitigation measures.

Proponent Conclusions

The Proponent predicted that residual project effects on migratory birds and bird species at risk would not be significant, given the mitigation, follow-up, and monitoring measures proposed, and given that residual effects were not expected to threaten the long-term persistence or viability of migratory birds and bird species at risk within the RAA.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to migratory birds and for meeting the Agency's section 79 obligations under SARA are described in Section 7.2.3 of this Chapter.

7.2.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada agreed with the Proponent that the Project would cause temporary residual effects on migratory bird and bird species at risk habitat and that these effects would likely be reversible following reclamation and re-vegetation of the project sites. Environment and Climate Change Canada was of the view that residual adverse effects of the Project to migratory birds and bird species at risk would be adequately addressed, in consideration of the expected recovery of groundwater levels to near baseline conditions during the post-closure phase, the proposed reclamation of the Gordon and MacLellan site PDAs following operation, including the legacy mine footprints, and the mitigation measures identified.

Indigenous Nations

Mathias Colomb Cree Nation expressed concerns regarding a potential decrease in migratory bird abundance due to increased harvesting by project personnel and contractors.

Mathias Colomb Cree Nation expressed concerns that the Proponent's assessment of effects for the distribution line and assessment of potential indirect project effects on migratory bird and bird species at risk habitat was inadequate and effects may have been underestimated. The Manitoba Metis Federation noted concerns that mitigation measures proposed by the Proponent to address effects to migratory birds and bird species at risk associated with the distribution line were general and not site-specific.

The Manitoba Metis Federation raised concerns that the Proponent did not include an estimate of the amount of barn swallow habitat that may be disturbed as a result of the Project, despite observations of barn swallow within the LAAs during baseline studies and the fact that historical mine infrastructure at the MacLellan site may be used as roosting and nesting habitat by barn swallow. The Manitoba Metis Federation also noted concern regarding project effects to rusty blackbird, common nighthawk, and olive-sided flycatcher as a result of project-related habitat loss, including potential effects to riparian and wetland habitat due to project-related changes in surface water and groundwater levels and flows. Concerns were also noted that the Proponent's proposed mitigation measures to address project-related effects to bird health and mortality risk may not be effective. The Manitoba Metis Federation requested that all bird species be afforded similar protections from project activities as migratory birds and bird species at risk.

The Manitoba Metis Federation noted that the information provided by the Proponent regarding potential indirect effects to migratory birds and their habitat outside of the PDAs, including potential habitat avoidance and changes in movement patterns, was insufficient. Marcel Colomb First Nation and the Manitoba Metis Federation noted concerns regarding potential project-related effects to migratory birds and bird species at risk as a result of sensory disturbance, particularly if construction activities occur during bird nesting periods.

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

7.2.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent adequately characterized potential project effects on the habitat, mortality risk, and health 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 PDAs, LAAs, and RAA, including along the proposed distribution line right of way, 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 restricted to the PDAs and will be partially reversible following reclamation and revegetation of the PDAs, particularly for upland habitat. The Agency is of the view that the key mitigation measures proposed in Chapter 6.4 (Terrestrial Landscape) would further reduce effects to migratory bird and bird species at risk habitat, including wetlands. The Agency also understands that some indirect effects to migratory bird and bird species at risk habitat, including effects related to sensory disturbance and indirect effects to wetland and riparian areas, may be reversible following decommissioning/closure of the Project and recovery of groundwater levels to near baseline conditions.

The Agency recognizes that uncertainty remains regarding the amount of habitat that may be affected by the Project and the extent of habitat use within the PDAs for barn swallow and other migratory bird species for which project effects were not directly assessed. Should individuals or potential habitat features for migratory birds be discovered within the PDAs, the Agency recommends that the Proponent implement mitigation measures to protect identified habitat areas and prevent mortality of any individuals noted, such as establishing no-work buffers or ceasing project activities in areas where habitat, individuals, or occupied nests are found.

The Agency recognizes that the Project may result in an increased risk of mortality and adverse effects to the health of migratory birds and bird species at risk throughout all project phases. The Agency agrees with the Proponent's proposed use of bird deterrents, including vegetation management and netting, to prevent contact with or ingestion of contaminated water within or near the Tailings Management Facility and contact water collection ponds by migratory birds and bird species at risk. However, the Agency is of the view that these measures should be implemented, and use of these areas monitored, at all times and throughout all project phases to mitigate effects to migratory birds, until surface water quality at the project sites meets applicable federal and provincial regulatory requirements, including the authorized limits of deleterious substances specified in the MDMER, and the Tailings Management Facility is reclaimed. The Agency is of the view that these mitigation measures would also mitigate effects to bird species at risk.

The Agency agrees with Mathias Colomb Cree Nation that there is the potential for increased harvesting of migratory birds by project personnel, which could increase hunting pressure and result in population level effects. While the Proponent proposed the implementation of restrictions on the use of firearms by non-local project personnel, the Agency recommends that this restriction extend to all hunting activities of migratory birds by non-local project personnel.

The Agency acknowledges that the distribution line associated with the MacLellan site may result in adverse effects to migratory birds and bird species at risk, including through line strikes. The Agency understands that the Proponent committed to routing the distribution line away from areas where interactions with migratory birds and bird species at risk are likely and using bird diverters to increase the visibility of the distribution line. The Agency recommends that, prior to construction, the Proponent conduct bird surveys along the distribution line right of way to identify areas where interactions with migratory birds are likely and re-route the distribution line to avoid these areas.

The Agency understands that the bird species at risk listed in Table 13 are also managed by the Province of Manitoba and that Manitoba Environment, Climate, and Parks will be putting in place measures to mitigate project effects to species at risk as part of the provincial environmental assessment process. The Agency is satisfied that these measures will avoid or lessen project-related effects to bird species at risk.

The Agency is of the view that the Project is not likely to cause significant adverse effects on migratory birds, result in population level effects to 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, or health, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures 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

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. The Agency is of the view that these key mitigation measures would also mitigate effects to bird species at risk and are necessary 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 nations.

Mitigation Measures

- Vegetation clearing will be conducted in accordance with the *Migratory Birds Regulations* (2022).
- Lights used at nighttime will be aimed downwards (i.e. down-lighting) to limit effects on migratory bird habitat adjacent to the Gordon and MacLellan site PDAs. Lighting must not exceed the minimum intensity and duration required for safety, in order to minimize attraction of insects, and to mitigate effects to migratory birds.
- Distribution lines will be routed away from areas where interactions with migratory birds are likely and bird diverters will be used to increase the visibility of distribution lines, to mitigate line strikes, taking into account the Avian Power Line Interaction Committee's *Suggested Practices for Avian Protection on Power Lines*. High-risk locations for avian distribution line strikes will be identified prior to construction by a qualified professional, and mitigation measures will be implemented at these locations during construction and will be maintained until the distribution line is decommissioned. The mitigation measures will be submitted to the Agency prior to implementation.
- 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*.
- Project personnel and contractors will be prohibited from hunting within the PDAs or in areas accessed through the PDAs in order to limit increased hunting pressure on migratory birds, unless an employee or contractor is provided access by the Proponent for exercising Aboriginal rights.
- Measures to prevent migratory birds from using the Tailings Management Facility, contact water collection ponds, and any other infrastructure where contact water may be stored or conveyed, including deterrents, will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities, in consideration of the principles of Environment and Climate Change Canada's *Guide for Developing Beneficial Management Practices for Migratory Bird Conservation*, and implemented from the beginning of operation until such time that the Tailings Management Facility and contact water collection ponds are reclaimed.

Follow-up and Monitoring

- Prior to construction, a follow-up program will be developed, in consultation with relevant federal and provincial authorities and Indigenous nations, to verify the accuracy of the environmental assessment and to determine the effectiveness of mitigation measures related to avoiding harm to migratory birds,

including migratory bird species at risk, their eggs and nests. The follow-up program will be implemented during all project phases.

- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities, to monitor migratory bird use of the Tailings Management Facility, contact water collection ponds, and any other infrastructure where contact water may be stored or conveyed. Monitoring will be conducted from operation through reclamation. If monitoring identifies use of these areas by migratory birds, additional deterrents will be implemented until decommissioning of the Tailings Management Facility and contact water collection ponds is complete and monitoring indicates that water in the Tailings Management Facility and contact water collection ponds meets water quality objectives, to be established using an ecological risk-based approach developed in consultation with Indigenous nations and relevant federal and provincial authorities.

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: Atmospheric Environment (Chapter 6.1), Groundwater (Chapter 6.2), Surface Water (Chapter 6.3), Terrestrial Landscape (Chapter 6.4), 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 SARA requires the Agency to identify the adverse effects of the Project on wildlife species listed in Schedule 1 of SARA 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 taken in a way that is consistent with any applicable recovery strategy and action plan.

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. 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 focussed the analysis in this Chapter on effects to mammal, amphibian, and insect species at risk.

The Agency is of the view that the Proponent adequately considered potential project effects on species at risk and that the Proponent’s proposed mitigation, monitoring, and follow-up measures (Appendix D) 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 and Indigenous nations.

7.3.1 Proponent’s Assessment of Environmental Effects

Eight amphibian, mammal, and insect species at risk were identified by the Proponent as potentially occurring in the LAAs and RAA (Table 15).

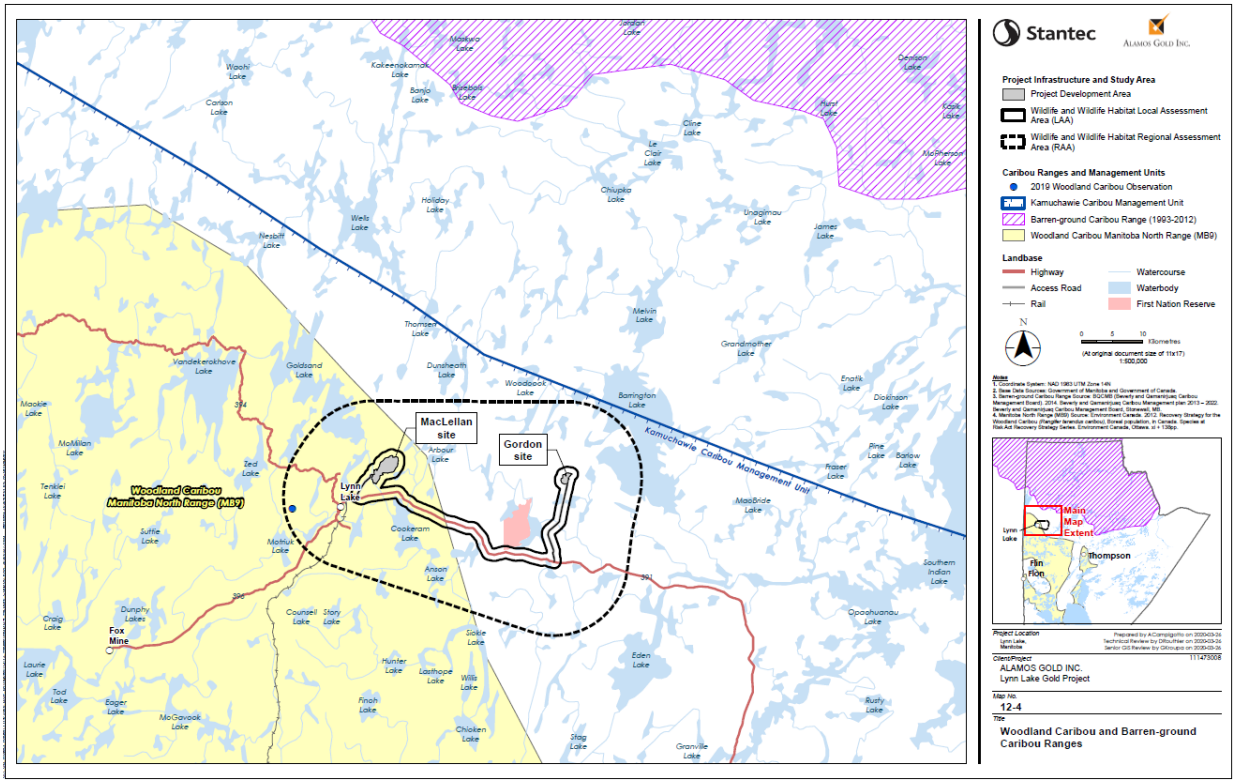
Table 15 Mammal, Amphibian, and Insect Species at Risk Potentially Affected by the Project

Species			Status		
Common Name	**Scientific Name**	**Observed or Potential Location**	**SARA (Schedule 1)**	**COSEWIC**	**Federal Recovery Strategy**
Mammals					
Little brown myotis	*Myotis lucifugus*	RAA	Endangered	Endangered	Yes
Northern myotis	*Myotis septentrionalis*	RAA	Endangered	Endangered	Yes
Wolverine	*Gulo gulo*	RAA/LAA	Special Concern	Special Concern	Yes
Caribou, barren-ground population	*Rangifer tarandus*	RAA	No Status	Threatened	No
Boreal caribou	*Rangifer tarandus*	RAA	Threatened	Threatened	Yes
Amphibians					
Northern leopard frog	*Lithobates pipiens*	RAA	Special Concern	Special Concern	Yes
Insects					
Yellow-banded Bumble Bee	*Bombus terricola*	RAA	Special Concern	Special Concern	No
Transverse Lady Beetle	*Coccinella transversoguttata*	RAA	No Status	Special Concern	No

The Proponent identified four key indicator species at risk (i.e. wolverine, boreal caribou, little brown myotis, and northern myotis) to assess potential project effects on non-fish and non-bird species at risk. Key indicator species at risk were identified as species of importance to Indigenous nations through engagement, are known to regularly occupy the RAA, and were considered most likely to be affected by the Project. Northern leopard frog was not included as a key indicator species at risk as no individuals were detected within the RAA during baseline studies. However, the Project is located within the northern limit of their known range and local Indigenous knowledge indicated they were observed in the Town of Lynn Lake as recently as 2006. The remaining species at risk identified in Table 15 were not known to regularly occupy the RAA and were considered unlikely to be present in the RAA due to a lack of suitable breeding habitat; therefore effects to these species were not assessed further.

The western portion of the RAA and the MacLellan site PDA overlap with the Manitoba North Range, an area delineated federally[19] as containing habitat for boreal caribou (Figure 6). The Gordon and MacLellan site PDAs and RAA also overlap with the Kamuchawie Management Unit, a provincially designated[20] geographic unit used to facilitate the management of boreal caribou ranges.

Figure 6 Federal and Provincial Boreal Caribou Habitat Ranges in Relation to the Gordon and MacLellan Sites



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 29, 2020)

Figure Description: *The Wildlife and Wildlife Habitat Regional Assessment Area (RAA) is located within the Kamuchawie Caribou Management Unit. The MacLellan site Project Development Area and the western portion of the Wildlife and Wildlife Habitat RAA overlap with the Manitoba Northern Range.*

Construction and Operation

Change in Habitat

Vegetation clearing during construction and water management activities (i.e. dewatering the Wendy and East pit lakes, removal of the existing diversion channel, and operation of interceptor wells at the Gordon site; and dewatering of the underground workings at the MacLellan site) during construction and

[19] As identified in the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal Population* (2020).
[20] As identified in *Manitoba's Boreal Woodland Caribou Recovery Strategy* (2015).

operation would result in the direct loss or alteration of species at risk habitat through the direct removal of upland vegetation and wetlands in the PDAs. Indirect losses or changes to wetlands and other waterbodies could also occur through changes to groundwater levels and flows (i.e. groundwater drawdown) and changes to groundwater-surface water interactions, which could affect the amount of terrestrial and riparian habitat available for species at risk, leading to a positive or adverse effect, depending on the species. Removal of existing mine infrastructure at the MacLellan site during construction may also result in direct habitat loss, as this infrastructure may currently provide habitat for species at risk (e.g. little brown myotis, northern myotis).

Open pit mining and storage and stockpiling of ore, overburden, and mine rock at the Gordon and MacLellan sites could result in the direct loss of species at risk habitat if additional vegetation clearing is required during operation to expand the area of the stockpiles or open pit. Indirect effects to species at risk habitat in the RAA, such as avoidance or reduced habitat effectiveness, may also occur due to increased noise, light, and vibration levels associated with the Project.

Table 16 presents the amount of habitat for terrestrial indicator species at risk that may be directly or indirectly lost or altered within the Gordon and MacLellan site LAAs as a result of construction activities. During operation, the Proponent predicted a less than five percent change in the amount of species at risk habitat available in the LAAs. A quantitative estimate of the amount of habitat that may be affected by the Project for little brown myotis and northern myotis was not available due to the difficulty of identifying and quantifying their habitat. However, the Proponent noted that it would be unlikely that the Gordon site PDA provides maternal roosting habitat for little brown myotis and northern myotis due to the absence of anthropogenic structures and dense forest habitats at the site. For the MacLellan site, removal of historical mining structures during construction may adversely affect little brown myotis and northern myotis as these species have been known to utilize anthropogenic structures as habitat.

Table 16 Direct and Indirect Habitat Losses for Terrestrial Indicator Species at Risk Within the LAAs

Species	Gordon Site LAA		MacLellan Site LAA	
Common Name	Area of Direct or Indirect Habitat Loss (hectares)	Percent of Suitable Habitat Lost[1]	Area of Direct or Indirect Habitat Loss (hectares)	Percent of Suitable Habitat Lost[1]
Wolverine	119	-1%	490	-33%
Boreal Caribou	51	-0.35%	154	-1.05%

[1] Relative to the amount of habitat available in the LAAs under baseline conditions.

Although the Project would result in disturbance of boreal caribou habitat, the Proponent considered the existing conditions for boreal caribou habitat in the Gordon and MacLellan site LAAs and RAA to be highly disturbed due to historical mining and forest fires. As boreal caribou require large, contiguous tracts of mature habitat, the Proponent concluded that the PDAs, LAAs, and RAA likely provide limited suitable habitat for the species, limiting the likelihood of interactions with the Project and adverse effects. Further, due to the known distribution of boreal caribou within their population range, interactions with the Project were considered unlikely; however, data on the boreal caribou herd that may be affected by the Project is

somewhat limited. Effects to caribou habitat were predicted to be temporary and reversible following reclamation.

Although the Project may result in direct habitat losses for wolverine within the LAAs, effects were predicted to be temporary and reversible following reclamation. While the Project may indirectly affect wolverine habitat, the Proponent predicted that effects would be minor in comparison to indirect effects associated with existing anthropogenic disturbances in the LAAs and RAA.

The Proponent predicted that, following the implementation of mitigation measures, residual project effects to species at risk habitat during construction would be adverse, short-term, single in frequency, reversible, would extend to the RAA (i.e. as increases in noise and vibration may extend beyond the LAAs), and would be low in magnitude for the Gordon site and moderate to high in magnitude for the MacLellan site (i.e. as changes to the area of habitat for some species at risk in the MacLellan site LAA would be greater than 30%). During operation, residual project effects were predicted to be adverse, medium-term in duration, of low magnitude, continuous, reversible, and would extend to the RAA.

Change in Mortality Risk

The anticipated rise in vehicle traffic within the Gordon and MacLellan site PDAs and along Provincial Road 391 during construction and operation could result in an increase in wildlife-vehicle collisions and mortality. The use of heavy equipment for site preparation activities during construction (e.g. vegetation removal, soil disturbance) and water management activities during construction and operation could also increase mortality risk for species at risk through collisions or crushing of individuals. While the possibility of species at risk mortality as a result of human-wildlife encounters (e.g. removal of dangerous wildlife or wildlife pests) would exist at the Gordon and MacLellan sites, the likelihood of this effect occurring at the MacLellan site would be greater due to higher staffing levels.

At the MacLellan site, species at risk (i.e. northern myotis and little brown myotis) may strike or be electrocuted by the distribution line, increasing their risk of mortality. Species at risk may also be attracted to the Tailings Management Facility and contact water collection ponds due to the presence of water, food, and breeding and overwintering habitat. As these facilities may contain elevated concentrations of cyanide and other contaminants, mortality may occur through direct ingestion or interaction with water in the Tailings Management Facility and contact water collection ponds, or through ingestion of contaminated aquatic flora and fauna near or on these facilities. However, the Proponent predicted that increases in noise and vibration levels would deter use of the PDAs by species at risk; therefore the risk of interactions with the Tailings Management Facility and contact water collection ponds would be limited.

Despite an increased risk of mortality, the Proponent did not anticipate that species at risk would be uniquely susceptible to project-related mortality compared to other secure (i.e. more abundant) wildlife species, as species at risk are less abundant in the LAAs and RAA. Therefore, even though a higher risk of mortality exists with the presence of the Project, the likelihood of interactions between species at risk and the Project would be much lower than for secure wildlife species. The Proponent predicted that, with the implementation of mitigation measures, effects to species at risk mortality would be limited and it would be unlikely that measurable changes to the abundance and distribution of species at risk in the LAAs would occur; therefore population level effects to species at risk were not anticipated.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to mortality risk for species at risk during construction and operation would be adverse, low in magnitude, short-term in duration for construction and medium-term for operation, reversible, would occur irregularly, and would occur within the LAAs.

Change in Health

Changes in the health of species at risk during construction and operation at the Gordon and MacLellan sites may occur due to air emissions, effluent discharges, and the presence of wastes on the PDAs. Inhalation of atmospheric emissions, such as combustion by-products and fugitive dust, which may contain heavy metals toxic to wildlife (e.g. arsenic, copper, cadmium, lead, chromium) could result in adverse effects to species at risk health. Project-related discharges and emissions may also result in contamination of surface water, sediments, soils, and vegetation, which may indirectly affect wildlife health through consumption or interaction with these resources. Direct consumption of solid or liquid wastes, such as garbage or sewage, and interactions with the Tailings Management Facility and contact water collection ponds may also affect the health of species at risk. The Proponent was of the view that species at risk would not be uniquely susceptible to a change in health during construction, in comparison to other secure wildlife species, due to the lower abundance of species at risk in the LAAs. Due to the low concentration of contaminants predicted in air, surface water, and other media, effects to species at risk health, including from bioaccumulation of contaminants, were not predicted. Further, as noted previously, the Proponent predicted that project-related increases in noise and vibration levels would generally deter use of the PDAs by species at risk; therefore the risk of interactions with air emissions, effluent discharges, and wastes within the PDAs would be limited and a measurable change in the abundance and distribution of species at risk was not predicted.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to the health of species at risk during construction and operation would be adverse, negligible to low in magnitude, continuous in frequency during construction and irregularly occurring during operation, reversible, long-term in duration, and would occur within the LAAs.

Decommissioning/Closure

Change in Habitat

During decommissioning/closure at the Gordon and MacLellan sites, potential effects to the majority of species at risk were expected to be positive due to the removal of project infrastructure and reclamation of the PDAs. Some species at risk, such as little brown myotis and northern myotis, may be adversely affected by the removal of project infrastructure, as they may establish nesting sites in infrastructure and buildings during operation. Indirect adverse effects to species at risk may also occur due to sensory disturbance, such as increased noise and vibration levels from heavy machinery that would be used to decommission and reclaim the sites, which may result in habitat avoidance within the RAA. Sensory disturbance from heavy machinery would cease following decommissioning/closure and reclamation of the PDAs.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to species at risk habitat during decommissioning/closure at the Gordon and MacLellan sites would be both adverse and positive (i.e. depending on the species), low in magnitude, long-term in duration, continuous in frequency, reversible, and would occur within the RAA.

Change in Mortality Risk

Project-related changes in mortality risk for species at risk during decommissioning/closure at the Gordon and MacLellan sites were expected to be similar to the construction phase initially, as the levels of human presence, site traffic, and heavy equipment operation would be similar. However, mortality risk was predicted to decline after the project sites are decommissioned and reclaimed.

During post-closure, access to the Gordon and MacLellan site PDAs by humans and predators may increase, following the removal of access restrictions to the sites and due to the presence of linear features (e.g. distribution line right of way), which may facilitate easier access to the area by predators and hunters, potentially increasing predation rates and harvesting pressure. However, changes in mortality risk for species at risk were not expected to cause measurable changes in the abundance or distribution of these species at the population level. Further, following operation, the distribution line at the MacLellan site would be decommissioned and the portions of the right of way that overlap with lands leased to the Proponent would be reclaimed and revegetated.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to species at risk due to changes in mortality risk during decommissioning/closure would be adverse, low in magnitude, limited to the LAAs, reversible, would occur irregularly, and would be long-term in duration.

Change in Health

The Proponent predicted that effects to species at risk health during decommissioning/closure would initially be the same as effects that may occur during the operation phase. However, effects to species at risk health would gradually decrease following the cessation of mining activities, removal of mine infrastructure, and reclamation of the sites due to the removal of sources of emissions, discharges, and wastes and recovery of the PDAs and LAAs to near baseline conditions. Therefore, the Proponent predicted that there would not be a measurable change to the abundance or distribution of species at risk at the population level during decommissioning/closure.

The Proponent predicted that, following the implementation of mitigation measures, effects to species at risk health during decommissioning/closure would be adverse, negligible to low in magnitude, long-term in duration, continuous, reversible, and would occur within the LAAs.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to areas of federal jurisdiction, as described under section 5 of CEAA 2012, and for meeting the Agency's section 79 obligations under SARA are described in Section 7.3.3 of this Chapter.

7.3.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada expressed concerns regarding potential project effects to boreal caribou habitat and requested that the Proponent develop a plan to address these effects,

including a plan to mitigate destruction or alteration of boreal caribou habitat. Environment and Climate Change Canada recommend that this plan include monitoring of boreal caribou and their range that is consistent with the Province of Manitoba and the Government of Canada's direction on caribou conservation and management. Environment and Climate Change Canada also noted concerns that, as data is currently limited regarding the boreal caribou herd that may be affected by the Project, including their range, and there is uncertainty regarding the availability of habitat offsetting options in the RAA, uncertainty exists regarding whether boreal caribou habitat losses could be fully mitigated.

Environment and Climate Change Canada disagreed with the Proponent's conclusion that effects to species at risk would be of low magnitude, and were of the view that species at risk are uniquely susceptible to a change in mortality risk in comparison to other secure wildlife species.

Indigenous Nations

Sayisi Dene First Nation stated that caribou are an important species to their Nation, including for governance and autonomy. The Nation expressed concerns regarding the lack of baseline data presented by the Proponent in relation to boreal caribou population size, trends, and distribution within the Kamuchawie Management Unit and the accuracy of the Proponent's conclusions with respect to potential effects to boreal caribou. The Nation noted that boreal caribou habitat within the Manitoba North Range is 67% undisturbed, which is approaching the minimum desired target of 65% undisturbed habitat set out in the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal Population*. Therefore, any project effects to the Manitoba North Range are of concern to the Nation.

Chemawawin Cree Nation stated that boreal caribou transit through the LAAs and potentially the PDAs from north to central Manitoba annually. The Nation also noted the importance of boreal caribou for the continued exercise of their hunting rights and expressed the need for additional information regarding how the Project may contribute to habitat losses in the Kamuchawie Management Unit and affect the ongoing viability and sustainability of boreal caribou populations.

Mathias Colomb Cree Nation requested that the Proponent commit to scheduling site preparation activities outside of the boreal caribou calving and calf-rearing period (i.e. May 1 to June 30), regardless of whether caribou have been detected within the PDAs or LAAs. Mathias Colomb Cree Nation also raised concerns regarding the Proponent's selection of indicator species to represent all species at risk for the assessment, noting that each species at risk is unique and therefore effects to each species must be assessed separately. The Nation expressed concerns that no habitat offsetting has been identified for boreal caribou. Peter Ballantyne Cree Nation expressed concerns regarding potential effects to boreal caribou and noted how population size and migration patterns may be affected by the Project.

The Manitoba Metis Federation raised concerns regarding project effects to listed and non-listed bat species and yellow-banded bumble bee. Concerns were also expressed regarding the status of boreal caribou in the LAAs and RAA and how the species' decline has resulted in a significant effect on the area's ecology.

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

7.3.3 Agency Analysis and Conclusions

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 LAAs for key indicator species at risk, including little brown myotis and northern myotis, and for other species at risk that may occur within the PDAs and LAAs for whom effects were not directly assessed. 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 PDAs, 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 boreal caribou is a species of cultural and traditional importance to Indigenous nations. The Agency also recognizes that uncertainty exists regarding the habitat usage and distribution of boreal caribou in the PDAs, LAAs, and RAA, and the ability of the Proponent to offset or otherwise mitigate predicted residual boreal caribou habitat losses. The Agency understands that the Proponent committed to supporting a collaring program for boreal caribou, in partnership with the Province of Manitoba, and that data from this program will be used to inform mitigation measures, monitoring, and adaptive management. The Agency is of the view that this collaring program will address uncertainty regarding habitat usage and distribution of boreal caribou in the PDAs, LAAs, and RAA. The Agency highlights the importance of mitigating project effects to boreal caribou and their habitat, given the conservation status of boreal caribou and the importance of preventing further population decline. While boreal caribou habitat disturbed as a result of the Project will be reclaimed following operation, the Agency is of the view that additional mitigation measures to address boreal caribou habitat losses are required to address the time lag between when habitat will be disturbed and when it will be reclaimed to such a state that it will be suitable for boreal caribou use.

The Agency agrees with Mathias Colomb Cree Nation's recommendation that site preparation activities be conducted outside of the boreal caribou calving and calf-rearing period (i.e. May 1 to June 30) regardless of whether individuals are detected within the PDAs or LAAs, to limit potential adverse effects to caribou health and survival. To reduce the risk of mortality or adverse health effects to boreal caribou as a result of interactions with tailings and contact water, the Agency recommends that the Proponent implement deterrents, such as vegetation management, fencing, and netting, at all times during all project phases. The Agency is of the view that the key mitigation measures described in Chapter 7.2 (Migratory Birds) would adequately address this recommendation.

The Agency agrees with Environment and Climate Change Canada's concerns regarding the Proponent's rationale that species at risk are not uniquely susceptible to a change in mortality risk as a result of the Project in comparison to other wildlife species and agrees that this should not be used to support a determination of potential effects to species at risk as low in magnitude. The Agency also agrees with Mathias Colomb Cree Nation that each species at risk is unique and may be uniquely affected by the Project in comparison to other wildlife species, including other species at risk. The Agency recommends that the Proponent develop a follow-up program, in consultation with relevant federal and provincial authorities and Indigenous nations, to monitor project effects to boreal caribou, including potential effects to habitat within the PDAs and LAAs, mortality risk, and health.

The Agency understands that the species at risk listed in Table 15 are also managed by the Province of Manitoba and that Manitoba Environment, Climate, and Parks will be putting in place measures to mitigate project effects to species at risk as part of the provincial environmental assessment process. The Agency is satisfied that these measures will avoid or lessen project-related effects to species at risk. The Agency is also of the view that key mitigation measures identified in Chapter 6.3 (Surface Water), Chapter 6.4 (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) would mitigate effects to species at risk.

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 threaten the long-term persistence or viability of species at risk as a result of effects to habitat, mortality risk, or health, taking into account the mitigation, monitoring, and follow-up measures proposed by the Proponent (Appendix D) and the key mitigation measures identified 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

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 mitigation measures, monitoring, and follow-up programs proposed by the Proponent, expert advice from federal authorities, and comments received from Indigenous nations.

Mitigation Measures

- Pre-construction surveys within the Gordon and MacLellan site PDAs will be conducted to identify boreal caribou calving and calf rearing habitat prior to construction.
- Vegetation clearing and other site preparation activities will be conducted outside of the boreal caribou calving and calf-rearing period (i.e. May 1 to June 30), unless otherwise authorised by relevant authorities.
- Linear project features, such as the distribution line right of way and access roads, will be decommissioned and reclaimed when no longer required for the Project or other purposes, to mitigate increased predation of boreal caribou, in consultation with Indigenous groups and relevant authorities.
- During all project phases and in consultation with Environment and Climate Change Canada, Indigenous nations, and other relevant federal and provincial authorities, the Proponent will mitigate adverse project effects on boreal caribou and its habitat, including calving and calf rearing habitat, as identified by pre-construction surveys, monitoring of caribou usage of the PDAs, and available information from any regional initiatives the Proponent participates in, in a manner consistent with the federal *Recovery Strategy for Woodland Caribou (Rangifer tarandus caribou), Boreal Population* (2020). In doing so, preference will be given to avoiding the destruction or alteration of boreal caribou habitat over minimizing effects. Where effects to boreal caribou habitat cannot be avoided, preference will be given to minimizing the destruction or alteration of habitat over restoring or offsetting habitat. For any residual boreal caribou habitat losses that cannot be avoided or minimized, options for offsetting or restoring boreal caribou habitat will be explored and, if available, implemented in consultation with Indigenous nations, Environment and Climate Change Canada, and other relevant

federal and provincial authorities. Mitigation measures will be submitted to the Agency prior to implementation.

- The Proponent will participate in regional initiatives related to the management of adverse effects on boreal caribou during construction and operation, at the request of Manitoba's Ministry of Environment, Climate, and Parks or other relevant authorities responsible for these initiatives.
    - Regional initiatives will include habitat restoration initiatives, including a collaring program, as part of the Provincial Caribou Recovery Strategy led by Manitoba Natural Resources and Northern Development, or any equivalent future initiative as determined by Manitoba Natural Resources and Northern Development.
    - Data from regional initiatives, including the boreal caribou collaring program, will be used to inform the selection of measures to mitigate adverse project effects to boreal caribou and its habitat.

Follow-up and Monitoring

- Remote camera surveys will be conducted for boreal caribou to monitor usage of the PDAs. The results of these surveys will be shared with Indigenous nations, Environment and Climate Change Canada, Manitoba Environment, Climate, and Parks, and other relevant authorities.
- Prior to construction, a follow-up program will be developed, in consultation with Environment and Climate Change Canada, other relevant federal and provincial authorities, and Indigenous nations, to monitor project effects to boreal caribou, including potential effects to habitat within the PDAs and LAAs, mortality risk, and health, to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures. If monitoring indicates that mitigation measures are not effective at mitigating project effects to boreal caribou, additional mitigation measures to limit or prevent effects to boreal caribou will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities.
- The follow-up program referred to in Chapter 7.2 (Migratory Birds) of this EA Report to monitor use of the Tailings Management Facility, contact water collection ponds, and any other infrastructure where contact water may be stored or conveyed, will also apply to boreal caribou.

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 (Atmospheric Environment), Chapter 6.2 (Groundwater), Chapter 6.3 (Surface Water), Chapter 6.4 (Terrestrial Landscape), Chapter 7.1 (Fish and Fish Habitat), 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 for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance

The Project could cause residual adverse effects on 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 not likely to cause significant adverse effects on current use, physical and cultural heritage, and sites of significance, after taking into account the 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 and Indigenous nations.

7.4.1 Effects on Current Use

7.4.1.1 Proponent's Assessment of Effects

Access for Current Use

Access to the Gordon and MacLellan site PDAs would be restricted for the life of the Project. Adverse effects to the ability of Indigenous nations to practice current use activities may occur for those Nations who conduct current use activities within the Gordon and MacLellan site PDAs or who use the PDAs to access sites and resources of importance in the LAAs. Travel routes used by Marcel Colomb First Nation, Peter Ballantyne Cree Nation, and Mathias Colomb Cree Nation are located within the MacLellan and Gordon site PDAs and LAAs. These routes are used to access trap lines, hunting and fishing sites, and plant gathering areas within the PDAs and LAAs. Vegetation clearing, earthworks, and access road upgrades during construction would result in the removal of the portions of these travel routes that overlap with project infrastructure. This may result in long-term adverse effects to current use that would extend into the post-closure phase. Restricted access to the PDAs during construction, operation, and decommissioning/closure may also prevent access to any as yet unidentified cultural or traditional use sites within the PDAs and LAAs. Increased project-related traffic along Provincial Road 391 and along the Gordon and MacLellan site access roads could also affect access to other travel routes used by Indigenous nations.

While effects to access would persist throughout the life of the Project, effects were predicted to be temporary and reversible following reclamation of the PDAs and were not predicted to substantially diminish the ability of Indigenous nations to exercise traditional and cultural practices in the RAA.

The Proponent predicted that, following the implementation of mitigation measures, project effects to access for current use during all phases would be adverse, long-term, continuous, reversible, of low magnitude, and would occur within the LAAs.

Availability and Quality of Resources for Current Use

Plants, Wildlife, and Wildlife Habitat

The Project could affect plant and wildlife species and their habitat that support the traditional and cultural practices of Indigenous Peoples, such as hunting, trapping, and plant gathering. The Proponent and Indigenous nations identified several culturally important plant and wildlife species likely to be present in the LAAs, including moose, migratory and non-migratory birds, and boreal caribou. Potential residual

effects to vegetation and wetlands, migratory birds, and species at risk, and proposed key mitigation, monitoring, and follow-up measures are described in Chapter 6.4 (Terrestrial Landscape), Chapter 7.2 (Migratory Birds), and Chapter 7.3 (Species at Risk) of this EA Report.

Potential effects during construction and operation include the direct and indirect loss of vegetation and wetlands, wildlife habitat loss and alteration, increased wildlife mortality risk, and effects to wildlife health, which could result in adverse effects to the availability and quality of resources for current use. Habitat loss and wildlife mortality due to project activities could affect the abundance and distribution of wildlife species of cultural importance to Indigenous Peoples, making it more difficult to practice harvesting activities (e.g. less wildlife available to harvest, wildlife no longer present in areas they once were, increased travel distances to harvest plants and wildlife). Project-related increases in contaminant concentrations in the environment and effects to wildlife health could also affect the quality of plant and wildlife species, including measurable and perceived effects, which may deter Indigenous Peoples from harvesting resources or accessing sites within the LAAs and RAA. The Proponent predicted that project effects to non-migratory bird and non-at risk wildlife species of cultural and traditional importance, such as moose, would be similar to those described for migratory birds and species at risk. The Proponent concluded that, with the implementation of mitigation measures, residual project effects on wildlife and plant species of traditional and cultural importance to Indigenous Peoples would not pose a threat to the long-term persistence or viability of species in the LAAs and RAA and would not result in the loss of any vegetation communities in the LAAs.

Project activities may affect the exercise of traditional and cultural activities within the LAAs and RAA due to the removal of portions of Registered Traplines. Increased noise and dust may also result in avoidance of traplines or cultural use areas by wildlife due to sensory disturbance, which may affect harvesting activities and harvesting success.

Fish and Fish Habitat

The Project could affect the availability (i.e. abundance and distribution) and quality of fish in waterbodies within the PDAs and LAAs through direct and indirect effects to fish habitat and adverse effects to fish health, growth, and survival. Further details on the Project's anticipated residual effects to fish and fish habitat and proposed key mitigation, monitoring, and follow-up measures are available in Chapter 7.1 (Fish and Fish Habitat) of this EA Report.

Multiple fish species present in waterbodies within the LAAs and RAA are used by Indigenous Peoples for subsistence, cultural, and recreational purposes. Project-related changes to the abundance and distribution of fish may result in adverse effects to current use by reducing the amount of fish available to be harvested; changing the locations where fish are present, leading to uncertainty in the reliability of harvesting locations; and may result in the need for Indigenous Peoples to travel farther to practice harvesting activities. Changes to the quality and health of fish may also affect current use through avoidance of certain fishing sites or fish populations by Indigenous land users due to measurable or perceived contamination risk. However, the Proponent predicted that effects to fish habitat within the PDAs and LAAs would be relatively minor compared to the availability of fish habitat within the RAA. Further, the Proponent did not anticipate that residual project effects to fish health, growth, or survival

would result in a threat to the long-term persistence or viability of fish species in the LAAs and RAA. Therefore, effects to current use resulting from effects to fish and fish habitat were predicted to be limited.

The Proponent predicted that, following the implementation of mitigation measures, residual project effects to the availability and quality of resources of importance for current use during all phases would be adverse, low in magnitude, long-term in duration, continuous, would extend into the LAAs, and would be reversible following reclamation of the PDAs.

Quality of Experience

The Project could affect the quality of experience of Indigenous Peoples while on lands and waters in the LAAs and RAA during all project phases as a result of changes to air quality; surface water quality; noise, vibration, and light levels; visual aesthetics; access to lands and resources; loss and alteration of physical and cultural heritage resources and sites of significance; and the availability and measurable or perceived quality of country foods.

The Proponent acknowledged that Indigenous land-users may choose not to pursue traditional land use activities near the PDAs for a variety of personal, practical, aesthetic, and spiritual reasons, including lack of access. Project effects to Indigenous Peoples' socio-economic conditions that may also affect current use and effects on Indigenous Peoples' health and socio-economic conditions as a result of project-related effects to noise and vibration levels, air quality, and country foods are described in Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report.

The Proponent predicted that, following the implementation of mitigation measures, residual effects to air quality, noise and vibration levels, and country foods would be low for all project phases. Project-related changes to noise and vibration levels would be highest during operation and could result from blasting, heavy equipment use, and ore processing. Increased noise levels may also occur during construction as a result of heavy equipment use and other construction activities. The Proponent was of the view that residual project effects to air quality, aesthetics, and noise and vibration levels could cause low to moderate nuisances and may affect the quality of experience of Indigenous Peoples on the landscape.

The Proponent stated that project effects to the quality of experience and other intangible effects would be best evaluated by Indigenous Peoples that would experience the changes within their own cultural context. These intangible values are related to beliefs, perceptions, values, and qualitative experience. Given the subjective and conditional nature of intangible values, the Proponent only considered these potential effects when an Indigenous nation identified a related concern. The Proponent acknowledged that mitigation of physical effects may not fully mitigate effects to intangible values. The Proponent committed to ongoing engagement with each Indigenous nation throughout the life of the Project to work towards addressing these concerns. The Proponent also noted that assigning a universal rating for magnitude, duration, or extent of effects on intangible values is not practical or appropriate. While potential project effects may be mitigated to acceptable regulatory standards, individual Indigenous Peoples and Indigenous nations may nevertheless continue to feel that unsafe conditions remain. These perceived effects can vary greatly between individuals and Indigenous nations, and may not be fully mitigated in the context of an environmental assessment.

Proponent Conclusions on Significance

The Proponent predicted that, following the implementation of mitigation measures, residual project effects to current use would not be significant as the Project would not result in the long-term loss of

resources of importance for current use and the Project would not substantially diminish the ability of Indigenous Peoples to practice current use within the RAA.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects on current use are described in Section 7.4.2 of this Chapter.

7.4.1.2 Views Expressed

Indigenous Nations

Sayisi Dene First Nation, Chemawawin Cree Nation, the Manitoba Metis Federation, and Peter Ballantyne Cree Nation raised concerns regarding the Proponent's conclusions related to project effects to current use. The lack of Proponent engagement regarding effects to current use, the lack of capacity funding provided by the Proponent to participate in this assessment, and the effect of this lack of engagement on the accuracy of the Proponent's conclusions were also noted. Sayisi Dene First Nation also expressed concerns regarding their Nations' ability to continue to connect with the lands, waters, and resources within the LAAs and RAA due to project activities in sensitive wildlife or culturally significant areas.

Access for Current Use

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation expressed concerns regarding potential project effects to travel routes used to access harvesting areas within the LAAs, particularly those located in close proximity to the PDAs. Concerns were also noted regarding the uncertainty that exists regarding how access and land use conflicts would be managed and mitigated throughout the life of the Project. These Indigenous nations also noted concerns regarding potential project effects on their ability to access species of traditional and cultural importance, which may be disrupted in the LAAs.

Availability and Quality of Resources for Current Use

Concerns expressed by Indigenous nations specific to potential project effects to vegetation and wetlands, fish and fish habitat, migratory birds, and species at risk are described in Chapter 6.4 (Terrestrial Landscape), Chapter 7.1 (Fish and Fish Habitat), Chapter 7.2 (Migratory Birds), and Chapter 7.3 (Species at Risk) of this EA Report, respectively.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted concerns that the assessment of project effects on the availability of resources for current use only considered accessible areas within the Nations' traditional territories and did not focus on more localized effects within the PDAs and LAAs. These Indigenous nations also noted that the wildlife species used in the Proponent's assessment of effects to current use did not include key species of cultural importance for traditional use and did not assess potential indirect losses of traditionally used species.

Peter Ballantyne Cree Nation, the Manitoba Metis Federation, O-Pipon-Na-Piwin Cree Nation, Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, and Chemawawin Cree Nation expressed concerns regarding potential measurable and perceived contamination of fish, plant, and wildlife species of traditional and cultural importance and effects to fish, plant, and wildlife health and quality as a result of noise, dust, and other project-related atmospheric emissions. These effects may adversely affect the ability of Indigenous Peoples to harvest these resources and may cause avoidance of lands and resources due to safety or health concerns.

Marcel Colomb First Nation noted concerns regarding project effects to their members' Registered Trapline areas, some of which directly overlap with the PDAs and LAAs. As these traplines and the surrounding areas are used for the exercise of section 35 rights, traditional practices, including hunting, fishing, gathering and ceremonial practices, and for the transmission of Indigenous knowledge, history and culture, effects to these areas could adversely affect the Nation's ability to exercise traditional and cultural practices, and their section 35 rights.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, and O-Pipon-Na-Piwin Cree Nation expressed concerns that the length of monitoring proposed by the Proponent with respect to wetlands and vegetation may be not be adequate to fully understand project-related changes. Mathias Colomb Cree Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Marvel Colomb First Nation, and the Manitoba Metis Federation requested that the Proponent create opportunities for community-based monitoring, including funding for engagement, as part of its mitigation and monitoring strategies, and requested that triggers and thresholds for habitat mitigation and rehabilitation measures be informed by Indigenous knowledge.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation expressed concerns regarding the potential for increased pressure on traditional resources throughout the LAAs and RAA due to an influx of project personnel that may hunt, fish, and harvest vegetation in these areas.

Marcel Colomb First Nation, the Manitoba Metis Federation, Chemawawin Cree Nation, Sayisi Dene First Nation, and Peter Ballantyne Cree Nation noted concerns with respect to potential project effects, including both measurable and perceived effects, to surface water quality and associated effects to fish health and the quality of fish tissue for consumption. This may result in avoidance of certain areas that are currently used for fish harvesting due to measurable or perceived health risks.

Quality of Experience

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted concerns that the Project could adversely affect cultural, intrinsic, spiritual, and other intangible values that support the quality of land use experiences in the PDAs and LAAs. Maintaining spiritual and cultural connection is important for the intergenerational transfer of knowledge and cultural preservation; interruptions to land use activities can result in disruptions to knowledge and cultural transmission to younger generations. Concerns were also noted that the Project would result in effects to the cultural and spiritual quality of the land due to its interference with the PDAs and LAAs, including potential contamination of lands and water, and removal or alteration of wildlife habitat.

Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, the Manitoba Metis Federation, and Mathias Colomb Cree Nation expressed concerns regarding fish and wildlife habitat offsetting and wetland recovery; while important for the continuation of species of importance, these activities may interact with Indigenous land users in a negative way. Indigenous harvesters who may use existing areas designated for habitat offsets may not be able to relocate their traditional activities to a different area, as conditions at new sites may not be suitable for that particular activity or the sites may not be as easily accessible. The Manitoba Metis Federation noted that the time that it may take for areas of importance, such as wetlands, to recover during post-closure could lead to the loss of cultural connection to the original area.

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

Federal Authorities

Environment and Climate Change Canada noted concerns regarding the lack of species-specific mitigation measures proposed for species of cultural and traditional importance to Indigenous nations. As these species have unique life history and habitat requirements from other wildlife species, it is important that effects to species of cultural and traditional importance to Indigenous nations be assessed separately from wildlife more broadly and that mitigation measures be proposed to address potential project interactions that may uniquely affect these species.

Transport Canada highlighted that the Proponent must adhere to the requirements of the *Canadian Navigable Waters Act* and conditions outlined in any *Canadian Navigable Waters Ac*t approval(s) that may be granted by the Minister of Transport for the Project, to ensure that no significant residual adverse effects to navigation occur.

7.4.1.3 Agency Analysis and Conclusions for Current Use

Access for Current Use

The Agency is of the view that the Proponent adequately characterized potential residual project effects on access for current use. The Agency is of the view that project effects on access for current use extends to all Indigenous nations that use the Gordon and MacLellan site PDAs for traditional and cultural purposes and that have rights-based interests in the PDAs.

The Agency acknowledges that the Project would result in residual effects to access for current use through direct removal of trails and travel routes and access restrictions to the PDAs. This may result in restricted access to preferred sites, including Indigenous knowledge teaching sites, and resources of cultural, traditional, and spiritual importance to Indigenous nations that would persist into post-closure. The Agency understands that some effects would be reversible upon decommissioning/closure and reclamation of the PDAs, and subsequent removal of access restrictions during post-closure. The Agency recommends that the Proponent engage with Indigenous nations regarding land management and use decisions within the PDAs that are within the Proponent's care and control, including with respect to land reclamation planning. The Agency highlights the importance of continued engagement with Indigenous

nations to monitor potential effects to access to resources and sites of importance and to ensure that project effects are mitigated to the extent possible. The Agency also recommends that the Proponent engage with Indigenous nations regarding project effects to travel routes, and sites and resources of cultural, traditional, and spiritual importance to Indigenous Peoples', including preferred sites.

The Agency is of the view that residual project effects on access for current use would be moderate in magnitude and would extend to the LAAs, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures described in Section 7.4.3 of this Chapter.

Availability and Quality of Resources for Current Use

The Agency is of the view that the Proponent adequately characterized potential project effects to the quality and availability of resources of importance for current use. The Agency recognizes that the Project would result in the loss of plant species and wetland areas of importance within the Gordon and MacLellan site PDAs and LAAs that could adversely affect their availability to support current use activities. The Agency also recognizes that the Project would result in the loss or alteration of wildlife and fish habitat within the PDAs and LAAs and may result in adverse effects to wildlife and fish health, growth, and survival that may adversely affect the availability and distribution of wildlife and fish species of importance for cultural and traditional purposes. The Agency understands that, following the implementation of mitigation, monitoring, and follow-up measures proposed by the Proponent, residual project effects to vegetation and wetlands of traditional and cultural importance to Indigenous Peoples would not result in the complete loss of vegetation communities or wetland types in the LAAs and RAA. Further, the Agency understands that residual project effects to wildlife and fish species, including effects to their habitat, health, growth, and survival, would not result in a threat to the long-term persistence or viability of wildlife and fish species in the LAAs and RAA. However, the Agency acknowledges that adverse effects to current use may still occur as a result of perceived effects to the availability and quality of resources of traditional and cultural importance.

The Agency acknowledges that project activities may affect the exercise of traditional and cultural activities within the PDAs and LAAs due to the removal of portions of Registered Traplines and increased noise and dust levels, which may result in avoidance of traplines or cultural use areas by wildlife. The Agency acknowledges that project effects associated with the removal of portions of Registered Traplines would result in unique effects to Marcel Colomb First Nation, whose members are the primary holders of these traplines. As these traplines are used for the exercise of section 35 rights, traditional practices, and for the transmission of Indigenous knowledge, history, and culture, the Agency is of the view that removal of portions of these traplines could adversely affect the ability of Marcel Colomb First Nation's members to exercise traditional and cultural practices, and their section 35 rights in these areas. The Agency is of the view that the mitigation measures identified in Chapter 6.1 (Atmospheric Environment) and Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) would adequately address project-related increases in noise and dust levels. The Agency recommends that the Proponent engage with Marcel Colomb First Nation and holders of Registered Traplines that may be affected by the Project regarding potential adverse project effects on trapping for traditional purposes, including potential project effects to access to Registered Traplines. If adverse effects associated with the Project are identified, the Agency recommends that the Proponent engage with Marcel Colomb First Nation and Registered Trapline holders to determine whether additional mitigation measures are to be implemented.

To mitigate effects to current use, the Agency recommends that the Proponent avoid the removal of plant species of importance to Indigenous Peoples for the exercise of current use activities within the PDAs. If avoidance is not possible, the Agency recommends that the Proponent provide an opportunity for Indigenous nations to conduct pre-construction site visits to harvest and relocate plants of importance for the exercise of current use activities that may be affected by the Project. The Agency also recommends that the Proponent avoid broadcast spraying herbicide within the PDAs to reduce the risk of removing or harming non-target vegetation within the PDAs and LAAs. The Agency understands that the Proponent has committed to monitoring project effects to wildlife, fish, and plant species of importance for current use. The Agency highlights the importance of involving Indigenous nations in monitoring activities, including the selection of species to be monitored. The Agency further recognizes the importance of continued engagement with Indigenous nations to share information regarding project effects to the quality and availability of resources of importance for current use and to provide an opportunity for Indigenous nations to provide feedback to the Proponent regarding project effects.

The Agency of the view that the magnitude of residual project effects on the availability and quality of resources of importance for current use would be low in magnitude and would extend to parts of the Gordon and MacLellan site LAAs, taking into account the implementation of the mitigation, monitoring, and follow-up measures proposed by the Proponent (Appendix D) and the key mitigation measures described in Section 7.4.3 of this Chapter.

Quality of Experience

The Agency is of the view that uncertainty remains regarding potential project effects to the quality of experience of Indigenous Peoples on the landscape. However, the Agency acknowledges the difficulty in predicting the long-term effects to quality of experience given the subjective nature of these effects.

The Agency recognizes that the Project may result in residual adverse effects to the quality of experience of Indigenous Peoples on the landscape and may disrupt cultural connections with lands and resources. While some residual project effects would be reversible following reclamation of the PDAs, some effects to the landscape, such as the direct removal of wetland areas, would be permanent as these areas would be reclaimed to upland habitat.

The Agency acknowledges that fish habitat offsetting and any other offsetting measures that may be required for the Project may result in adverse effects to current use activities and the quality of experience on the landscape, including potential displacement of Indigenous Peoples from areas currently used for the exercise of traditional and cultural practices. The Agency understands that the Proponent committed to engaging with Indigenous nations regarding the development and implementation of fish habitat offsetting measures for the Project, including the selection of fish habitat offsets. The Agency also understands that the Proponent will establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations regarding environmental aspects of the Project.

The Agency is of the view that the Project is not likely to cause significant adverse effects on current use, taking into account the implementation of mitigation measures proposed by the Proponent (Appendix D) and the key mitigation measures described in Section 7.4.3 of this Chapter.

7.4.2 Effects on Physical and Cultural Heritage and Sites of Significance

7.4.2.1 Proponent's Assessment of Effects

The Proponent did not identify any physical or cultural heritage sites or resources, or sites of significance to Indigenous Peoples within the Gordon site PDA or LAA, and predicted a low potential for these resources to be present based on predictive modelling. The Proponent identified 11 heritage resource sites within the MacLellan site PDA and LAA, eight of which are located within 100 metres of the Keewatin River; the remaining three sites are located in the northwest portion of the PDA and LAA. The Proponent predicted that project activities at the MacLellan site would not result in the disturbance or direct removal of these known sites, as the Project was designed to avoid known and intact physical and cultural heritage resources and sites of significance. Project activities during construction and operation, such as vegetation clearing, grading, and excavation, could result the loss or alteration of unidentified physical or cultural heritage sites or resources and sites of significance within the PDAs.

The Project may also result in adverse effects to Indigenous Peoples' physical and cultural heritage and sites of significance within the PDAs and LAAs by restricting access to these sites, including through direct removal or loss of access to trails and travel routes. Potential effects to travel routes and trails are described in Section 7.4.1.1 of this Chapter. An analysis of project effects on cultural experience and social well-being as a result of the loss and alteration of physical and cultural heritage resources and sites of significance is provided in Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report.

The Proponent predicted that, following the implementation of mitigation measures, residual project effects to Indigenous Peoples' physical and cultural heritage and sites of significance would be adverse, long-term in duration, continuous, irreversible, of low magnitude, and would occur within the LAAs.

Proponent Conclusions on Significance

The Proponent predicted that project effects to physical and cultural heritage and sites of significance would not be significant, as the Project was designed to avoid known physical and cultural heritage sites and resources and sites of significance, and given the measures proposed to mitigate effects, including establishment of a chance finds protocol and an Indigenous Environmental Advisory Committee.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant 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 Nations

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation expressed concerns regarding potential project effects to physical and cultural heritage sites, including archaeological sites, that may be present within the Gordon and MacLellan site PDAs and LAAs. Concerns were also noted that a loss of

cultural connection to lands and resources within the PDAs could occur as a result of project activities, which could result in disruptions to cultural practices and knowledge transmission to younger generations.

Peter Ballantyne Cree Nation and Mathias Colomb Cree Nation requested that a specific engagement and notification protocol in the event of chance finds be developed prior to construction and operation. Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation expressed an interest in Indigenous monitors being present during all project phases to monitor for potential chance finds. Marcel Colomb First Nation recommended that the Proponent develop measures to protect unmarked burial sites, should they be identified, during all project phases.

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

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

The Agency is of the view that the Proponent adequately characterized potential residual project effects to Indigenous Peoples' physical and cultural heritage and sites of significance. The Agency acknowledges that some physical and cultural heritage sites and resources and sites of significance to Indigenous Peoples may be permanently lost, altered, or made inaccessible as a result of the Project. The Agency understands that the Proponent proposed mitigation, monitoring, and follow-up measures to address potential effects to physical and cultural heritage sites and resources and sites of significance, including development of a Heritage and Cultural Resource Protection Plan and a Chance Finds Protocol, which will include engagement and notification protocols to be implemented in the event of chance finds. The Agency also understands that Indigenous nations will be invited to participate in an Indigenous Environmental Advisory Committee, which will support ongoing communication between the Proponent and Indigenous nations, including engagement in the event of chance finds of physical or cultural heritage sites or resources or sites of significance. The Agency highlights the importance of continued engagement with Indigenous nations to identify any unknown physical and cultural sites or resources and sites of significance to Indigenous nations and to develop mitigation measures to address potential effects.

The Agency agrees with the recommendation that the Proponent provide opportunities for Indigenous monitors to be present during construction to monitor for potential chance finds. The Agency also recommends that Indigenous nations be provided an opportunity to collect any traditional and cultural resources that can be moved and conduct ceremonies prior to construction for any sites of significance for which disturbance cannot be avoided.

The Agency is of the view that residual effects to Indigenous Peoples' physical and cultural heritage and sites of significance would be low in magnitude and would be restricted to the PDAs, taking into account the implementation of mitigation, monitoring, and follow-up measures proposed by the Proponent (Appendix D) and the key mitigation measures described in Section 7.4.3 of this Chapter. For these

reasons, the Agency is of the view that the Project is not likely to cause significant adverse effects on Indigenous Peoples' physical and cultural heritage or sites of 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 ensure that there are no significant adverse effects to the current use of lands and resources for traditional purposes by Indigenous Peoples, physical and cultural heritage, and any structure, site, or thing 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 nations.

Mitigation Measures

- An Indigenous Environmental Advisory Committee will be developed to facilitate ongoing engagement with Indigenous nations, the identification of project-related concerns and mitigation measures, and the participation of interested Indigenous nations in aspects of ongoing project activities, including the development and implementation of follow-up and monitoring plans and mitigation measures. All Indigenous nations will be provided an opportunity to participate on this Committee.
- The Proponent will provide safe, alternative means for accessing lands and resources in the Gordon and MacLellan site LAAs that are currently used for traditional or cultural purposes that are made inaccessible due to project activities, and support Indigenous initiatives for the preservation of cultural heritage. Indigenous nations will be consulted regarding the alternative means of access selected.
- The Proponent will, during all project phases, consult with Marcel Colomb First Nation and holders of Registered Traplines within the PDAs and LAAs that will be directly disturbed by the Project regarding potential adverse project effects on trapping activities for traditional purposes, including effects to access to Registered Traplines and other traditional and cultural practices that are associated with Registered Traplines. If adverse effects associated with the Project are identified, the Proponent will consult with Marcel Colomb First Nation and Registered Trapline holders to determine additional mitigation measures to be implemented.
- Indigenous nations will be consulted prior to construction to identify the location of sites of traditional or cultural importance within or near the PDAs that may be affected by the Project, and removal or disturbance of these sites will be avoided, except where required for the construction of project components. If removal or disturbance of plants of importance for the exercise of current use activities by Indigenous Peoples is required for the construction of project components, the Proponent will allow Indigenous nations to collect individual plants or seeds for transplantation or replanting.
- Indigenous nations will be provided with advanced notice of construction and operation schedules, including blasting schedules, prior to the start of construction. Updates to construction and operation schedules will provided on a yearly basis and the amount of notice to be given for blasting schedules will be determined in consultation with Indigenous nations.
- Prior to construction, the Proponent will consult with Indigenous nations to identify days of cultural significance. The Proponent will modify the blasting schedule to minimize or avoid disturbance of culturally significant activities, unless not technically or economically feasible.

- Indigenous nations will be provided an opportunity to conduct ceremonies prior to construction for any sites of significance for which disturbance cannot be avoided.
- The Proponent will use measures other than broadcast spraying herbicide for weed control within the PDAs to reduce the risk of removing non-target vegetation outside of the PDAs, including plant species of importance to Indigenous nations.
- The Proponent will consult with all Indigenous nations regarding land management and land use decisions for lands within the PDAs that are within the Proponent's care and control, including with respect to reclamation planning.

Follow-up and Monitoring

- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities, to inform response procedures in the event that previously unidentified structures, sites, or things of historical, archaeological, paleontological, or architectural significance are discovered during site excavation, including:
  - halt work at the location of the discovery;
  - delineate an area of at least 50 metres around the discovery as a no-work zone;
  - inform the Agency and Indigenous nations in writing of the discovery and allow Indigenous nations to monitor the discovery;
  - have a qualified individual conduct an assessment of the discovery;
  - consult with Indigenous nations regarding the manner in which to comply with relevant legislation and protocols; and
  - conduct archaeological sampling or construction monitoring activities on landforms in the PDAs planned for development that are of similar historic potential to the discovery site(s), prior to development in these areas.
- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities, to monitor project effects to the access to, and the availability and quality of resources of importance to Indigenous nations for current use obtained through harvesting, fishing, hunting, or trapping activities, and Indigenous Peoples' socio-economic conditions, to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures.
- Indigenous nations will be engaged:
  - regarding the list of wildlife, fish, and plant species to be included in monitoring plans to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures; and
  - when evaluating the need for the implementation of contingency measures to address project effects to plant, wildlife, and fish species of cultural and traditional importance to Indigenous nations. Indigenous nations will also be provided an opportunity to be involved in the implementation of contingency measures.
- Interested Indigenous nations will be provided opportunities to:

- monitor for the presence of physical and cultural heritage resources and sites of significance, including chance finds, during any land disturbance activities during construction, operation, and decommissioning/closure; and
- participate in follow-up and monitoring programs for all valued components of interest to Indigenous nations.

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 any structure, site, or thing of historical, archaeological, paleontological, or architectural significance can be found in the following chapters of this EA Report: Atmospheric Environment (Chapter 6.1), 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 – 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 adverse effects on the health and socio-economic conditions of Indigenous Peoples, including the physical health of individuals and communities and community well-being, through changes to the availability, quality, and access to country foods; access to resources and sites of traditional and cultural importance; surface water and groundwater quality; the atmospheric environment; and the availability and access to community services and infrastructure.

The Agency is of the view that the Project is not likely to cause significant adverse effects on Indigenous Peoples' health and socio-economic conditions after taking into account the proposed key mitigation measures. 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 and Indigenous nations.

7.5.1 Effects on Indigenous Peoples' Health

7.5.1.1 Proponent's Assessment of Effects

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, the acoustic environment, and country foods.

Atmospheric Environment

During construction, operation, and decommissioning/closure, vehicle exhaust and fugitive dust emissions from project-related transportation and operation of heavy equipment could result in the release of atmospheric contaminants, such as total suspended particulates, $PM_{2.5}$, PM_{10}, NO_2, CO, and SO_2, as discussed in Chapter 6.1 (Atmospheric Environment) of this EA Report. 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 Indigenous Peoples' health.

The Proponent predicted that Indigenous Peoples who regularly harvest and consume country foods harvested within the LAAs would be the most at risk of exposure to atmospheric contaminants; individuals who live and practice traditional, cultural, spiritual, and recreational activities within the RAA may also be adversely affected.

The Proponent predicted that, following the implementation of mitigation measures, concentrations of atmospheric contaminants would exceed acceptability benchmarks for the protection of human health established by Health Canada at two receptor locations. Exceedances of the CAAQS for NO_2 were predicted at three receptor locations. However, the Proponent predicted that guideline exceedances would occur only 1% of the time during construction and operation and would be single events separated by prolonged periods of acceptable air quality conditions. Therefore, the Proponent predicted that adverse effects to Indigenous Peoples' health would be negligible.

Water Quality

Project-related changes to surface water and groundwater quality are described in Chapter 6.2 (Groundwater) and Chapter 6.3 (Surface Water) of this EA Report, respectively. Changes to surface water and groundwater quality in the Gordon and MacLellan site LAAs could affect Indigenous Peoples' health if Indigenous Peoples source drinking water from surface waterbodies, groundwater, or other untreated sources in the LAAs. The Proponent indicated that engagement with Indigenous nations identified that Indigenous Peoples may occasionally ingest untreated water directly from waterbodies in the LAAs and RAA, but that drinking water was not generally directly obtained from waterbodies within the RAA. The exception to this is Marcel Colomb First Nation, who source their drinking water from the Hughes River; however, this water is treated prior to consumption and no project-related effects to water quality in the Hughes River were anticipated.

The Proponent predicted that concentrations of metals and other contaminants in waterbodies in the RAA would be less than federal and provincial drinking water guidelines during all project phases; therefore, even if Indigenous Peoples were to directly consume untreated water within the LAAs and RAA, the health risks would be negligible. The Proponent also predicted that potential effects to Indigenous Peoples' health as a result of exceedances of the MWQSOG limits for drinking water quality and CWQG-FAL limits for maximum total antimony, dissolved hexavalent chromium, total selenium, and total zinc concentrations in the unnamed tributary of the Keewatin River at the MacLellan site would be negligible due to the short-term duration of exceedances.

Acoustic Environment

Heavy equipment operation, blasting, and increased traffic along Provincial Road 391 may cause project-related increases in noise and vibration levels during construction and operation, as discussed in Chapter 6.1 (Atmospheric Environment) of this EA Report. This may result in adverse effects to Indigenous Peoples' health through annoyance and sensory disturbance, particularly for Marcel Colomb First Nation members who reside on the Black Sturgeon Reserve, Indigenous Peoples living in the Town of Lynn Lake, or Indigenous Peoples practicing traditional, spiritual, cultural, or recreational activities in the LAAs and RAA.

The Proponent predicted that, following the implementation of mitigation measures, effects to Indigenous Peoples' health as a result of project-related changes to noise and vibration levels would be minor, as noise and vibration levels during all project phases would comply with Health Canada's *Guidance on Evaluating Human Health Impacts in Environmental Assessment: Noise*[21] and the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual*[22].

Country Foods

Project activities during construction and operation could affect Indigenous Peoples' health through a measurable or perceived reduction in the quantity, quality, and access to country foods. Vegetation clearing, site preparation, and other construction activities could result in the loss of or changes to the abundance and distribution of vegetation, wildlife, and fish species within the LAAs used as country foods or loss or alteration of the ability of Indigenous Peoples to access country foods. Vegetation removal during construction and project-related changes to groundwater and surface water levels would also result in the direct removal of plant species of importance as country foods and dewatering of wetlands where country foods may be located. These effects were anticipated to persist during all project phases until the Gordon and MacLellan sites are decommissioned and reclaimed.

The Project may increase the risk of mortality for wildlife and fish species used as country foods by Indigenous Peoples during all project phases, including through blasting, vehicle-wildlife collisions, and interactions with contact water and tailings, which could affect the number of individuals available for harvest. Project-related increases in noise and vibration levels due to heavy equipment operation, blasting, and increased traffic along Provincial Road 391 could result in avoidance behaviour by wildlife, particularly avoidance of areas within one kilometre of the PDAs, potentially altering the distribution of wildlife of importance for traditional harvesting and their abundance at harvesting sites.

Project-related activities at the Gordon and MacLellan sites could increase the concentrations of contaminants in air, soil, water, and sediments, which could lead to an increase in contaminant concentrations in traditional vegetation, wild meat, and fish tissue that may be consumed by Indigenous Peoples. The Proponent predicted that concentrations of most contaminants in wild meat, fish, and traditional vegetation would be below the thresholds established in Health Canada's *Guidance for Evaluating Human Health Impacts in Environmental Assessments: Country Foods (2017)*[23]. While concentrations of manganese, methylmercury, and thallium in country foods were predicted to exceed the total ingestion benchmarks set by Health Canada for toddlers and adults, concentrations of these contaminants in country foods are elevated under baseline conditions. Therefore, the Proponent was of the view that exceedances of contaminant benchmarks should not be solely attributed to the Project and should not be used as the sole trigger for the implementation of mitigation measures. The Proponent predicted that project-related increases in contaminant levels in country foods may deter the harvest and consumption of country foods by Indigenous Peoples, through measurable or perceived changes in the value or quality of country foods.

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[21] Health Canada. 2016. *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise*. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
[22] Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123.
[23] Health Canada. 2017. *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods*. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

The Proponent predicted that, following the implementation of mitigation measures, the harvest of country foods by Indigenous Peoples would be able to continue with some alteration of behavior, such as changes in patterns of access or travel routes. The Proponent also predicted that project effects would not cause population-level effects to plant, wildlife, and fish species of importance as country foods within the RAA; therefore potential effects to Indigenous Peoples' health were predicted to be minor.

Proponent Conclusions

The Proponent predicted that, following the implementation of mitigation measures, residual project effects to Indigenous Peoples' health would be adverse, moderate in magnitude, irregular, long-term in duration, irreversible, and would occur within the LAAs during all project phases.

The Proponent predicted that residual project effects to Indigenous Peoples' overall health would not be significant as long-term effects to the availability of resources of traditional importance or access to lands relied upon for harvesting country foods were not predicted. Further, project-related contaminant concentrations in the environment were not predicted to exceed federal or provincial regulatory thresholds, except for contaminants whose concentrations are already elevated, or guideline exceedances would only occur for a limited period during post-closure. Project-related increases in noise and vibration levels were not predicted to affect Indigenous Peoples' health and well-being.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to Indigenous Peoples' health are described in Section 7.5.3 of this Chapter.

7.5.1.2 Views Expressed

Indigenous Nations

Marcel Colomb First Nation, the Manitoba Metis Federation, Mathias Colomb Cree Nation, and Sayisi Dene First Nation expressed concerns regarding potential effects to their Nations' health from project-related changes to noise, air quality, surface water and groundwater quality, and the experience of land users on the landscape.

The Manitoba Metis Federation, Mathias Colomb Cree Nation, Marcel Colomb First Nation, Peter Ballantyne Cree Nation, and Sayisi Dene First Nation raised concerns regarding potential project effects on the availability and quality of country foods, particularly potential contamination of country foods and other resources of importance for traditional purposes. The Manitoba Metis Federation, Mathias Colomb Cree Nation, Marcel Colomb First Nation, Peter Ballantyne Cree Nation, Chemawawin Cree Nation, and Sayisi Dene First Nation also expressed concerns that the Project may affect the perceived safety of country foods in the LAAs and RAA, which may affect their traditional land use practices. Sayisi Dene First Nation noted specific concerns regarding potential effects to boreal caribou and effects of the Project on the ability of Indigenous nations to continue harvesting boreal caribou.

Chemawawin Cree Nation, Mathias Colomb Cree Nation, Marcel Colomb First Nation, Peter Ballantyne Cree Nation,, and Sayisi Dene 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 the lack of consideration of cumulative effects in determining potential project effects and in collecting baseline data to support the assessment. As such, a more robust regional analysis of cumulative effects to Indigenous Peoples' health is required.

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

Federal Authorities

As noted in Chapter 6.1 (Atmospheric Environment) of this EA Report, Health Canada noted concerns about the level of uncertainty regarding potential project effects to human health from increased noise levels and the need for mitigation measures to limit noise, monitoring to determine the adequacy of proposed noise management and monitoring measures, and a complaints protocol to address noise-related concerns. Health Canada also recommended that the Human Health Risk Assessment be amended and additional mitigation measures be implemented, should monitoring results vary considerably from modelled predictions.

Health Canada highlighted the need for ongoing communication between the Proponent and Indigenous nations regarding current and future traditional land and water use practices and potential associated health risks.

Health Canada noted that, while they acknowledge the Proponent's view that exceedances of contaminant benchmarks for manganese, methylmercury, and thallium in country foods should not be solely attributed to the Project and should not be used as the sole trigger for the implementation of mitigation measures, a precautionary approach is recommended. This should include monitoring of all contaminants of concern in ambient air, surface water, and soil, and proactive engagement with local Indigenous nations regarding mitigation measures, given that any incremental increase in contaminant concentrations for manganese, methylmercury, and thallium would exacerbate existing exceedances.

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 recognizes that construction and operation activities may result in adverse effects to the health of Indigenous Peoples through changes to air quality, water quality, the acoustic environment, and the quantity and quality of country foods. The Agency acknowledges the importance of tangible and intangible, land-based connections for Indigenous Peoples to engage in traditional activities, which are necessary for the intergenerational transfer of culture, spirituality, and practices to safeguard the sustainability of their culture. The Agency also acknowledges that Indigenous nations may perceive risk to their physical health or safety caused by project-related environmental changes and that the measurable or perceived presence of contaminants in water and country foods may lead to changes in behaviours or practices required for carrying out traditional and cultural activities, such as hunting, fishing, trapping, and plant gathering.

The Agency is of the view that the mitigation, monitoring, and follow-up measures proposed by the Proponent to prevent or reduce project effects to air quality, water quality, the acoustic environment, vegetation and wetlands, and wildlife (Appendix D) and the key mitigation measures identified in Chapter 6.1 (Atmospheric Environment), Chapter 6.2 (Groundwater), Chapter 6.3 (Surface Water), Chapter 6.4

(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 Site of Significance) of this EA Report would also mitigate potential project effects to Indigenous Peoples' health. The Agency highlights the importance of the participation of Indigenous nations in the development and implementation of follow-up and monitoring programs to monitor project effects to Indigenous Peoples' health and safety and to ensure that Indigenous knowledge and views regarding measurable or perceived effects to Indigenous Peoples' health are adequately considered.

The Agency agrees with Health Canada's recommendation regarding the need for mitigation and monitoring measures for noise, including a complaint response protocol. The Agency is satisfied that the key mitigation measures proposed in Chapter 6.1 (Atmospheric Environment), including development of a public complaints protocol, will address potential effects to Indigenous Peoples' health due to project-related increases in noise levels.

The Agency is of the view that the Project is not likely to cause significant adverse effects on Indigenous Peoples' health, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures proposed in Section 7.5.3 of this Chapter.

7.5.2 Effects on 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 during all project phases through changes in the availability and quality of lands and resources used for harvesting (i.e. recreational, subsistence, and commercial), increased demands on community services and local infrastructure, and changes to community well-being and social cohesion[24].

Availability and Quality of Lands and Resources

Project activities may adversely affect the ability of Indigenous Peoples to practice commercial and subsistence harvesting, recreational activities, and cultural practices 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. The right of way cleared for the distribution line from the Town of Lynn Lake to the MacLellan site may also create a preferential access route for local and non-local hunters and other land users, which may increase competition for resources of importance to Indigenous Peoples.

[24] Social cohesion is defined as "the ongoing process of developing a community of shared values, shared challenges and equal opportunity within Canada, based on a sense of trust, hope, and reciprocity among all Canadians".

Project activities may also affect the experience of Indigenous Peoples practicing traditional, cultural, and recreational activities within the LAAs and RAA due to the removal of portions of Registered Traplines, fugitive dust emissions, elevated noise and vibration levels, and changes to the visual aesthetics of harvesting areas and areas used for recreation located within the PDAs and LAAs. Increased noise and dust may also result in avoidance of traplines or cultural use areas by wildlife due to sensory disturbance, which may affect harvesting activities and harvesting success.

Availability of Community Services and Infrastructure

The Project may result in an influx of outside personnel and contractors during construction and operation, which may strain community services and infrastructure and subsequently affect Indigenous Peoples' ability to access services. The capacity of existing service providers and local infrastructure to respond to and manage emergencies in Indigenous communities may also be reduced. Movement of trucks, equipment, supplies, and personnel within the LAAs and the need for air transport for project personnel located outside of the LAAs and RAA would also place additional demands on airports and local roads, increasing the rate of wear and affecting travel times and road safety for Indigenous Peoples who live and work in the LAAs. Potential personnel injuries, vehicle collisions, and other project-related incidents requiring police or emergency medical response could overwhelm the capacity of local emergency services.

The Proponent did not anticipate measurable effects to the availability of housing or accommodations in Indigenous communities or in the Town of Lynn Lake as transient project personnel and contractors would be housed in an on-site work camp. However, use of the work camp would negate any potential opportunities for indirect economic gain by Indigenous Peoples through property rentals to project personnel. The Proponent also did not anticipate additional constraints on waste disposal services or water treatment facilities in the Town of Lynn Lake or nearby communities as sewage treatment and potable water treatment would occur at on-site facilities.

Community Well-Being and Social Cohesion

Project-related changes to employment status and income in local communities may affect community well-being and social cohesion, resulting in both positive and adverse effects. The Proponent noted that the influx of project personnel and contractors, which are generally young to middle aged non-Indigenous males, could alter the demographic profile of the region and result in adverse effects to social cohesion, particularly in Indigenous communities, which are often subject to disproportionate degrees of inequity and may be less likely to realize benefits of project-related employment and income.

The Proponent predicted that Indigenous Peoples employed for the Project may experience changes in the amount of time they have available to participate in recreational, subsistence, and family-related activities, which could result in adverse effects to well-being and social cohesion. Increased income for Indigenous employees could also increase the amount of disposable income available, lower financial barriers to accessing purchased foods, and increase the reliance of Indigenous employees on purchased foods rather than traditionally harvested foods. Combined, these changes could both positively and adversely affect well-being and social cohesion. The Project may also result in benefits to Indigenous-owned businesses that may be contracted during project construction, operation, and decommissioning/closure, including increased revenues that may increase local spending and create jobs. However, this may also result in an increased demand for local labour, goods, and services, increasing operating costs for Indigenous business owners through wage inflation and employee

turnover. The Project could also decrease the capacity of businesses through local labour shortages due to increased competition for labour. Any income benefits to individuals or businesses would cease following project operation and decommissioning/closure.

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, 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 land and resource use activities within the RAA were predicted to be able to continue at or near baseline conditions during all project phases. Further, any residual effects to local services and infrastructure were predicted to be limited and economic effects were predicted to be positive.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to Indigenous Peoples' socio-economic conditions are described in Section 7.5.3 of this Chapter.

7.5.2.2 Views Expressed

Indigenous Nations

Marcel Colomb First Nation, Mathias Colomb Cree Nation, and the Manitoba Metis Federation expressed concerns that the Project may effect their socio-economic conditions, particularly for community members who rely on traditional resources for subsistence and commercial harvesting, due to the depletion of wildlife and fish as a result of increased harvesting by non-Indigenous harvesters. Mathias Colomb Cree Nation requested that a community specific or community-led socio-economic effects assessment be undertaken to understand the current economic situation of their Nation and potential project effects to their community.

Marcel Colomb First Nation noted concerns regarding potential project effects to Indigenous Peoples' well-being as a result of the expected influx of non-local project personnel. Mathias Colomb Cree Nation and Marcel Colomb First Nation expressed support for cultural sensitivity training programs for project personnel and contractors and highlighted the need for a community liaison for mentoring Indigenous community members employed for the Project.

The Manitoba Metis Federation expressed concerns regarding the ability of Métis citizens to equitably participate in the economic benefits and opportunities associated with the Project. They noted that the hiring of outside project personnel would reduce the economic opportunities available for the Town of Lynn Lake, including for Indigenous-owned businesses, as the number of local people, including Métis citizens, hired may be reduced and transient workers may not invest in the local economy. The Manitoba Metis Federation also highlighted that crime rates could increase due to the transient workforce.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation expressed interest in partnerships with the Proponent that would facilitate employment or business opportunities for community members and businesses, and requested that their members be prioritized for employment opportunities associated with the Project.

Sayisi Dene First Nation, the Manitoba Metis Federation, and Marcel Colomb First Nation raised concerns regarding the lack of community-specific baseline socio-economic data and the lack of Proponent engagement regarding project-related effects to Indigenous Peoples' socio-economic conditions. Concerns were also noted regarding the lack of capacity funding provided by the Proponent to adequately review and provide input regarding potential effects of the Project to Indigenous socio-economic conditions. Sayisi Dene First Nation also expressed concerns regarding their ability to continue to connect with the lands, waters, and resources within the LAAs and RAA due to project activities in sensitive wildlife or culturally significant areas.

The Manitoba Metis Federation and Sayisi Dene First Nation highlighted concerns regarding the lack of mitigation measures proposed by the Proponent to reduce or avoid project effects to the safety and well-being of citizens in the Town of Lynn Lake and surrounding areas due to the predicted influx of non-local project personnel.

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

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 may result in the loss of land; restrict access to lands and resources relied upon by Indigenous nations for recreation, traditional, and cultural practices; 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 also acknowledges that the expected influx of non-local project personnel may affect Indigenous Peoples' well-being. The Agency recommends that the Proponent implement a cultural sensitivity training program for all project personnel and contractors to foster understanding of the local cultural setting and cultural practices of Indigenous Peoples.

The Agency acknowledges that project activities may affect the exercise of traditional, cultural, and recreational activities within the PDAs and LAAs due to the removal of portions of Registered Traplines and measurable and perceived increases in noise and dust levels, which may result in avoidance of traplines or cultural use areas by wildlife and Indigenous Peoples. The Agency is of the view that the mitigation measures identified in Chapter 6.1 (Atmospheric Environment), 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) would adequately address these potential effects.

The Agency recognizes that the Project is located in an area currently accessed by Indigenous Peoples 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 Peoples' ability to practice subsistence and cultural activities in the PDAs and LAAs. The Agency highlights the importance of continued engagement with Indigenous nations throughout the life of the Project to provide an opportunity for Indigenous nations to raise concerns regarding adverse project effects to Indigenous Peoples' socio-economic conditions and to work with the Proponent to address these concerns. The Agency notes the importance of providing equal opportunities for Indigenous Peoples and businesses to benefit from employment opportunities and contracts associated with the Project.

The Agency understands that the Proponent will provide an opportunity for Indigenous nations to participate in an Indigenous Environmental Advisory Committee, which will facilitate the participation of interested Indigenous nations in environmental aspects of ongoing project activities, including the development and implementation of follow-up and monitoring plans. The Agency recommends that the Proponent work with the Indigenous Environmental Advisory Committee to identify and address potential project effects to Indigenous socio-economic conditions.

The Agency is of the view that the Project is not likely to cause significant adverse effects on Indigenous Peoples' socio-economic conditions, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures described in Section 7.5.3 of this Chapter.

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 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 nations.

- The Proponent will engage with Indigenous nations throughout all project phases to identify and address potential project effects to Indigenous Peoples' health and socio-economic conditions, including measurable and/or perceived effects.
- The Proponent will develop, in consultation with Indigenous nations, and implement during all project phases a cultural sensitivity training program for all project personnel and contractors.
- For any project activity that may increase noise and vibration levels in the PDAs, LAAs, or RAA, including blasting activities, the Proponent will take into account thresholds and mitigation measures for noise identified in Health Canada's *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise*.
- A follow-up program will be developed prior to construction, and in consultation with Indigenous nations and relevant authorities, regarding project-related effects to country foods, for monitoring

contaminants of potential concern, including mercury, methylmercury, selenium, arsenic and copper, in country foods species of fish, vegetation and wildlife and locations identified in consultation with Indigenous groups and within which areas where project-related contamination of these country foods may occur.

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: Atmospheric Environment (Chapter 6.1), 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), and Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance (Chapter 7.4).

7.6 Federal Lands

The Project could cause residual effects on federal lands through changes to the atmospheric environment; surface water quantity and quality; vegetation and wetlands; the current use of lands and resources for traditional purposes by Indigenous Peoples; and Indigenous socio-economic conditions. The Agency is of the view that project effects on the other valued components identified in this EA Report are unlikely to occur on federal lands, given the negligible to low magnitude and limited geographic extent of the Project's anticipated residual effects on these components. The Agency therefore excluded the other valued components from the analysis of effects to federal lands.

The Agency is of the view that the Project is not likely to cause significant adverse effects on federal lands, after taking into account the Proponent's proposed mitigation, follow-up, and monitoring measures and the proposed key mitigation measures discussed in Chapter 6.1 (Atmospheric Environment), Chapter 6.2 (Groundwater), Chapter 6.3 (Surface Water), Chapter 6.4 (Terrestrial Landscape), 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 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 and Indigenous nations.

7.6.1 Proponent's Assessment of Environmental Effects

Marcel Colomb First Nation's Black Sturgeon Reserve is located approximately 5.6 kilometres southwest of the Gordon site and 19.5 kilometres east of the MacLellan site. Project activities may affect the Black Sturgeon Reserve through changes to air quality, noise and vibration levels (i.e. sensory disturbance), surface water quantity and quality, the quality and abundance of vegetation and wetland resources on the reserve, mortality risk for species of cultural and traditional importance to Indigenous Peoples, and the availability and quality of on-reserve services and infrastructure. No other federal lands were predicted to be affected by the Project.

Changes to Air Quality

Project activities at the Gordon and MacLellan sites may affect air quality in the LAAs during all project phases. Project-related air quality modelling predicted that concentrations of air contaminants at the Black

Sturgeon Reserve would remain below Manitoba's AAQC limits during all project phases. Therefore, the Proponent predicted that residual effects on air quality and associated effects to the health of Indigenous Peoples residing on the Black Sturgeon Reserve would be minimal.

Additional details regarding potential project effects to the atmospheric environment and Indigenous Peoples' health can be found in Chapter 6.1 (Atmospheric Environment) and Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report.

Changes to Noise and Vibration Levels

The Project may cause changes to noise and vibration levels that may extend into the Gordon and MacLellan site RAA and may result in sensory disturbance. However, given that noise and vibration levels associated with the Project would comply with Health Canada's *Guidance on Evaluating Human Health Impacts in Environmental Assessment: Noise*[25] and the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual*[26], the Proponent did not anticipate that adverse effects to key receptors on the Black Sturgeon Reserve would occur.

Additional details regarding potential project effects to noise and vibration levels and effects of sensory disturbance to Indigenous Peoples' health can be found in Chapter 6.1 (Atmospheric Environment) and Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report.

Changes to Surface Water Quantity and Quality

While project activities may result in adverse effects to surface water quality and quantity, following the implementation of mitigation measures, the Proponent did not anticipate that adverse residual effects to surface water quantity and quality would extend beyond the Gordon and MacLellan site LAAs defined for the surface water assessment (Appendix B) during any project phase. Given that the Black Sturgeon Reserve is located outside of the surface water LAAs for the Gordon and MacLellan sites, changes to surface water quality or quantity on the reserve were not anticipated.

Additional details regarding potential project effects to surface water quality and quantity can be found in Chapter 6.3 (Surface Water) of this EA Report.

Changes to Vegetation and Wetlands

The Project could affect vegetation and wetlands, including wildlife habitat, within the Gordon and MacLellan site PDAs and LAAs through vegetation removal, changes to surface water and groundwater quality and quantity, and through the potential introduction and spread of weed species. The Proponent did not anticipate that direct and indirect effects to vegetation and wetlands would extend to the Black Sturgeon Reserve, given its distance from the Gordon and MacLellan site PDAs. If weed species were introduced as a result of project activities, they could potentially spread to the Black Sturgeon Reserve;

[25] Health Canada. 2016. *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise*. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
[26] Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123.

however, the Proponent anticipated that this would be unlikely, given the mitigation, follow-up, and monitoring measures proposed (Chapter 6.4 (Terrestrial Landscape) of this EA Report). Therefore, residual project effects to vegetation and wetlands on federal lands were not anticipated.

Additional details regarding potential project effects to vegetation and wetlands can be found in Chapter 6.4 (Terrestrial Landscape) of this EA Report.

Changes to Wildlife Species of Importance to Indigenous Peoples

The Project may result in adverse residual effects to wildlife, including migratory birds, species at risk, and species of cultural and traditional importance to Indigenous Peoples, that may inhabit or migrate onto the Black Sturgeon Reserve as a result of vehicle-wildlife collisions and exposure to contaminants. The Proponent anticipated that these effects would primarily occur within the Gordon and MacLellan site PDAs, with some effects extending into the LAAs. As a portion of the Black Sturgeon Reserve overlaps with the Gordon site LAA defined for the wildlife and wildlife habitat assessment (Appendix B) near Provincial Road 391, effects to wildlife that may transit through the reserve may occur. However, the Proponent predicted that, with the implementation of mitigation measures, project effects to wildlife on federal lands as a result of vehicle-wildlife collisions and exposure to contaminants would be low to moderate and negligible to low in magnitude, respectively.

Changes to Services and Infrastructure

The Project may result in increased traffic along Provincial Road 391, including light vehicle traffic and haul trucks, which may affect access to the Black Sturgeon Reserve, as Provincial Road 391 is the main access point to the reserve. The Proponent predicted that the Project would be unlikely to result in increased traffic on the Black Sturgeon Reserve; therefore, effects to roads and related infrastructure on reserve were not anticipated.

The expected influx of project personnel may result in adverse effects to the availability and quality of local services, such as police and firefighting services, on the Black Sturgeon Reserve.The Proponent predicted that, with the implementation of mitigation measures, residual effects on the capacity of local services and infrastructure on the Black Sturgeon Reserve during all project phases would be low in magnitude.

The Proponent’s proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. The mitigation, monitoring, and follow-up measures the Agency views as key for preventing significant adverse effects to federal lands are described in Section 7.6.3 of this Chapter.

7.6.2 Views Expressed

Indigenous Nations

Marcel Colomb First Nation expressed concerns regarding potential project effects to surface water and groundwater quality and quantity on the Black Sturgeon Reserve and the potential for adverse effects to on-reserve community services, infrastructure, and housing due to an influx of project personnel.

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

7.6.3 Agency Analysis and Conclusions

The Agency agrees with the Proponent's conclusions that project-related changes to surface water quality and quantity would be unlikely to result in adverse effects to federal lands. The Agency acknowledges that project-related changes to the atmospheric environment, terrestrial environment, wildlife, and the quality and availability of services and infrastructure may result in adverse effects to the Black Sturgeon Reserve. These changes may also affect the current use of lands and resources for traditional purposes and the health and socio-economic conditions of Indigenous Peoples located on the Black Sturgeon Reserve. Effects to the current use of lands and resources for traditional purposes and the health and socio-economic conditions of Indigenous Peoples are discussed in Chapters 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 Agency is satisfied that the Proponent adequately considered the potential effects of the Project on federal lands and that the proposed mitigation, follow-up, and monitoring measures proposed by the Proponent are appropriate to address potential adverse effects on federal lands.

The Agency is of the view that the Project is not likely to cause significant adverse effects on federal lands, after taking into account the proposed key mitigation measures identified below.

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

The Agency considers the key mitigation measures, monitoring, and follow-up programs discussed in Chapter 6.1 (Atmospheric Environment), Chapter 6.2 (Groundwater), Chapter 6.3 (Surface Water), Chapter 6.4 (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 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report to be necessary to ensure there are no significant adverse 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 and Indigenous nations.

8.1.1 Proponent's Assessment of Environmental Effects

The accidents and malfunctions scenarios assessed by the Proponent and that were predicted to result in residual effects to valued components, should they occur, included: Tailings Management Facility malfunction; release of untreated contact water; hazardous materials spills; ore, overburden, and mine rock storage area slope failure; and vehicle accidents. The Proponent also identified slope failure in the open pit, uncontrolled or unmanaged blasting, fires or explosions, accidents or malfunctions within the Ore Milling and Processing Plant, and malfunction or failure of the Sewage Treatment Plant or discharge pipeline as potential accident and malfunction scenarios. However, the Proponent predicted that these scenarios would be unlikely to result in residual effects to valued components, and were therefore not assessed further.

Tailings Management Facility Malfunction

Malfunction of the Tailings Management Facility could lead to the uncontrolled release of untreated tailings solids and contaminated water into the environment, resulting in soil erosion, deposition of tailings solids and sediment in low-lying areas and waterbodies, and leaching of contaminants (e.g. arsenic, copper, iron, chromium, lead) into soil, surface water, and groundwater. Potential malfunction scenarios associated with the Tailings Management Facility during construction and operation that may result in adverse environmental effects include: a failure of the tailings dam (i.e. dam breach), water management issues causing the quality and quantity of water inflow to the Tailings Management Facility to be in excess of the Facility's storage capability (i.e. dam overtopping); and seepage by way of a pre-existing defect in or accidental damage to the dam liner. A dam breach from the dam crest to the dam foundation causing a release of 23.1 cubic megametres of tailings, which is equivalent to the maximum storage capacity of the Tailings Management Facility, would be the worst-case scenario for a Tailings Management Facility malfunction.

Residual adverse effects of an uncontrolled release of untreated tailings from the Tailings Management Facility could include effects to surface water quality and quantity, sediment quality, fish and fish habitat, groundwater quality, vegetation and wetlands, and wildlife and wildlife habitat extending into the RAA.

Contaminants in untreated tailings solids and water released through a Tailings Management Facility malfunction could potentially cause long-term toxicological effects to fish and benthic invertebrate communities, including lake sturgeon (i.e. listed as “Endangered” by COSEWIC), which have been observed in the MacLellan site LAA. Sediment deposition could interfere with fish spawning by smothering eggs or by altering physical substrate characteristics (e.g. substrates are no longer suitable for spawning).

A Tailings Management Facility malfunction may also result in adverse effects to the availability of resources used for traditional purposes by Indigenous Peoples and a change to the environment that may alter the measurable and perceived cultural value of the landscape, current use activities, traditional and cultural practices, or traditional, cultural, and spiritual use areas, which may result in avoidance behaviours. Potential adverse effects to Indigenous Peoples’ health, consumptive resources, socio-economic conditions (e.g. recreation), archaeological or cultural heritage resources that may exist in the area, and impacts to rights, such as fishing and trapping, may also occur.

Release of Untreated Contact Water

Failure of the contact water collection systems and site water management ponds within the PDAs could result in the release of untreated contact water to the surrounding environment. The Proponent did not estimate the worst-case scenario volume of contact water that could be released from the contact water collection systems or site water management ponds. Worst-case scenario contact water volume estimates would be available as detailed engineering progresses and would be taken into consideration in emergency response planning.

The release of untreated contact water, which may contain high concentrations of arsenic and metals, including copper, iron, chromium, and lead, could result in adverse effects to surface water and groundwater quality in the surrounding environment and subsequent adverse effects to fish and fish habitat, vegetation and wetlands, and Indigenous Peoples. The volume and flow rate of contact water released would correlate with the physical disturbance of fish habitat through erosion and sediment deposition.

Hazardous Material Spills

Collisions or mechanical malfunctions involving construction equipment, mining equipment, or transport trucks may result in the release of hazardous materials, such as chemicals (i.e. mill reagents, hydraulic fluid, and fuel), or non-hazardous materials, such as aggregate or construction materials. The extent of spills would depend on the type of hazardous material, weather (i.e. evaporation and emulsification), and watercourse flow rates, if the spill were to occur near a watercourse.

Worst-case scenario volumes for highway spill incidents were estimated to be:

- 15,066 litres per hour for diesel spills from fuel trucks during construction and operation;
- 113.6 kilograms per hour for ammonium nitrate spills (i.e. sub-containerized for transport) during operation; and
- 50 kilograms per hour for sodium cyanide spills (i.e. shipped in briquette form) during operation.

Spills from vehicle malfunctions or transportation accidents could result in adverse effects to surface water quality and quantity, including surface water and groundwater flow patterns, fish and fish habitat, vegetation and wetlands, and Indigenous Peoples, including health, current use, and impacts to rights.

The worst case scenario for a hazardous materials spill at the project sites would likely be a spill of fuels into the Hughes River at the Gordon site or into the Keewatin River at the MacLellan site. In this scenario, released fuel would be transported downstream into connected waterbodies and riparian areas, and may be deposited or adsorbed onto sediments. This may result in localized changes in surface water quality, localized fish mortality, chronic or acute toxicity to fish populations, loss or alteration of native vegetation communities, alteration of wetlands, and contamination of vegetation, wild meat, and fish tissue that may result in adverse effects to Indigenous Peoples' health, current use, and Indigenous rights.

Ore, Overburden, and Mine Rock Storage Area Slope Failure

Ore, overburden, and mine rock would be stockpiled in separate storage areas at the Gordon (Figure 2) and MacLellan (Figure 3) sites during operation. Slumping and release of material from the ore and overburden stockpiles was anticipated to be localized to the PDAs, due to the proposed volume of material to be stored. An estimated 600,000 cubic metres of mine rock material could slump at the Gordon and MacLellan sites, which would extend between approximately 50 to 100 metres from the stockpiles and may extend beyond the boundary of the PDAs. At the Gordon site, the likely slope failure locations are the east or west ends of the mine rock storage area, and at the MacLellan site, the east or south ends of the mine rock storage area.

Slope failure or slumping of materials in the mine rock storage areas, overburden stockpiles, or ore stockpiles at either site could result in adverse effects to surface water quality, fish and fish habitat, and Indigenous Peoples, including current use and impacts to rights. Slope failure or slumping could result in ore, overburden, or mine rock breaching the boundaries of the PDAs and entering surface waterbodies within the LAAs. This could result in the release of contaminants and sediments into surface water, which could cause localized increases in turbidity and suspended sediments, acute fish mortality, and adverse effects to fish spawning habitat. Slope failure or slumping into surface waterbodies could also temporarily limit access and navigation by Indigenous Peoples to fishing, hunting, trapping, and traditional and cultural use areas.

Vehicle Accidents

Vehicle accidents could occur due to increased vehicle traffic from project activities, poor winter driving conditions, and the presence of wildlife and pedestrians near roads. Vehicle accidents may cause temporary delays to road traffic, damage to property or infrastructure, hazardous materials spills, and injury or mortality to wildlife or humans, including Indigenous Peoples. A worst-case scenario for a vehicle accident at the Gordon and MacLellan sites or along Provincial Road 391 would be one resulting in human injury or loss of life. The residual adverse effects to human health resulting from the worst-case scenario vehicle accident would be high magnitude and irreversible; however, the likelihood of injury or mortality as a result of a vehicle accident was considered to be very low, following the implementation of mitigation measures. Residual adverse effects of hazardous material spills caused by vehicle accidents are described in the *Hazardous Materials Spills* section above.

Proponent Conclusions

The Proponent's conclusions regarding the severity of residual effects of accidents or malfunctions at the Gordon and MacLellan sites, following the implementation of mitigation measures, are presented in Table 17. The Proponent considered the likelihood of occurrence and overall risks associated with the accident or malfunction scenarios assessed to be low, in recognition of contingency planning and the implementation of engineering and quality controls to mitigate these risks.

Table 17 Proponent's Characterization of Residual Effects of Accident and Malfunction Scenarios

Accident or Malfunction Scenario	Valued Component[1]	Extent	Magnitude	Timing	Reversibility
Tailings Management Facility Malfunction	Groundwater	LAA	High	Long-term	Irreversible
	Surface water	RAA	High	Long-term	Irreversible
	Fish and fish habitat	RAA	High	Medium-term	Irreversible
	Vegetation and wetlands	LAA	High	Medium- to long-term	Irreversible
	Wildlife and wildlife habitat	LAA	High	Medium- to long-term	Irreversible
	Current use	LAA	High	Medium- to long-term	Irreversible
	Human health	RAA	Low	Medium-term	Irreversible
Release of Untreated Contact Water	Groundwater	LAA	Moderate	Short-term	Reversible
	Surface water	LAA	Low	Medium-term	Reversible
	Fish and fish habitat	LAA	Moderate	Medium-term	Reversible
	Vegetation and wetlands	LAA	Moderate	Short-term	Reversible
Hazardous Materials Spill	Surface water	LAA	Moderate to High	Short-term	Reversible
	Fish and fish habitat	LAA	Moderate to High	Short-term	Reversible
	Current use	LAA	Moderate to High	Short-term	Reversible
	Human health	RAA	Moderate	Medium-term	Reversible
Ore, Overburden, and Mine Rock Storage Area Slope Failure	Surface water	LAA	Moderate	Short-term	Reversible
	Fish and fish habitat	LAA	Moderate	Short-term	Reversible
	Current use	LAA	Low	Short-term	Reversible
	Impacts to rights	LAA	Low	Short-term	Reversible
Vehicle Accidents	Wildlife and wildlife habitat	LAA	Low	Medium-term	Reversible

[1] For each accident or malfunction scenario, only the valued components predicted to experience adverse residual effects, should the accident or malfunction occur, are listed. Any valued components not listed were not predicted to experience residual adverse effects as a result of the accident or malfunction scenario.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. 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 information provided by the Proponent about measures that would be implemented to mitigate potential effects to migratory birds, species at risk, wetland functions, and wildlife health in the event of failure of Tailings Management Facility containment structures, the accidental release of cyanide to the surrounding environment, or hazardous materials spills, including explosives and fuels. Environment and Climate Change Canada recommended that the Proponent develop and implement a Cyanide Management Plan, Ammonium Nitrate Management Plan, and Fuel Management Plan that outline measures to manage and mitigate effects associated with potential spills of hazardous materials into fish-bearing waterways.

Environment and Climate Change Canada noted concerns regarding potential overtopping of contact water collection systems and recommended that the Proponent develop contingency options to manage excess contact water around the mine rock storage areas, ore and overburden stockpiles, the Tailings Management Facility, and other infrastructure where seepage and runoff may originate.

Indigenous Nations

Marcel Colomb First Nation expressed concerns regarding the potential for spills and contamination of the surrounding environment as a result of project activities, and noted a lack of confidence that the Proponent would be able to remediate spills or mitigate adverse environmental effects associated with accidents and malfunctions.

Mathias Colomb Cree Nation noted that a breach of the Tailings Management Facility dam would result in significant adverse impacts to the Nation's rights and interests, and significant adverse environmental effects on current use. Mathias Colomb Cree Nation requested that information regarding the likelihood of a potential Tailing Management Facility dam breach be provided to their Nation in advance of project construction.

Peter Ballantyne Cree Nation and Mathias Colomb Cree Nation requested that potentially affected Indigenous nations be informed of accidents and malfunctions and any consequent adverse environmental effects to valued components immediately after occurrence, and be provided with summary reports from follow-up programs.

The Manitoba Metis Federation noted that project-related accidents and malfunctions would adversely impact Métis rights, claims, and interests, and that these impacts cannot be functionally mitigated. Of particular concern was the potential for contact water volumes to exceed the design capacity of contact water collection ditches and the need for additional contingency measures to be developed to prevent this scenario from occurring. The Manitoba Metis Federation also expressed concerns that the Proponent did not adequately describe emergency response plans to respond to accident or malfunction scenarios. They requested that the Proponent continue to engage with their Nation to develop accommodation measures that would be implemented in the event that accidents and malfunctions were to occur.

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

8.1.3 Agency Analysis and Conclusions

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, 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 uncertainty exists regarding measures that would be implemented to mitigate potential effects to migratory birds, species at risk, fish and fish habitat, wetland functions, and wildlife health in the event of a failure of Tailings Management Facility containment structures, the accidental release of cyanide to the surrounding environment, or hazardous materials spills, including explosives and fuels. The Agency understands that the Proponent will develop an Emergency Response and Spill Prevention and Contingency Plan that will include measures to mitigate potential effects to the environment and Indigenous Peoples as a result of these accident and malfunction scenarios. The Agency recommends that the Proponent engage with federal authorities, including Environment and Climate Change Canada, and Indigenous nations when developing emergency response and contingency measures to address potential effects of accidents and malfunctions on the environment and Indigenous Peoples.

As suggested by Mathias Colomb Cree Nation and Peter Ballantyne Cree Nation, the Agency recommends that the Proponent provide potentially affected Indigenous nations with the results of any further assessments conducted regarding the likelihood and potential effects of accidents and malfunctions at the project sites. The Proponent should immediately notify potentially affected Indigenous nations of any accident or malfunction that occurs at the project sites, and provide reports containing the results of monitoring and follow-up programs to Indigenous nations. The Agency recognizes that some information related to the expected magnitude of accidents and malfunctions is outstanding, such as the volume of contact water that may be released under an accident or malfunction scenario. The Agency understands that the Proponent will calculate this prior to construction and it will be considered during the Proponent's contingency planning for accidents and malfunctions.

The Agency is of the view that the Project is not likely to cause significant adverse environmental effects due to accidents and malfunctions, in consideration of the mitigation, monitoring, and follow-up measures proposed by the Proponent (Appendix D) and the key mitigation measures outlined 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 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 nations.

- Prior to construction, an accident and malfunction response plan will be developed, in consultation with Indigenous nations and relevant federal and provincial authorities. The accident and malfunction response plan will be updated with new information regarding potential accident and malfunction scenarios as it becomes available, will be implemented during all phases of the Project, and will include:
  - a description of the types of accidents and malfunctions that may cause adverse environmental effects during any phase of the Project;
  - the mitigation and management measures to be implemented in response to each type of accident or malfunction to address adverse environmental effects; and
  - for each type of accident and malfunction, a description of the roles and responsibilities of the Proponent and each applicable relevant party in implementing the proposed mitigation measures and for mobilizing emergency response equipment.
- Indigenous nations will be consulted prior to construction regarding mitigation measures developed to prevent a dam breach, including details of the likelihood, modes of failure, and consequences of a dam breach or failure.
- 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 will be developed prior to construction and will include notification of affected Indigenous nations. Summary reports from monitoring and follow-up programs conducted following accident or malfunction events will be made available to Indigenous nations.

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: Atmospheric Environment (Chapter 6.1), Groundwater (Chapter 6.2), Surface Water (Chapter 6.3), and Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance (Chapter 7.4).

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 (Appendix D) and the key mitigation measures identified by the Agency 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 and Indigenous nations.

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. Potential adverse environmental effects from accidents and malfunctions of project infrastructure are discussed in Chapter 8.1 (Accidents and Malfunctions) of this EA Report.

Weather and Climate Change

Temperatures below -30°C occur in the region in which the Project is located and could result in infrastructure and equipment damage from reduced material flexibility. Extreme precipitation events (i.e. heavy rain, heavy snowfall, and ice storms) also occur in the region and could result in infrastructure and equipment damage, erosion, washouts of access roads, additional snow clearing and removal requirements, degradation of soil quality, changes to slope stability, water volumes exceeding the capacity of collection ponds or drainage and diversion systems, and failure of erosion or sedimentation control structures at the Gordon and MacLellan sites. Rapid melting of snow or ice or beaver activity may also cause flooding at the Gordon and MacLellan sites. The Proponent indicated that the likelihood of flooding at the MacLellan site was low, as flooding has not been recorded at the site for the entirety of its history as a mine site, and flood modelling indicated that the risk to mine infrastructure would be negligible if flooding were to occur due to the assimilative capacity of the Keewatin River. The Proponent did not present information regarding historic flood occurrences at the Gordon site. A flood risk assessment for Farley Lake determined a negligible risk to mine infrastructure should flooding occur, due to the assimilative capacity of the Lake.

The Proponent considered it unlikely that extreme precipitation events would cause overtopping of the Tailing Management Facility's dams, given the conservative design of the Facility. An emergency spillway would be used in an overtop situation to route increased flows to the Keewatin River. Effects to surface water quality in the Keewatin River and associated valued components, such as fish and fish habitat and Indigenous Peoples, would be similar to those associated with the release of untreated contact water, as described in Chapter 8.1 (Effects of Accidents and Malfunctions) of this EA Report. The release of untreated contact water from the Tailings Management Facility could also result in the temporary inundation of wetlands surrounding Payne Lake (i.e. connected to the Keewatin River) and lead to elevated methylmercury concentrations; however, the Proponent considered this scenario to be unlikely to occur. As water levels in Payne Lake naturally fluctuate, the inorganic mercury in the area has likely already converted to methylmercury, and the duration of inundation would be temporary, short-term, and therefore unlikely to result in appreciable increases in methylmercury concentrations.

Fog and wind conditions could cause reduced visibility, difficulties maneuvering project equipment, interference with project charter flights, and delayed shipments to and from the project sites. Extreme winds could cause an increase in structural loadings on buildings and contribute to erosion. A tornado at the Gordon or MacLellan site could result in severe damage to project infrastructure. However, the Proponent indicated that there is a low risk of tornadoes in the region; therefore, the risk of adverse effects to the Project as a result of tornadoes would be low.

Droughts occur frequently in Manitoba and drought conditions in the PDAs and LAAs could decrease ore production by reducing the amount of available surface water for withdrawal. Third party climate change

modelling conducted for the region in which the Project is located indicated trends of increasing temperatures, frequency of droughts, frequency and magnitude of extreme precipitation events, frequency and magnitude of storm events, and frequency of flooding and erosion. These changes could increase the frequency and severity of adverse effects of extreme weather events on the Project.

Beaver Activity

Beaver activity in the LAAs has the potential to affect project infrastructure, such water management structures (e.g. contact and non-contact water collection systems), during construction and operation, particularly if beaver dams reduce the capacity of water management infrastructure or impede the flow of water. Beaver activity could also trigger flooding events in the PDAs, LAAs, or RAA that could affect project infrastructure or activities.

Geologic Hazards

The probability of earthquakes, seismic activity, and landslides at the Gordon and MacLellan sites was considered low; therefore, the risk of adverse effects to the Project as a result of these events would be low. As these scenarios were considered unlikely to cause residual adverse effects, they were not assessed further.

Wind and water erosion at the project sites could cause removal or movement of topsoil, degradation of soil quality and stability, and sedimentation in areas surrounding the PDAs. Wind and water erosion were identified as high and low risk, respectively, at the Gordon and MacLellan sites.

Thawing of permafrost at the Gordon and MacLellan sites could cause subsidence, as permafrost is present within both PDAs. Potential effects of subsidence could include building damage or collapse, power outages, twisting or damaging of roads, and damage to underground infrastructure such as pipes. However, the Proponent anticipated that the potential for subsidence and terrain instability within the PDAs would be limited, as permafrost soils would be removed, where appropriate, as part of site preparation and construction activities.

Forest Fires

The Proponent considered lightning from electrical storms to be the most likely cause of forest fires in the RAA. Based on the current weather, climate, vegetation, moisture, and soil conditions present in the RAA, the potential for forest fires was considered low. Climate change models for the region indicated a potential increase in the frequency of forest fires due to predicted longer, warmer, and drier summers, and an increased frequency and magnitude of droughts, heat waves, and extreme storm events.

Potential adverse effects of forest fires could include reduced visibility due to smoke, which may potentially affect equipment maneuverability to and within the project sites, and effects to air quality, which may interact cumulatively with project effects.

Proponent Conclusions

The Proponent did not anticipate residual adverse effects on 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, beaver activity, geologic hazards, and forest fires during the life of the Project and the implementation of mitigation measures.

The Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. 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, are described in Section 8.2.3 of this Chapter.

8.2.2 Views Expressed

Federal Authorities

Environment and Climate Change Canada expressed concerns that the Proponent did not provide information on how projected climate change scenarios, including changes in the frequency and severity of extreme precipitation events, flooding, and droughts, were considered or accommodated in project design and requested that these scenarios be accounted for in the next phase of project design.

Indigenous Nations

The Manitoba Metis Federation and Sayisi Dene First Nation noted concerns that input from Indigenous nations, including traditional knowledge regarding historic flooding in the region in which the Project is located, was not incorporated into the assessment of potential effects of the environment on the Project. They requested that Indigenous nations be engaged and traditional knowledge be included in the flood modelling study for the Keewatin River in the detailed design phase.

The Manitoba Metis Federation stated that flood modelling conducted by the Proponent should address the potential risks of flooding to project infrastructure and the risks to water quality in the Keewatin River should rapid dewatering of the open pit and release of water to the Keewatin River be required. The Manitoba Metis Federation expressed concerns that periodic flooding may exceed the 1:25 year precipitation event design capacity of the contact water collection ditches and result in the release of untreated contact water to the surrounding environment, and recommended that contact water collection ditches be designed to contain a 1:100 year precipitation event.

The Manitoba Metis Federation also expressed concerns regarding potential effects of permafrost in the region to project infrastructure, particularly instability that may be caused due to permafrost thaw, and requested that their Nation be consulted regarding any decisions related to permafrost and permafrost management at the project sites.

Mathias Colomb Cree Nation and the Manitoba Metis Federation expressed concerns that the Proponent did not adequately consider potential effects of climate change on the Project and the resultant increased potential for accidents and malfunctions, such as the potential for discharge from the Tailings Management Facility due to extreme precipitation or flooding events. Mathias Colomb Cree Nation and the Manitoba Metis Federation requested that the Proponent consider climate change, including extreme climate scenarios under climate change projections, in the next phase of project design and in the development of management plans.

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

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.

The Agency understands that overtopping of the Tailings Management Facility dams would be unlikely to occur prior to closure and that the emergency spillway would only be used in emergency situations. Therefore, the Agency is of the view that potential effects to surface water quality and other valued components occurring as a result would be unlikely.

The Agency agrees with Environment and Climate Change Canada, Mathias Colomb Cree Nation, and the Manitoba Metis Federation's recommendation that the Proponent consider projections for extreme climate scenarios for the RAA, including changes in the frequency and severity of extreme precipitation events, probable maximum flood, and drought under climate change scenarios, in the next phase of project design. The Agency also agrees with the Manitoba Metis Federation and Sayisi Dene First Nation's recommendation that the Proponent consider and incorporate Indigenous knowledge regarding historic flooding in the PDAs and LAAs during the detailed design phase and engage with the Manitoba Metis Federation and any other interested Indigenous nations regarding permafrost management and monitoring.

The Agency is of the view that the project design and mitigation measures proposed by the Proponent (Appendix D) and the key mitigation measures outlined below would avoid or reduce 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 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 nations.

- Containment structures for the Tailings Management Facility will be designed and managed to meet earthquake and flood requirements as defined by the Canadian Dam Association *Dam Safety Guidelines*.
- Prior to construction, a follow-up program will be developed, in consultation with Indigenous nations and relevant authorities, to monitor permafrost following construction within the PDAs, including the type, degree, and extent of residual permafrost, for consideration in final project design.
- The Project will be designed in consideration of available Indigenous knowledge of historic flooding in the LAAs and projections of climate change-related scenarios, in consultation with Indigenous nations and relevant authorities, prior to construction.
- Use of the emergency spillway will be restricted to emergency use only during extreme precipitation events to prevent overtopping of the Tailings Management Facility dams.

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: 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*[27], which recommends that cumulative effects analyses consider environmental effects, as described in section 5 of CEAA 2012, or effects on 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, migratory birds, species at risk, and the current use of lands and resources for traditional purposes, physical and cultural heritage, and the health and socio-economic conditions of Indigenous Peoples. The Agency is of the view that effects on 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 on 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 not likely to cause significant adverse cumulative effects on the valued components identified above 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 and Indigenous nations.

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 mineral developments and explorations, residential and community developments, water and wastewater treatment facilities, recreational and traditional land use, infrastructure developments, and other land uses (Table 18; Figure 7).

[27] Government of Canada. 2018. *Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012*. Accessible at: https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/assessing-cumulative-environmental-effects-ceaa2012.html

Table 18 Projects and Physical Activities Included in the Cumulative Effects Assessment

Category of Physical Activities	Specific Project or Physical Activity
Past or Present Physical Activities that Have Been Carried Out	

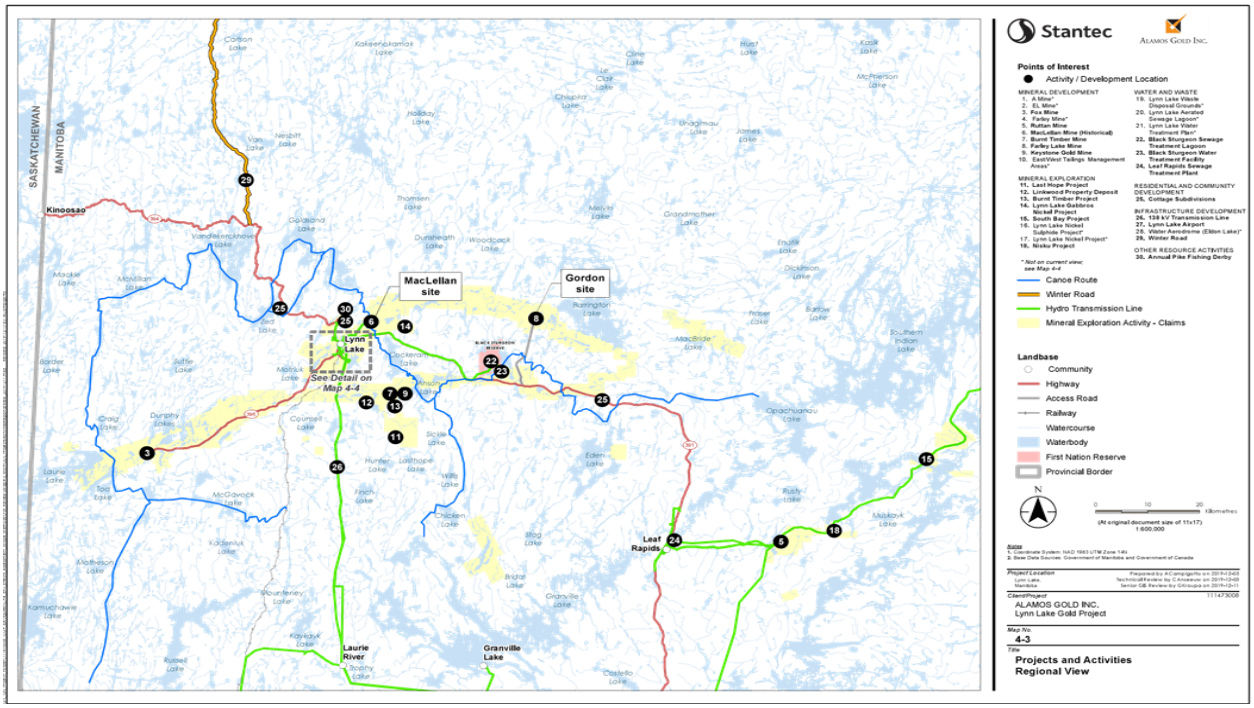
Mineral Developments	• Sherritt Gordon Mines Limited:
	  ○ "A" Mine (1953 to 2002)
	  ○ "EL" Mine (1954 to 1963)
	  ○ Fox Mine (1970 to 1985)
	  ○ Farley Mine (1972 to 2002)
	  ○ Ruttan Mine (1973 to 2002)
	  ○ East/West Tailings Management Areas (1953 to 2002)
	• SherrGold Incorporated:
	  ○ MacLellan Mine (Historical) (1986 to 1989)
	• Black Hawk Mining:
	  ○ Burnt Timber Mine (1993 to 1996)
	  ○ Farley Lake Mine (1972 to 2002)
	  ○ Keystone Gold Mine (1996 to 2000)

Mineral Exploration	• Last Hope Project (1982 to 1984; 2012) • Linkwood Property Deposit (1980s, 2012) • Burnt Timber Project (late 1980s to 1990, 2012) • Lynn Lake Gabbos Nickel Project (2003 to 2004) • South Bay Project (2015 to 2018) • Lynn Lake Nickel Project (2008 to 2010) • Nisku Project (2017)
Water and Wastewater Treatment	• Lynn Lake Waste Disposal Grounds (2010 to Present) • Lynn Lake Aerated Sewage Lagoon (1974 to Present) • Lynn Lake Water Treatment Plant (2002 to Present) • Black Sturgeon Sewage Treatment Lagoon (2004 to Present) • Black Sturgeon Water Treatment Facility (2011 to Present) • Leaf Rapids Sewage Treatment Plant (1988 to Present)
Residential and Community Developments	• Town of Lynn Lake (1950 to Present) • Town of Leaf Rapids (1974 to Present) • Community of Kinoosao (1952 to Present) • Black Sturgeon Reserve Housing Project (2018) • Cottage Subdivisions (Province of Manitoba) (1997 to Present)
Infrastructure Developments	• 138 kV Transmission Line (1994 to Present) • Lynn Lake Airport (1959 to Present) • Water Aerodrome (1954 to Present) • Winter Road (1997 to Present) • Provincial Roads (1966 to Present) • Railway (1954 to Present)
Traditional Land and Resource Use	• Various ongoing land use activities, including use of lands and waterbodies for traditional and cultural purposes
Hunting, Outfitting, Trapping, and Fishing (Lodges and Outfitters)	• Ongoing commercial trapping, fishing, hunting, sport fishing, and outfitting
Recreational Activities	• Recreational use of lands and waterways in the region, such as canoeing (Ongoing) • Annual Pike Fishing Derby (Ongoing)

Future Physical Activities that are Certain or Reasonably Foreseeable	
Mineral Exploration and Development	• Various potential future activities in the Town of Lynn Lake and surrounding area, such as nickel, copper, and cobalt exploration • These activities may result in the development of future mining projects
Traditional Land and Resource Use	• Various land use activities by the Indigenous Peoples in the region, involving use of lands and waterbodies for traditional harvesting and cultural purposes
Hunting, Outfitting, Trapping, and Fishing (Lodges and Outfitters)	• Commercial trapping, fishing, hunting, sport fishing, and outfitting
Recreational Activities	• Recreational use of lands and waterways in the region, such as canoeing • Annual Pike Fishing Derby

Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure 7 Past, Present, and Reasonably Foreseeable Projects and Physical Activities in the RAA



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *Projects and activities considered in the cumulative effects assessment include those located within the Gordon and MacLellan site Project Development Areas; north and southeast of the Town of Lynn Lake in the Local Assessment Areas; and along Highway 391, 394, and 396, within the Regional Assessment Area.*

The Proponent indicated that existing cumulative effects of the historical mines at the Gordon and MacLellan sites on the biophysical environment and Indigenous Peoples are reflected in the baseline datasets and predictive modelling for the Project and were considered in the assessment of project-specific residual effects presented in this EA Report.

Cumulative Effects on Fish and Fish Habitat

The Project's predicted residual effects to fish and fish habitat are described in Chapter 7.1 of this EA Report. These residual effects could interact cumulatively with other reasonably foreseeable projects and activities, such as mineral exploration and developments, ongoing land and resource use, and ongoing sewage treatment.

There are a number of existing sewage treatment plants and on-site sewage treatment systems (e.g. at cottage subdivisions) outside of the Gordon and MacLellan site LAAs that would continue to operate into the future. These sewage treatment facilities could produce effluent containing nutrients and metals that could affect surface water quality and fish and fish habitat. The Proponent predicted that effects of existing domestic sewage treatment plants and systems would not extend into the Gordon and MacLellan site LAAs and would therefore be unlikely to interact cumulatively with project effects on surface water quality and fish and fish habitat.

Future mineral exploration activities, and mining projects that may result from these activities, could also contribute nutrients and metals to aquatic environments downstream of the Gordon and MacLellan site LAAs and result in removal of fish habitat within the RAA. However, these 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 would likely be limited to a localized downstream area of future exploration and mining areas. These effects were considered unlikely to extend into the Gordon and MacLellan site LAAs, as known exploration activities and potential future mining projects would likely be located outside of the LAAs.

Ongoing resource use and recreational activities that may affect surface water quality and fish and fish habitat, such as canoeing, hunting, berry picking, and fishing, were predicted to be unlikely to have measurable residual effects on fish habitat, health, growth, or survival within the LAAs due to the relatively low magnitude effects and low frequency of occurrence associated with these activities.

No other reasonably foreseeable projects or activities were predicted to occur within the Gordon or MacLellan site LAAs, 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 on Migratory Birds and Species at Risk

The Project's predicted residual effects to migratory birds and species at risk are described in Chapters 7.2 and 7.3, respectively, of this EA Report. These effects could interact cumulatively with other past, present, and reasonably foreseeable projects and activities.

The Project would result in the direct loss or alteration of approximately 1,207 hectares of wildlife habitat, including for migratory birds and species at risk, in the RAA (i.e. less than 1% reduction in habitat from existing conditions). Past and present projects and activities have resulted in the direct loss or alteration

of approximately 1,596 hectares of habitat in the RAA; effects to migratory bird and species at risk habitat may also occur from reasonably foreseeable mineral exploration and development, traditional land and resource use activities, and recreational activities. As cumulative habitat losses associated with the Project in combination with past, present, and reasonably foreseeable projects and activities would be relatively small compared to the available habitat in the RAA, the Proponent predicted that cumulative losses of migratory bird and species at risk habitat would not threaten the persistence or viability of migratory birds or species at risk in the RAA. Although the Kamuchawie Management Unit for boreal caribou is below the minimum 65% threshold for undisturbed habitat, contributions of the Project to cumulative habitat losses in this range would represent a loss of only 0.01% of available habitat. Therefore, the Proponent predicted that the Project's contribution to cumulative effects to boreal caribou habitat would be minimal.

Past, present, and reasonably foreseeable projects and activities that overlap with the RAA or whose residual effects overlap with the RAA (i.e. recreation activities, the East and West Tailings Management Areas, infrastructure development, mineral exploration and development, and traditional land and resource use activities), may contribute to increased mortality risk and effects to migratory bird and species at risk health in the RAA. This may occur through increased hunting pressure by traditional and recreational hunters, increased predation as a result of the creation of linear corridors, increased vehicle collisions (i.e. along Provincial Road 391 and other roadways in the RAA), increased sensory disturbance, effects to air and water quality, and direct mortality from site preparation and construction activities. Cumulative effects to migratory bird and species at risk mortality from increased traffic along Provincial Road 391 were predicted to be low, following the implementation of mitigation measures. Effects to mortality risk associated with increased hunting pressure were predicted to be minor as the number of resource users or recreational hunters was not anticipated to change measurably in the foreseeable future; however, the locations in the RAA where resource use occurs may shift in response to changes in access.

The Proponent predicted that cumulative changes in migratory bird and species at risk habitat, mortality risk, and health would not measurably affect the abundance or sustainability of migratory bird and species at risk populations in the RAA. Residual cumulative effects to migratory birds and species at risk were predicted to be adverse, low in magnitude, long-term, continuous, reversible, and would occur within the RAA, following the implementation of mitigation measures.

Cumulative Effects on the Current Use of Lands and Resources for Traditional Purposes and Physical and Cultural Heritage

The Project's potential residual effects to the current use of lands and resources for traditional purposes by Indigenous Peoples and physical and cultural heritage are described in Chapter 7.4 of this EA Report. These residual effects could interact cumulatively with other past, present, and reasonably foreseeable projects and physical activities, including those involving land clearing, construction of infrastructure, waste management, and the use of heavy equipment.

Residual effects of the Project in combination with past, present, and reasonably foreseeable projects and activities in the RAA may affect the ability of Indigenous Peoples to practice traditional use activities and use of physical and cultural heritage sites by altering the availability, quality, or access to traditional,

cultural, or spiritual use sites or resources. Cumulative effects to wildlife and plant species of importance for current use, including from changes to wildlife mortality risk, sensory disturbance, and vegetation removal, could reduce the availability of resources, destroy important resource harvesting areas, and limit the amount of undisturbed resource harvesting areas available. Cumulative effects to important travel routes and trails may limit access to traditionally harvested resources or spiritual or cultural use sites, which may limit available choices of access routes and potentially increase travel distances and harvesting effort required.

Effects of the Project on noise and vibration levels, air quality, and light levels could interact cumulatively with other past, present, and reasonably foreseeable projects and activities to disrupt the experience of land and resource users on the landscape, further limiting the availability of locations to undertake traditional and cultural practices. The Proponent predicted that project effects to current use and physical and cultural heritage sites within the LAAs would be limited, thereby limiting the Project's contribution to potential cumulative effects, following the implementation of mitigation measures and based on currently available data and Indigenous knowledge.

The Proponent predicted that cumulative effects to the availability of lands and resources used for traditional purposes, access to resources and sites of importance, and effects to physical and cultural heritage sites would be adverse, low in magnitude, medium to long-term in duration, continuous, reversible, and would occur within the RAA, following the implementation of mitigation measures.

Cumulative Effects on Indigenous Health and Socio-economic Conditions

Indigenous Peoples' Health Conditions

The Project's potential residual effects that could affect Indigenous Peoples' health conditions are described in Chapter 7.5 of this EA Report. Past, present, and reasonably foreseeable projects and activities that may contribute to cumulative effects include those involving land clearing, construction of infrastructure, increased human presence on the landscape, and the use of heavy equipment. Cumulative interactions of these projects and activities with the Project's residual effects may result in changes to the availability of harvested species, access to country food harvesting areas, and the perceived value or quality of country foods. Cumulative effects on surface water quality were not anticipated as residual project effects would not overlap spatially with the effects of other reasonably foreseeable projects and activities; however, residual effects of past projects and physical activities to surface water quality in the PDAs and LAAs could interact cumulatively with project effects.

The Proponent anticipated that, despite predicted cumulative effects, the harvest of country foods in the LAAs and RAA would be able to continue with minor alterations to behavior, such as changes in patterns of access or travel routes. Therefore, cumulative effects were expected to be adverse, of low magnitude, long-term in duration, reversible, irregularly occurring, and would extend into the LAAs. Project contributions to cumulative effects on the availability of and access to country foods were anticipated to cease following decommissioning/closure.

Indigenous Peoples' Socio-economic Conditions

The Project's residual effects to Indigenous Peoples' socio-economic conditions are described in Chapter 7.5 of this EA Report. These effects may interact cumulatively with the effects of past, present, and reasonably foreseeable projects and activities to result in adverse cumulative effects to Indigenous Peoples' socio-economic conditions in the RAA.

Future mineral exploration and development projects may interact cumulatively with the Project's residual effects by affecting commercial harvesting at Registered Traplines through vegetation clearing, changes in access, sensory disturbance, and changes to wildlife habitat. The use of Provincial Road 391 by future mineral exploration and development projects may also interact cumulatively with the residual effects of the Project and result in increased traffic volumes and degradation of infrastructure. However, the Proponent expected that current and reasonably foreseeable projects and physical activities would be required to apply standard mitigation and management measures specific to the project type and in line with the current federal and provincial regulations at the time, to avoid or reduce effects on local infrastructure and services. Reasonably foreseeable projects and activities may benefit Indigenous Peoples by increasing the capacity of local services and infrastructure and due to potential community services and infrastructure improvements, such as power and transportation infrastructure upgrades. The Project was not expected to compete with other present and reasonably foreseeable projects and activities for services and infrastructure, as power, water, and wastewater treatment services for the Project would be provided on site and new infrastructure would be created to support project needs.

The labour force required for reasonably foreseeable projects and activities, such as mineral exploration and development projects, were expected to be sourced locally; therefore future projects and activities may benefit Indigenous Peoples and local businesses in the RAA by generating employment and income. However, if future mineral exploration and development projects occur within the RAA and transition into completion or decommissioning/closure at the same time as the Project, it is possible that cumulative losses of direct employment and contributions to the local economy of the RAA could occur.

The Proponent was of the view that the Project's contributions to cumulative effects to Indigenous Peoples' socio-economic conditions would be adequately mitigated through the implementation of mitigation measures. Overall, cumulative effects to Indigenous Peoples' socio-economic conditions were anticipated to be both adverse and positive, moderate in magnitude, long-term in duration, continuous, reversible, and would occur within the RAA.

Proponent Conclusions

The Proponent predicted that, following the implementation of mitigation measures, contributions of the Project to cumulative effects on fish and fish habitat, migratory birds, species at risk, 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 Proponent's proposed mitigation, follow-up, and monitoring measures are described in Appendix D of this EA Report. 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

Indigenous Nations

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted that their traditional territories have been severely affected by other past and present projects and activities in the region, including electrical generation projects, forestry, and other developments. Any further effects associated with the Project would interact cumulatively with these effects. These Nations also noted that preferred harvesting locations were not taken into consideration in the cumulative effects assessment.

Cumulative Effects on Fish and Fish Habitat

The Manitoba Metis Federation expressed concerns regarding the Project's contributions to cumulative lake level drawdown in Gordon Lake and associated effects to fish and fish habitat, noting that alterations to drainage patterns associated with historical mining operations have resulted in lower water levels in Gordon Lake than were present prior to construction of these past projects.

Sayisi Dene First Nation, Peter Ballantyne Cree Nation, Marcel Colomb First Nation, O-Pipon-Na-Piwin Cree Nation, and the Manitoba Metis Federation expressed concerns that any effluent discharges from the Project would act cumulatively with other past projects and activities (i.e. the East Tailings Management Area and the historical mines at the Gordon and MacLellan sites) to adversely affect surface water quality in the LAAs and RAA. Of particular concern to the Manitoba Metis Federation was potential effects to water quality in the Lynn River, which is an area of importance for Métis land users. Sayisi Dene First Nation and Peter Ballantyne Cree Nation recommended that the Proponent consider remediating historical sources of surface water contaminants to aid in reducing contributions of the Project to cumulative surface water quality degradation.

Cumulative Effects on Migratory Birds and Species at Risk

Chemawawin Cree Nation, Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation, and Sayisi Dene First Nation stated that boreal caribou are an important species to their Nations for the continued exercise of their hunting rights, autonomy, and governance rights. Sayisi Dene First Nation noted that 67% of boreal caribou habitat within the Manitoba North Range is undisturbed, which is close to the minimum desired target of 65% undisturbed habitat noted in the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal Population*; any further cumulative habitat losses are of concern to the Nation. Chemawawin Cree Nation, Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation, and Sayisi Dene First Nation noted the need for additional information regarding how reasonably foreseeable projects and activities in the region may contribute to habitat losses in the Kamuchawie Management Unit and how this may affect the ongoing viability and sustainability of boreal caribou populations.

Cumulative Effects on Current Use of Lands and Resources for Traditional Purposes and Physical and Cultural Heritage

Mathias Colomb Cree Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, the Manitoba Metis Federation, and Marcel Colomb First Nation noted that the Project is located within a region with known contemporary and historical use by Indigenous nations for fishing, hunting, trapping, and cultural purposes. Cumulative effects of past and present projects and activities have acted to reduce the availability of lands and resources of importance for current use; reasonably foreseeable projects and activities may further affect the availability of lands and resources within the Nations' traditional territories, reducing the total available area for Indigenous nations to exercise their rights and maintain their connection to the land.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted that there are likely many cultural heritage sites and values within the RAA that have not been identified by the Proponent; concerns were noted that, as the region becomes more developed, including from the Project and other future projects and physical activities, these sites could be damaged or lost.

Cumulative Effects on Indigenous Peoples' Health and Socio-economic Conditions

Mathias Colomb Cree Nation, Marcel Colomb First Nation, the Manitoba Metis Federation, Sayisi Dene First Nation, Chemawawin Cree Nation, and Peter Ballantyne Cree Nation expressed concerns regarding potential cumulative effects of regional developments on their community members' health, including from cumulative effects on drinking water, air quality, and the quality and quantity of country foods. Concerns were also noted that perceived regional contamination of country foods could have an effect on harvesting practices in the region, even if contaminant levels are within federal and provincial regulatory guidelines. Therefore, consideration must be given to potential cumulative effects of perceived contamination on the exercise of traditional practices, section 35 rights, and Indigenous Peoples' health conditions throughout the region and how these effects will be mitigated.

Mathias Colomb Cree Nation, Sayisi Dene First Nation, and Chemawawin Cree Nation requested that a regional assessment of effects to Indigenous Peoples' health conditions and healthcare be completed to assess cumulative effects at a regional scale. Mathias Colomb Cree Nation also noted the importance of assessing cumulative socio-economic effects on Indigenous Peoples who rely on traditional resources for both subsistence and commercial resources, as even incremental effects of past, present, and reasonably foreseeable projects and activities can result in significant effects.

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

Federal Authorities

Cumulative Effects on Fish and Fish Habitat

Fisheries and Oceans Canada noted concerns that the Proponent did not adequately consider potential cumulative effects to waterbodies within the PDAs and LAAs when establishing water withdrawal limits for the Project. If cumulative water withdrawals are not considered in establishing withdrawal limits, minimum flow rates protective of fish and aquatic biota may not be maintained.

Cumulative Effects on Indigenous Peoples' Health and Socio-economic Conditions

Health Canada noted that there is uncertainty regarding whether project effects on air quality will extend to the Town of Lynn Lake or Indigenous receptors just beyond the RAA. As potential project effects to receptors outside of the RAA were not considered in the assessment of effects to Indigenous Peoples' health conditions, potential cumulative effects of the Project, in combination with past, present, and reasonably foreseeable projects and activities, may have been underestimated.

8.3.3 Agency Analysis and Conclusions

The Agency is of the view that the Proponent adequately characterized potential cumulative effects of the Project in combination with other past, present, and reasonably foreseeable projects and activities. The Agency is of the view that, after taking into consideration the effects of the Project and its interactions with the effects of past, present, and reasonably foreseeable projects and activities identified in Table 18, the Project is not likely to cause significant adverse cumulative environmental effects on fish and fish habitat, migratory birds, species at risk, and Indigenous Peoples.

Fish and Fish Habitat

The Agency acknowledges that there would be overlap between project effects and effects of past and present projects and activities to fish and fish habitat. However, the Agency is of the view that the Proponent's proposed mitigation measures, monitoring, and follow-up programs (Appendix D) and the key mitigation measures identified in Chapter 7.1 (Fish and Fish Habitat) of this EA Report will adequately minimize the Project's contributions to cumulative effects on fish and fish habitat. Additional measures to mitigate and offset effects to fish and fish habitat will be developed as part of the *Fisheries Act* authorization process for the Project. The Agency understands that, as project effects to fish and fish habitat were not predicted to extend beyond the LAAs and effects of reasonably foreseeable projects and activities would not extend into the LAAs, 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.

Migratory Birds and Species at Risk

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. The Agency is of the view that, with the implementation of the Proponent's proposed mitigation measures, monitoring, and follow-up programs (Appendix D) and 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 on migratory birds and species at risk will be adequately mitigated, and cumulative effects to migratory birds and species at risk would not threaten the viability of migratory bird and species at risk populations in the RAA.

Current Use of Lands and Resources for Traditional Purposes and Physical and Cultural Heritage

The Agency recognizes that the Project's residual effects on the ability of Indigenous Peoples to access resources and sites of importance, the quality and availability of resources of importance, and the loss or alteration of sites of importance for traditional and cultural practices 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 and physical and cultural heritage. The Agency is of the view that, with the implementation of the Proponent's proposed mitigation measures, monitoring, and follow-up programs (Appendix D) 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, including the establishment of an Indigenous Environmental Advisory Committee, the Project's contributions to cumulative effects on current use and physical and cultural heritage will be appropriately

mitigated and cumulative effects would not threaten the ability of Indigenous Peoples to practice traditional and cultural use activities within the RAA.

Indigenous Health and Socio-economic Conditions

The Agency acknowledges that past, present, and reasonably foreseeable projects and activities may interact cumulatively with the Project's residual effects to cause adverse effects to Indigenous Peoples' health within the RAA through changes to the availability of country foods, changes to noise and vibration levels, or through exposure to contaminants in the atmospheric environment and surface water. The Agency also acknowledges that the Project may contribute to cumulative effects to Indigenous Peoples' socio-economic conditions, including increased demands on the local labour market, infrastructure, and services. The Agency is of the view that, with the implementation of the Proponent's proposed mitigation measures, monitoring, and follow-up programs (Appendix D) and the key mitigation measures identified in Chapter 6.1 (Atmospheric Environment), Chapter 6.3 (Surface Water), 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 on 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; migratory birds; species at risk; the current use of lands and resources for traditional purposes and the physical and cultural heritage of Indigenous Peoples; and the health and socio-economic conditions of Indigenous Peoples: 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 Indigenous Peoples – Health and Socio-economic Conditions (Chapter 7.5).

9 Impacts to Aboriginal or Treaty Rights

The federal government has a legal duty to consult and, where appropriate, accommodate Indigenous nations, including First Nations and Métis Peoples, when the Crown contemplatesconduct 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 nations 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 nations 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. Appendices C and E summarize all issues of concern communicated to the Agency by Indigenous nations throughout the environmental assessment, up to the date this EA Report was issued.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, the Manitoba Metis Federation, and Chemawawin Cree Nation indicated that traditional knowledge, cultural aspects (e.g. beliefs and customs), and governance should be included in the assessment. The Agency acknowledges that each Indigenous nation is unique in its exercise of rights and that impacts will vary by Indigenous nation. For the purposes of this EA Report, a high-level summary of impacts is presented; and where applicable, impacts to a specific Indigenous nation were noted.

9.1 Existing Aboriginal and Treaty Rights

The Project is located within Treaty 5 and the national homeland of the Red River Métis citizens represented by the Manitoba Metis Federation and Métis Nation of Saskatchewan. Treaty 5 is an historic treaty spanning much of what is currently central and northern Manitoba and defines the right to hunt, fish, and trap throughout the treaty territory. First Nation signatories to Treaty 6 and 10 also assert rights in the Gordon and MacLellan site PDAs. Treaty 6 and 10 are historic treaties located adjacent to the Treaty 5 territory and include much of central Alberta and Saskatchewan and northern Saskatchewan, respectively. Treaty 6 and 10 define the right to hunt and fish, and to hunt, fish, and trap, respectively, throughout the treaty territory. All treaties in Manitoba exclude lands taken up for settlement or other purposes; First Nations cannot exercise treaty rights in these areas. Other uses of the lands and resources within the Gordon and MacLellan site LAAs and RAA, under section 35 rights, include plant harvesting and the use of lands and resources for cultural purposes.

Treaty rights were modified through the *Natural Resources Transfer Act* (NRTA), which forms part of the *Constitution Act, 1930*. The NRTA 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. Treaty 5, 6, and 10 First Nations have and continue to practice rights across the province, not limited to their treaty area.

Métis locals near the Gordon and MacLellan site PDAs in Manitoba are represented by the Manitoba Metis Federation for consultation purposes and assert section 35 rights, including hunting, fishing, and trapping rights, throughout the province of Manitoba, including the Gordon and MacLellan site PDAs. The proximity of the Métis Nation of Saskatchewan, Northern Region 1 and Eastern Region 1 to the project sites triggered consultation with Métis citizens represented by the Métis Nation of Saskatchewan.

Overall, the Agency identified 13 Indigenous nations for consultation on the Project. These Indigenous nations include:

- Treaty 5 First Nations:
  - Chemawawin Cree Nation (Manitoba)
  - Nisichawayasihk Cree Nation (Manitoba)
  - Sayisi Dene First Nation (Manitoba)
  - O-Pipon-Na-Piwin Cree Nation (Manitoba)
- Treaty 6 First Nations:
  - Marcel Colomb First Nation (Manitoba)
  - Mathias Colomb Cree Nation (Manitoba)
  - Peter Ballantyne Cree Nation (Manitoba)
- Treaty 10 First Nations:
  - Barren Lands First Nation (Manitoba)
  - Hatchet Lake First Nation (Saskatchewan)
  - Northlands Denesuline First Nation (Manitoba)
- Métis Nations:
  - Manitoba Metis Federation
  - Métis Nation – Saskatchewan, Eastern Region 1
  - Métis Nation – Saskatchewan, Northern Region 1

In March 2021 and May 2021, respectively, Nisichawayasihk Cree Nation and O-Pipon-Na-Piwin Cree Nation indicated that they were not interested in participating in the environmental assessment for the Project. The Agency continues to inform Nisichawayasihk Cree Nation and O-Pipon-Na-Piwin Cree Nation of key updates and opportunities to participate in the environmental assessment process; any concerns and input received from these Nations have been incorporated into this EA Report.

9.2 Potential Adverse Impacts of the Project on Section 35 Rights

9.2.1 Hunting, Trapping, and Fishing Rights

The Project overlaps with the traditional territories of all four Treaty 5 First Nations, all three Treaty 6 First Nations, one Treaty 10 First Nation, and the Métis Nations who hold and practice their section 35 rights in the Gordon and MacLellan site PDAs, LAAs, and/or RAA. While the Project does not directly overlap with the traditional territories of some First Nations and Métis Nations included on the Agency's consultation list, these Nations have been included at their request or due to the potential for effects to extend beyond the Gordon and MacLellan site PDAs.

The assessment of project impacts to 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 considers pre-existing impacts, cultural factors[28], and socio-economic conditions that support the exercise of each right. Governance rights were also identified by Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation as being incidental to the exercise of rights.

Hunting and Trapping

Physical and Biological Conditions Supporting the Exercise of Rights

The Project's residual and cumulative effects to the physical and biological conditions that support the right to hunt and trap include:

- loss or alteration of wildlife habitat during all project phases due to site preparation, water management activities, open pit mining, the storage and stockpiling of ore, overburden, and mine rock, and tailings management;
- increased wildlife mortality risk during all project phases due to site preparation activities, project-related increases in vehicle traffic, the presence of site infrastructure, water management activities, and tailings management;
- changes to wildlife health during construction and operation due to atmospheric emissions, effluent discharges, the presence of solid and liquid wastes on the PDAs, water management activities, and tailings management; and
- increased harvesting pressure on traditional resources throughout the LAAs and RAA due to an influx of project personnel and contractors that may recreationally harvest wildlife in the region.

The Proponent concluded that both residual and cumulative effects of the Project to migratory birds, species at risk, and wildlife species of importance to Indigenous Peoples would be low, as the amount of habitat affected by the Project would be small in comparison to the availability of habitat within the RAA. Further, the Proponent did not expect that the long-term persistence or viability of wildlife species and populations in the RAA would be threatened as a result of the Project.

The Agency acknowledges that the availability and health of preferred species, such as boreal caribou, moose, marten, waterfowl, upland game birds, and other species of importance, in the Gordon and MacLellan site PDAs, LAAs, and RAA, are important factors that support the exercise of rights. Mathias Colomb Cree Nation, the Manitoba Metis Federation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, and Marcel Colomb First Nation noted that pre-existing effects to boreal caribou from industrial

[28] Customs, practices, values and traditions that are connected to and support the right.

development within their traditional territories, which are causing a decline in population numbers, have affected their ability to practice their section 35 rights.

Mathias Colomb Cree Nation, the Manitoba Metis Federation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, and Marcel Colomb First Nation also noted that the Project could impact hunting and trapping rights through measurable or perceived effects on the quality and safety of traditional resources. Specific concerns were noted regarding potential project-related increases in methylmercury and arsenic concentrations in surface water and associated effects to wildlife resources. Adverse effects to wildlife of importance for the exercise of hunting and trapping rights could also occur due to the release of effluents into waterbodies within the PDAs and LAAs and air pollutant emissions through dust and contaminant deposition. This may lead to avoidance of resources or areas where rights are practiced due to measurable or perceived contamination and health risks.

Concerns were also expressed by Mathias Colomb Cree Nation, the Manitoba Metis Federation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, and Marcel Colomb First Nation regarding the uncertainty of reclamation success in returning the PDAs to pre-disturbance conditions, including for upland and wetland wildlife habitat areas. Of particular concern was the anticipated lag time between when reclamation of these areas would begin and when these areas would be sufficiently recovered to allow the resumption of harvesting activities.

Peter Ballantyne Cree Nation, O-Pipon-Na-Piwin Cree Nation, the Manitoba Metis Federation, Sayisi Dene First Nation, Marcel Colomb First Nation, and Chemawawin Cree Nation expressed concerns regarding the lack of information provided by the Proponent about the Indigenous Environmental Advisory Committee, including how it will be established, structured, and governed.

The Agency is of the view that measurable effects to the quality of wildlife resources of importance for the exercise of hunting and trapping rights can be appropriately mitigated. However, the Agency acknowledges that perceived effects to the quality of wildlife resources may persist and result in avoidance behaviour that could adversely impact hunting and trapping rights.

The Agency acknowledges that there are outstanding concerns from Indigenous nations regarding the uncertainty of reclamation success and the Proponent’s reliance on this mitigation measure to address habitat loss for species of importance for the exercise of section 35 rights. The Agency also acknowledges that, for some Indigenous nations, impacts to rights will be more severe if the project sites cannot be reclaimed to pre-disturbance conditions. The Agency is of the view that ongoing monitoring and follow-up programs related to reclamation, wildlife, vegetation, and wetlands must include the participation of Indigenous nations in order to address any uncertainties. The Agency understands that the Proponent would invite Indigenous nations to participate in an Indigenous Environmental Advisory Committee, which would facilitate the participation of interested Indigenous nations in environmental aspects of ongoing project activities, including the development and implementation of mitigation, monitoring, and follow-up measures. The Indigenous Environmental Advisory Committee would also provide a forum for ongoing engagement with Indigenous nations to determine the effectiveness of mitigation measures for addressing impacts to section 35 rights throughout the life of the Project.

The Agency is of the view that the severity of project impacts to the right to hunt and trap, including the biological conditions that support these rights, would be low and local in extent, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report[29].

Right of Access

Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation identified areas of importance for the exercise of section 35 rights within the Gordon and MacLellan site PDAs, LAAs, and RAA. Project construction and operation will restrict access to the PDAs by Indigenous Peoples until mine closure, when the sites are reclaimed. Access restrictions within the PDAs could affect the right of access by affecting the availability of lands for the exercise of rights. Hunting, trapping, plant harvesting, and fishing would be affected, as would opportunities to undertake other cultural practices, such as cultural transmission activities and ceremonies. Mathias Colomb Cree Nation and Marcel Colomb First Nation described using the Gordon and MacLellan site PDAs for practices integral for harvesting, maintaining cultural continuity, intergenerational knowledge transfer, language, and a connection to the land.

Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted that access to sites within the Gordon and MacLellan site LAAs using trails and travel routes that overlap with the PDAs is important for supporting the exercise of rights. Project construction and operation would restrict access to or directly disturb pre-existing access routes and trails within the PDAs used to access preferred use areas by Indigenous Peoples. Sayisi Dene First Nation also identified a fishing area in close proximity to the MacLellan site PDA that may be affected by the Project.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted concerns regarding potential impacts to section 35 rights as a result of fish habitat offsetting. The displacement of Indigenous land users from areas currently accessed for the exercise of rights to allow the establishment of fish habitat offsets, or the need for Indigenous nations to travel to new fishing locations (i.e. offsets) to practice their rights, could have an adverse impact on the ability of Indigenous Peoples to exercise rights. These Indigenous nations also noted that rights cannot be practiced in any location, but that conditions appropriate for the exercise of rights need to be in place. Impacts to rights may be more severe than anticipated by the Proponent if fish habitat offsets are located in areas where rights cannot be meaningfully practiced.

The Agency acknowledges that the Project may result in adverse impacts to the right of access, including important trails and travel routes that may be directly disturbed as a result of construction and operation activities. The Agency understands that Indigenous nations will be invited to participate in an Indigenous

[29] Key mitigation measures include those identified in Chapter 6.1 (Atmospheric Environment), Chapter 6.2 (Groundwater), Chapter 6.3 (Surface Water), Chapter 6.4 (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), and Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report.

Environmental Advisory Committee, which will support ongoing communication between the Proponent and Indigenous nations, including ongoing engagement and resolution of concerns regarding access to resources and sites of importance. The Agency highlights the importance of continued engagement with Indigenous nations to identify and address project impacts to the right of access.

The Agency is of the view that the severity of project impacts to the right of access would be low and local in extent, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report.

Governance Rights

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted that governance over resources within their traditional territories is incidental to the exercise of rights. Governance over environmental stewardship, such as the protection and preservation of boreal caribou populations and habitat, is important for ensuring that the exercise of section 35 rights is able to continue.

The Agency is of the view that participation of Indigenous nations in land use and land management decisions, including reclamation planning, for lands within the Gordon and MacLellan site PDAs that are within the Proponent's care and control is an important mitigation measure for supporting resource governance.

The Agency is of the view that the severity of project impacts to governance rights would be low to moderate and reversible following reclamation of the Gordon and MacLellan site PDAs, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report.

Fishing Rights

Physical and Biological Conditions Supporting the Exercise of Rights

Potential impacts on the right to fish could occur as a result of residual and cumulative project effects to fish and fish habitat, including:

- fish habitat loss and alteration;
- effects to fish health, growth, and survival; and
- increased fishing pressure in waterbodies within the LAAs and RAA due to an influx of project personnel that may recreationally harvest fish in the region.

The Proponent concluded that both residual and cumulative effects of the Project to fish and fish habitat would be low, as the amount of fish habitat affected would be small compared to the availability of fish habitat within the RAA. Further, the Proponent did not expect that the long-term persistence or viability of fish species and populations in the RAA would be threatened as a result of the Project.

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, and the Manitoba Metis Federation noted concerns that project effects to fish and fish habitat could affect fish at the population level and impact the Nations' ability to meaningfully practice their fishing rights. Concerns were also expressed regarding fish habitat offsets and the need to consider the accessibility of fish habitat offsets by Indigenous Peoples in selecting the location of offsets (see the *Right of Access* section of this Chapter for further details).

Mathias Colomb Cree Nation, the Manitoba Metis Federation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, and Marcel Colomb First Nation also noted that the Project could impact fishing rights through measurable or perceived effects on the quality and safety of fish. Specific concerns were noted regarding potential project-related increases in methylmercury and arsenic concentrations in surface water and effects to surface water quality from project-related effluent releases into fish-bearing waterbodies, and associated effects to fish. This may lead to avoidance of resources or areas where rights are practiced due to measurable or perceived contamination and health risks.

While the Agency is of the view that measurable effects to the quality of fish resources of importance for the exercise of fishing rights can be appropriately mitigated, the Agency acknowledges that perceived effects to the quality of fish may persist and result in avoidance behaviour that could adversely impact fishing rights. The Agency highlights the importance of engagement with Indigenous nations regarding the development and implementation of mitigation measures, monitoring, and follow-up programs and sharing of monitoring results with Indigenous nations to create an open dialogue regarding the measurable or perceived safety risk that may be associated with the consumption of traditional resources. Establishment of an Indigenous Environmental Advisory Committee would also provide a forum for this information sharing and for the communication and potential resolution of the concerns of Indigenous nations related to impacts to rights.

The Agency is of the view that the severity of project impacts to the right to fish would be low to moderate and local in extent, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report. The Agency is of the view that the severity of pre-existing and cumulative impacts to fishing rights is low.

9.2.2 Right to Cultural Practice

As supported under section 35 of the *Constitution Act, 1982,* Aboriginal rights include a range of cultural, social, political, and economic rights. The Agency acknowledges that cultural practices are important for safeguarding cultural identity and language, maintaining spiritual connections to the land and sense of place, promoting community well-being, and transferring knowledge.

Overall, the Agency is of the view that the severity of project impacts to the right to cultural practice would be low to moderate and would vary by Indigenous nation, after taking into account the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report. Project impacts to hunting, trapping, and fishing rights are discussed in Section 9.2.1 of this Chapter.

Plant Harvesting

Potential impacts to plant harvesting, which is incidental to the right of cultural practice, could occur as a result of project effects to vegetation and wetlands, including through:

- direct removal of vegetation, which may result in changes in landscape, community, and plant species diversity in the PDAs and LAAs;
- project-related increases in contaminant concentrations in the surrounding environment, which may affect the quality of vegetation;
- the introduction and spread of weed plant species; and
- direct or indirect loss or alteration of wetlands areas and functions.

The Proponent predicted that the Project's residual and cumulative effects to vegetation and wetlands would not threaten the long-term persistence or viability of plant species, plant communities, or wetland functions within the RAA.

Marcel Colomb First Nation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, the Manitoba Metis Federation, and Chemawawin Cree Nation noted that they harvest culturally important plant species within the Gordon and MacLellan site PDAs, LAAs, and RAA for medicinal, ceremonial, and subsistence purposes. Concerns were expressed regarding the uncertainty of reclamation success in returning the PDAs to pre-disturbance conditions, including for upland and wetland areas that support culturally important plant species. Of particular concern was the anticipated lag time between when reclamation of these areas would begin and when these areas would be sufficiently recovered to allow the resumption of harvesting activities. Mathias Colomb Cree Nation, the Manitoba Metis Federation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, and Marcel Colomb First Nation also noted that the Project could impact the right to cultural practice and plant harvesting through measurable or perceived effects on the quality and safety of traditional resources. Specific concerns were noted regarding potential project-related increases in atmospheric contaminant emissions, including metals and fugitive dust, which could affect plant species of importance through dust and contaminant deposition. This may lead to the avoidance of resources or areas where rights are practiced due to measurable or perceived contamination and health risks.

The Agency acknowledges that the Project may result in adverse effects to plant species and wetland areas of importance for plant harvesting. The Agency understands that effects to terrestrial plant species and wetlands would be partially reversible through reclamation of the PDAs and following the cessation of water management activities. While some project-related wetland losses would be permanent, the Agency is of the view that, following the implementation of mitigation measures, these losses would result in a negligible change in the availability and overall distribution of wetland types and wetland functions in the RAA. Participation of Indigenous nations in the Indigenous Environmental Advisory Committee would also aid in addressing potential effects to plant harvesting rights, as it would provide a forum for Indigenous nations to raise concerns and to work with the Proponent to develop strategies to address concerns and potential impacts.

The Agency is of the view that the severity of project impacts to the right to cultural practice as a result of effects to plant harvesting would be low and local in extent, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key

mitigation measures identified by the Agency in this EA Report. The Agency is of the view that the severity of pre-existing and cumulative impacts to plant gathering is low.

Culturally Important Wildlife Species

Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, the Manitoba Metis Federation, and Chemawawin Cree Nation identified culturally important wildlife species that could occur within, and travel through, the Gordon and MacLellan site PDAs, including boreal caribou, moose, marten, and waterfowl.

Through the Proponent's engagement activities with Indigenous nations, the following concerns were identified regarding potential project effects to wildlife species of cultural importance:

- loss or alteration of wildlife habitat, particularly for sensitive species and species of cultural importance;
- increased mortality risk due to vehicle-wildlife collisions; and
- changes to the quality of wildlife resources, including cumulative effects.

The Proponent concluded that, following the implementation of mitigation measures, residual project effects on wildlife species of cultural importance to Indigenous Peoples would not pose a threat to the long-term persistence or viability of species in the LAAs and RAA.

The Agency acknowledges that the Project may affect the availability and health of wildlife species of cultural importance to Indigenous Peoples that may adversely impact section 35 rights. The Agency is of the view that the severity of project impacts to the right to cultural practice as a result of effects to wildlife species of cultural importance would be low and local in extent, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report. The Agency highlights the importance of continued engagement with Indigenous nations to identify and monitor project effects to wildlife species of cultural importance and to develop mitigation measures to address effects.

Quality of Experience

The Project's residual effects to air quality, aesthetics, and noise and vibration levels could cause low to moderate nuisances and may affect the quality of experience of Indigenous Peoples on the landscape. The Agency recognizes that these nuisances could potentially result in Indigenous Peoples not exercising their rights in the LAAs. Project effects to Indigenous Peoples' quality of experience are further discussed in 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 follow-up and monitoring programs with respect to air quality, noise, and vibrations, including the Proponent's commitment to regularly share the results of follow-up and monitoring activities with Indigenous nations, will minimize potential nuisances and avoidance behaviour. The Agency understands that the Proponent will also implement a complaint-response protocol to ensure Indigenous nations have the ability to report any changes to air quality and noise and vibration levels and that a mechanism exists for addressing concerns. The Proponent's proposed Indigenous Environmental Advisory Committee will also provide a forum for ongoing engagement with Indigenous nations to

determine the effectiveness of mitigation measures to identify and address project impacts to section 35 rights throughout the life of the Project.

The Agency is of the view that the severity of project impacts to the right to cultural practice as a result of effects to quality of experience would be low to moderate, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report.

Physical and Cultural Heritage Resources and Sites of Cultural Importance

In addition to the physical and cultural heritage resources and sites of cultural and historical importance already identified by the Proponent, the Project could affect unidentified sites of physical, cultural, and historic importance to Indigenous nations and sites of cultural importance. These sites are associated with the cultural activities of Indigenous Peoples, such as plant gathering, fishing, hunting, ceremonial activities, and campsites. These sites may also include current and historic travel routes, potential gravesites, and archeological and historical artifacts.

The Agency recognizes that, should unidentified sites of physical, cultural, and historic importance to Indigenous nations overlap with project infrastructure on the Gordon or MacLellan site PDAs, these sites could be permanently lost or damaged once construction begins. The Agency understands that the Proponent, in consultation with Indigenous nations 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 project construction to monitor for chance finds of sites of importance, notify Indigenous nations of any chance finds of physical and cultural heritage resources and sites of cultural importance, and, if requested, create opportunities for ceremonies to be conducted by Indigenous nations prior to construction.

The Agency recognizes that the severity of project impacts to the right to cultural practice as a result of effects to sites of physical, cultural, and historic importance to Indigenous nations will vary by Indigenous nation and that impacts may be more severe for some Nations. The Agency is of the view that the severity of project impacts to the right to cultural practice as a result of effects to physical and cultural heritage resources and sites of significance would be low, taking into account the implementation of the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report.

9.3 Issues to be Addressed During the Regulatory Approval Phase

Should the Project proceed, federal authorities with regulatory requirements will continue consultation with Indigenous nations after the environmental assessment decision is issued. Specifically, relevant federal authorities will consult with Indigenous nations prior to making decisions related to *Fisheries Act* authorizations and *Canadian Navigable Waters Act* approval(s), as appropriate, if authorizations or

approvals are required. Comments from Indigenous nations 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 nations 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, as applicable, on those authorizations will also create opportunities for Indigenous nations to have their concerns addressed. The provincial Crown has a duty to consult Indigenous nations, as appropriate, prior to making decisions.

9.4 Agency Conclusions Regarding Impacts to Section 35 Rights

Should the Project proceed, the Agency acknowledges that the Project is likely to cause changes to the exercise of section 35 rights. This includes low to moderate severity impacts on the right to hunt, trap, and fish, and low severity impacts on governance rights and the right to cultural practice. These impacts will vary by Indigenous nation, depending on their specific relationship with the PDAs and LAAs, and frequency of use.

The Agency is of the view that, taking into account the mitigation, follow-up, and monitoring measures proposed by the Proponent (Appendix D) and the key mitigation measures identified by the Agency in this EA Report, potential impacts of the Project on section 35 rights would be appropriately mitigated. The application of mitigation, monitoring, and follow-up measures should allow the continued exercise of section 35 rights in a similar manner to before the Project. The Agency recognizes that Proponent-led discussions with Indigenous nations regarding the Project are ongoing.

10 Conclusions and Recommendations of the Agency

In preparing this EA Report, the Agency considered the Proponent's EIS, its responses to information requests, the views of federal authorities, Indigenous nations, 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 socioeconomic assessment practitioners, including consideration of potential accidents and malfunctions and cumulative environmental effects.

The Agency recognizes that the Project may result in residual adverse environmental effects, after the implementation of mitigation measures, to fish and fish habitat; migratory birds; Indigenous Peoples' current use of lands and resources for traditional purposes; physical and cultural heritage, and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance to Indigenous Peoples; Indigenous Peoples' health and socio-economic conditions, and federal lands. A discussion of these effects can be found in the corresponding chapters of this EA Report.

The Agency concludes that, considering the implementation of mitigation measures, monitoring, and follow-up programs, the Project is not likely to cause significant adverse residual environmental effects as defined in section 5 of CEAA 2012. The Agency identified key mitigation measures, monitoring, and follow-up programs, for consideration by the Minister of Environment and Climate Change in establishing conditions as part of the Environmental Assessment Decision Statement, should the Project be permitted to proceed.

In addition, it is the Agency's expectation that, for the Project to be carried out in a careful and precautionary manner, all of 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 nations throughout the life of the Project.

Appendices

Appendix A Environmental Effects Rating Criteria

General definitions of criteria used to assess residual effects on each of the valued components.

Direction: The relative change compared to existing conditions (i.e. positive, adverse, or neutral).

Magnitude: The degree of change in a measurable parameter or variable relative to baseline conditions, defined for each valued component as low, moderate, high, or other qualifier deemed appropriate.

Geographic Extent: The geographic or spatial area within which the residual effect is expected to occur, defined for each valued component based on definitions of the Project Development Area (PDA), Local Assessment Area (LAA), and Regional Assessment Area (RAA).

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). This criteria is defined as applicable or not applicable.

Frequency: How often the residual environmental effect would occur during a project phase or activity in a specified time period.

Duration: The period of time over which the residual effect would occur, defined as short-term, medium-term, and long-term.

Reversibility: Whether the residual effect on the valued component(s) can be returned to its previous condition or other target (e.g. a reclamation target) once the activity or component causing the disturbance ceases.

Ecological/Socio-economic Context: The current degree of anthropogenic disturbance and/or ecological sensitivity in the area in which the residual effect would occur; defined as disturbed or undisturbed and resilient or non-resilient.

Significance: The significance of the adverse 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.

Table A-1 Description of Assessment Criteria Ratings for Significance for Each Valued Component

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
Fish and fish habitat	**Change in Fish Habitat** **Negligible –** no measurable change in habitat area, monthly flows, or lake surface elevation in a waterbody or watercourse **Low –** a measurable change in habitat area, monthly flows, or lake surface elevation within the range of natural variability **Moderate –** a measurable change in habitat area, monthly flows, or lake surface elevation that is greater than the range of natural variability but that does not affect the ability of fish to use this habitat to carry out their life processes **High –** a measurable change in habitat area, monthly flows (>10%), or lake surface elevation that is greater than the	**PDA** – residual effects are restricted to the Gordon and/or MacLellan site PDA **LAA** – residual effects extend into the Gordon and/or MacLellan site LAA **RAA** – residual effects extend into the RAA	**Not applicable –** seasonal aspects are unlikely to affect fish and fish habitat **Applicable –** seasonal aspects may affect fish and fish habitat	**Single event** – a single occurrence during a single project phase **Multiple irregular events** – effect occurs more than once one or more project phase but at an unpredictable interval of time **Multiple regular events** – effect occurs at regular intervals during one or more project phase **Continuous** – effect occurs continuously during one or	**Short-term –** residual effect is restricted to less than two years or less than one generation of the focal fish species **Medium-term –** residual effect extends through operation and decommissioning/closure or affects greater than one but less than two generations of focal fish species **Long-term –** residual effect extends beyond the life of the Project and affects greater than two	**Reversible –** residual effect is likely to be reversed following the completion of the activity and active reclamation **Irreversible –** the residual effect is unlikely to be reversed following active reclamation	**Change in Fish Habitat** **Undisturbed –** area is relatively undisturbed or not adversely affected by human activity **Disturbed –** area has been substantially disturbed by previous human development or human development is still present **Change in Fish Health, Growth, or Survival** **Resilient –** valued component is able to assimilate the additional change **Not resilient –** valued

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	range of natural variability and large enough so that fish can no longer rely on this habitat to carry out one or more of their life processes **<u>Change in Fish Health, Growth, and Survival</u>** **Negligible –** no measurable change in the abundance, structure, or health metrics of focal fish populations **Low** – a measurable change in the abundance, structure, or health metrics of focal fish populations, within the range of natural variability **Moderate** – a measurable change in the abundance, structure, or health metrics of focal fish populations that is greater than the range of natural variability but not large enough to affect the productivity of focal fish populations			more project phase	generations of focal fish species		component is not able to assimilate the additional change due to having little tolerance to imposed stresses as a result of fragility or conditions near a threshold

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	High – a measurable change in the abundance, structure, or health metrics of focal fish populations that is greater than the range of natural variability and large enough to affect the productivity of focal fish populations						
Migratory birds	**Change in Habitat** **Negligible –** no measurable change or loss of habitat **Low –** change or loss of less than 10% of habitat in the Gordon and/or MacLellan site LAA **Moderate –** change or loss of 10 to 20% of habitat in the LAA **High –** change or loss of more than 20% of habitat in the Gordon and/or MacLellan site LAA **Change in Mortality Risk and Wildlife Health**	**PDA** – residual effects are restricted to the Gordon and/or MacLellan site PDA **LAA** – residual effects extend into the Gordon and/or MacLellan site LAA **RAA** – residual effects extend into the RAA	**Not applicable –** effect does not occur during a critical life stage (e.g. nesting period) or timing of the effect does not affect the valued component **Applicable –** effect occurs during a critical life stage	**Single event** – a single occurrence during a single project phase **Multiple irregular events** – effect occurs more than once in one or more project phase but at an unpredictable interval of time **Multiple regular events** – effect occurs at regular	**Short-term –** residual effect is restricted to the construction phase **Medium-term –** residual effect extends through the operation phase **Long-term –** residual effect extends beyond the life of the Project	**Reversible –** residual effect is likely to be reversed following the completion of the activity and active reclamation **Irreversible –** the residual effect is unlikely to be reversed following completion of the activity and active reclamation	**Undisturbed –** area is relatively undisturbed or not adversely affected by human activity **Disturbed –** area has been substantially disturbed by previous human development or human development is still present

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	Negligible – no measurable change in the abundance of wildlife in the Gordon and/or MacLellan site LAA **Low – no** measurable change in the abundance of wildlife in the Gordon and/or MacLellan site LAA although temporary local shifts in wildlife distribution in the LAA may occur **Moderate –** a measurable change in the abundance and/or distribution of wildlife in the Gordon and/or MacLellan site LAA may occur, but a measurable change in the abundance of wildlife in the RAA is not anticipated **High –** a measurable change in the abundance and/or distribution of wildlife in the RAA may occur			intervals during one or more project phase **Continuous** – effect occurs continuously during one or more project phase			
Species at risk	**Change in Habitat**	**PDA** – residual effects are restricted to	**Not applicable –** effect does not occur during a	**Single event** – a single occurrence	**Short-term –** residual effect is restricted to the	**Reversible –** residual effect is likely to be	**Undisturbed –** area is relatively undisturbed or not adversely

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	Negligible – no measurable change/loss of habitat **Low –** change or loss of less than 5% of habitat in the Gordon and/or MacLellan site LAA **Moderate –** change or loss of 5 to 10% of habitat in the Gordon and/or MacLellan site LAA **High –** change or loss of more than 10% of habitat in the Gordon and/or MacLellan site LAA **Change in Mortality Risk and Wildlife Health** **Negligible –** no measurable change in the abundance of wildlife in the Gordon and/or MacLellan site LAA **Low –** a measurable change in the abundance of wildlife in the Gordon and/or	the Gordon and/or MacLellan site PDA **LAA** – residual effects extend into the Gordon and/or MacLellan site LAA **RAA** – residual effects extend into the RAA	critical life stage (e.g. calving season) or timing of the effect does not affect the valued component **Applicable –** effect occurs during a critical life stage	during any one project phase **Multiple irregular events** – effect occurs more than once in one or more project phase but at an unpredictable interval of time **Multiple regular events** – effect occurs at regular intervals during one or more project phase **Continuous** – effect occurs continuously during one or more project phase	construction phase **Medium-term –** residual effect extends through the operation phase **Long-term –** residual effect extends beyond the life of the Project	reversed following the completion of the activity and active reclamation **Irreversible –** the residual effect is unlikely to be reversed following completion of the activity and active reclamation	affected by human activity **Disturbed –** area has been substantially disturbed by previous human development or human development is still present

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	MacLellan site LAA is not anticipated, although temporary local shifts in wildlife distribution in the LAA may occur **Moderate –** a measurable change in the abundance and/or distribution of wildlife in the Gordon and/or MacLellan site LAA may occur, but a measurable change in the abundance of wildlife in the RAA is not anticipated **High –** a measurable change in the abundance and/or distribution of wildlife in the RAA may occur						
Federal lands	**Changes in Air Quality** **Negligible –**ambient air quality levels are less than 10% above baseline levels and do not exceed ambient air quality criteria **Low –** ambient air quality levels are greater than 10% above baseline conditions but less than 50% of	**Not applicable –** effects are not expected to occur on federal lands **Applicable** – effects are expected to occur on	**Not applicable –** seasonal aspects or time of day are unlikely to influence the effect **Applicable –** seasonal aspects or time of day	**Single event** – a single occurrence during any one project phase **Multiple irregular events** – short term effects that occur sporadically or at irregular intervals	**Short-term –** residual effect is restricted to the construction phase **Medium-term –** residual effect extends through the operation phase	**Reversible –** residual effect is likely to be reversed following the completion of the activity and active reclamation **Irreversible –** the residual effect is unlikely to be	**Undisturbed –** area is relatively undisturbed or not adversely affected by human activity **Disturbed –** area has been substantially disturbed by previous human development or human

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	ambient air quality criteria **Moderate –** ambient air quality levels are greater than 50% of ambient air quality criteria but the maximum air quality levels are less than ambient air quality criteria **High** – ambient air quality levels are greater than ambient air quality criteria **Changes in Noise and Vibration** **Negligible –** no measurable change **Low** – a measurable change within the range of normal variability **Moderate** – a measurable change within applicable regulatory criteria **High** – singly or as a substantial contributor in combination with other sources causing exceedances of	federal lands	may influence the effect	**Multiple regular events** – effect occurs during one or more project phase, occurs multiple times, and on a repetitive schedule **Continuous** – effect occurs continuously during one or more project phase	**Long-term –** residual effect extends beyond the life of the Project	reversed following completion of the activity and active reclamation	development is still present **Community Services, Infrastructure, and Well-being** **Resilient –** community services and infrastructure have capacity to accommodate increased demand; community has a moderate to high capacity to recover from a perturbation **Not Resilient –** community services and infrastructure have limited capacity to accommodate increased demand; community has a low capacity to

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	applicable regulatory criteria **<u>Surface Water Quantity</u>** **Negligible –** less than 5% change in water levels or flow from existing conditions **Low –**change in water levels or flow of <10% from existing conditions **Moderate –** change in water levels or flow between 10% and 30% from existing conditions **High** – change in water levels or flow of >30% from existing conditions **<u>Surface Water Quality</u>** **Negligible –** no measurable change from existing conditions **Low –** a measurable change within the natural range of variability of existing conditions **Moderate –** a measurable change that is not within the natural range of variability and is not within applicable guidelines, legislation, or						recover from a perturbation

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	management objectives, but is unlikely to affect aquatic biota within the Gordon and/or MacLellan site LAA **High** – a measurable change that is not within the natural range of variability, is not within applicable guidelines, legislation, or management objectives, and is likely to affect aquatic biota within the Gordon and/or MacLellan site LAA or RAA **Vegetation and Wetlands** **Low –** on federal lands, a measurable change in the distribution and abundance of vegetation and wetlands, but no loss of large intact native vegetation patches, upland or wetland land units, plant species of conservation concern, or traditional use species; and no						

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	change to the distribution of weed species and no introduction of weed species **Moderate/High –** on federal lands, a loss of large intact native vegetation patches, upland or wetland land units, plant species of conservation concern, or traditional land use species; and changes to the distribution of existing weed species and the likely introduction of new weed species **Labour and Economy** **Negligible –** no measurable change from baseline conditions **Low –** a measurable change that is within the natural range of variability of existing conditions **Moderate –** a measurable change but less than high likelihood to pose a serious risk or benefit						

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	High – a measurable change that is likely to pose a serious risk or benefit **<u>Community Services, Infrastructure, and Well-being</u>** **Negligible –** no measurable change from baseline conditions **Low –** capacity of community services will be at or near baseline conditions; a measurable effect on community well-being but within the normal range of variation **Moderate –** demand for community services and infrastructure approaches current capacity but will not result in a reduction of standards of service; a measurable effect on community well-being that exceeds the normal range of variation but						

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	which can be managed with existing resources **High** – demand for community services and infrastructure exceeds current capacity and results in a reduction of standards of service; a measurable effect on community well-being which exceeds the management capacity of existing resources **The criteria for migratory birds, species at risk, fish and fish habitat, and Indigenous related valued components listed above and below also apply*						
Transboundary effects – greenhouse gas (GHG) emissions	**Low -** a measurable change in GHG emissions but one that is relatively small in comparison to provincial and national GHG emissions levels **Moderate** - a notable change to provincial and national GHG emissions levels in comparison to	**PDA** – residual effects are restricted to the Gordon and/or MacLellan site PDA **LAA** – residual effects extend into the Gordon	**Not applicable –** seasonal aspects are unlikely to affect GHG emissions **Applicable** – seasonal aspects may affect GHG emissions	**Single event** – a single occurrence of GHG emissions during any one project phase **Multiple irregular events** – GHG emissions occur more than once in	**Short-term** – residual effect is restricted to the construction phase **Medium-term** – residual effect persists into the operation phase but	**Reversible –** residual effect is likely to be reversible after completion of the activity or following decommissioning/ closure **Irreversible –** the residual	**Undisturbed –** area is relatively undisturbed or not adversely affected by human activity **Disturbed –** area has been substantially disturbed by previous human development or human

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	provincial and national GHG emissions levels **High** - a substantial change to provincial and national GHG emissions levels in comparison to provincial and national GHG emissions levels	and/or MacLellan site LAA but not beyond **RAA** – residual effects extend into the RAA		one or more project phase but at an unpredictable interval of time **Multiple regular events** – GHG emissions occur at regular intervals during one or more project phase **Continuous** - GHG emissions occur continuously during one or more project phase	ceases after operation **Long-term** – residual effect extends beyond the operation phase	effect is unlikely to be reversed	development is still present
Indigenous Peoples: current use of lands and resources for traditional purposes	**Negligible -** no measurable change to the availability and access to resources, culturally important sites, or the cultural value of sites currently	**PDA** – residual effects are restricted to the Gordon and/or MacLellan site PDA	**Not applicable –** seasonal aspects are unlikely to affect the valued component	**Single event** – a single occurrence during any one project phase **Multiple irregular events** – short	**Short-term** – residual effect is restricted to the construction phase **Medium-term** – residual	**Reversible –** residual effect is likely to be reversed following the completion of the activity	**Undisturbed –** area is relatively undisturbed or not adversely affected by human activity **Disturbed –** area has been

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	used for traditional purposes **Low -** a measurable change would occur but would not reduce the ability to access or use resources and sites for traditional purposes **Moderate –** a measurable change would occur that would reduce the ability to access or use resources and sites for traditional purposes **High –** a measurable change would occur that would substantially diminish or remove the ability to access or use resources and sites for traditional purposes or substantially increase the difficulty and/or travel distance to conduct traditional practices	**LAA** – residual effects extend into the Gordon and/or MacLellan site LAA but not beyond **RAA** – residual effects extend into the RAA	**Applicable** – seasonal aspects may affect the valued component	term effects that occur sporadically or at irregular intervals **Multiple regular events** – effect occurs during one or more project phase, occurs multiple times, and on a repetitive schedule **Continuous** – effect occurs continuously during one or more project phase	effect persists into the operation phase but ceases after operation **Long-term** – residual effect extends beyond the operation phase	and active reclamation **Irreversible –** the residual effect is unlikely to be reversed following completion of the activity and active reclamation	substantially disturbed by previous human development or human development is still present
Indigenous Peoples: health and socio-economic conditions	**Indigenous Peoples' Health Conditions** **Negligible –** no measurable change from existing conditions and project-related environmental	**PDA** – residual effects are restricted to the Gordon and/or	**No sensitivity –** residual effect does not occur during a sensitive timing period, as identified for related	**Single event** – a single or rare occurrence during one or more project phase	**Short-term** – residual effect is restricted to the construction phase	**Reversible (short-term) –** residual effect is readily reversible over a relatively	**Undisturbed –** area is relatively undisturbed or not adversely affected by human activity

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	exposures are less than the target benchmarks; current use practices can continue without alteration of behaviour **Low –** a measurable change from existing conditions would occur but is below environmental and/or regulatory criteria and project-related environmental exposures marginally exceed target benchmarks; current use is able to continue at current levels with minor alterations to behaviour **Moderate –** a measurable change from existing conditions would occur that exceeds target benchmarks and/or may result in a long-term, substantive change in human health; current use is able to continue at a reduced level or with some restrictions	MacLellan site PDA **LAA** – residual effects extend into the Gordon and/or MacLellan site LAA but not beyond **RAA** – residual effects extend into the RAA	valued components and/or by Indigenous nations **Moderate sensitivity –** residual effect may occur during a lower sensitivity timing period, as identified for related valued components and/or by Indigenous nations **High sensitivity –** residual effect may occur during a higher sensitivity timing period, as identified for related valued components and/or by	**Multiple irregular events** – short term effect that occur sporadically or at irregular intervals **Multiple regular events** – effect occurs during one or more project phase, occurs multiple times, and on a repetitive schedule **Continuous** – effect occurs continuously during one or more project phase	**Medium-term** – residual effect persists into the operation phase but ceases after operation **Long-term** – residual effect extends beyond the operation phase	short period (i.e. less than 5 years) **Reversible (long-term) –** residual effect is potentially reversible over a long period (i.e. greater than 5 years) **Irreversible –** the residual effect is permanent and irreversible	**Disturbed –** area has been substantially disturbed by previous human development or human development is still present

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	and alterations to behaviour **High –** a measurable change from existing conditions would occur that exceeds target benchmarks and/or may result in a long-term, substantive change in human health; current use cannot continue or cannot continue without substantial changes to current practices and substantial restriction on the ability to engage in traditional practices **Indigenous Peoples' Socio-economic Conditions** **Negligible –** no measurable change in land, resource use, or capacity; use, access to, or interference with infrastructure and services; or baseline levels of local employment, goods and services, and economic activity **Low –** a small measurable change in land, resource use, or capacity (i.e. activities		Indigenous nations				

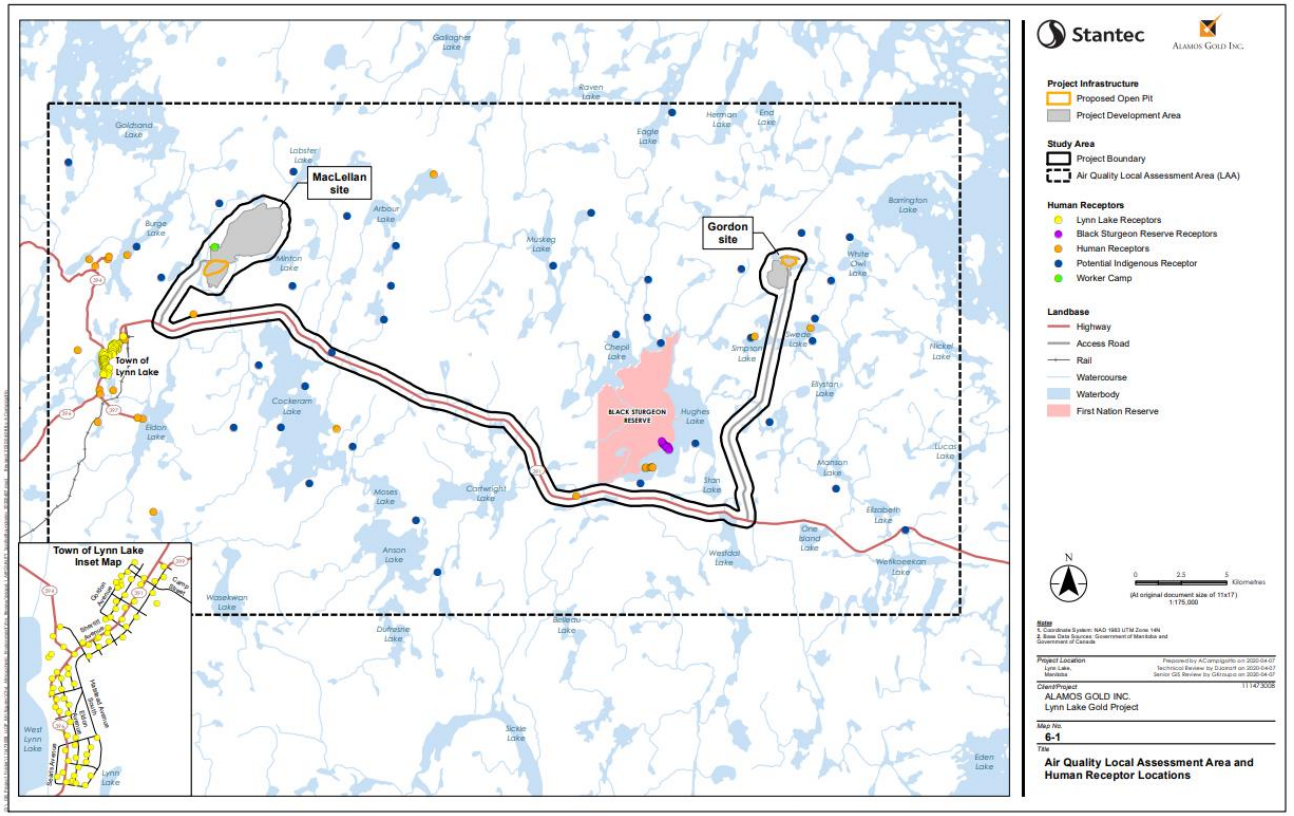
Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	can take place at or near similar levels as baseline); use, access to, or interference with infrastructure within the current available capacity, without effect to the quality of service; or local employment, goods and services, and economic activity **Moderate –** a measurable change in land, resource use, or capacity that is less than high; use, access to, or interference with infrastructure and services that nears the available capacity or which may affect the quality of services provided; or baseline levels of local employment, goods and services, and economic activity but that is unlikely to pose a substantial risk or benefit **High -** a measurable change in land, resource						

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	use, or capacity such that activities and production cannot take place at similar levels as existing conditions; use, access to, or interference with infrastructure and services that meets or exceeds the available capacity or degrades the quality of service provided; or baseline levels of local employment, goods and services, and economic activity that is substantial compared to existing conditions or that represents a management challenge						
Indigenous Peoples: physical and cultural heritage and structures, sites, and things of historical, archaeological, palaeontological, or architectural significance	**Negligible –** no measurable change from existing conditions **Low –** a measurable change from existing conditions may occur but is insufficient to result in disturbance to heritage sites **Moderate –** a measurable change from existing conditions may occur but less than a high degree of	**PDA** – residual effects are restricted to the Gordon and/or MacLellan site PDA **LAA** – residual effects extend into the Gordon and/or	**No sensitivity –** residual effect does not occur during a sensitive timing period, as identified for related valued components and/or by Indigenous nations	**Single event** – a single or rare occurrence during one or more project phase **Multiple irregular events** – short term effect that occur sporadically or	**Short-term** – residual effect is restricted to the construction phase **Medium-term** – residual effect persists into the operation phase but ceases after operation	**Reversible (short-term) –** residual effect is readily reversible over a relatively short period (i.e. less than 5 years) **Reversible (long-term) –** residual	**Undisturbed –** area is relatively undisturbed or not adversely affected by human activity **Disturbed –** area has been substantially disturbed by previous human development or human

Valued Component	Magnitude	Geographic Extent	Timing	Frequency	Duration	Reversibility	Ecological and Socio-economic Context
	change; effects to heritage sites would be moderate **High –** a high degree of physical disturbance on heritage sites and cultural areas may occur; a loss of the integrity of heritage sites is likely	MacLellan site LAA but not beyond **RAA** – residual effects extend into the RAA	**Moderate sensitivity –** residual effect may occur during a lower sensitivity timing period, as identified for related valued components and/or by Indigenous nations **High sensitivity –** residual effect may occur during a higher sensitivity timing period, as identified for related valued components and/or by Indigenous nations	at irregular intervals **Multiple regular events** – effect occurs during one or more project phase, occurs multiple times, and on a repetitive schedule **Continuous** – effect occurs continuously during one or more project phase	**Long-term** – residual effect extends beyond the operation phase	effect is potentially reversible over a long period (i.e. greater than 5 years) **Irreversible –** the residual effect is permanent and irreversible	development is still present

Appendix B Local and Regional Assessment Areas

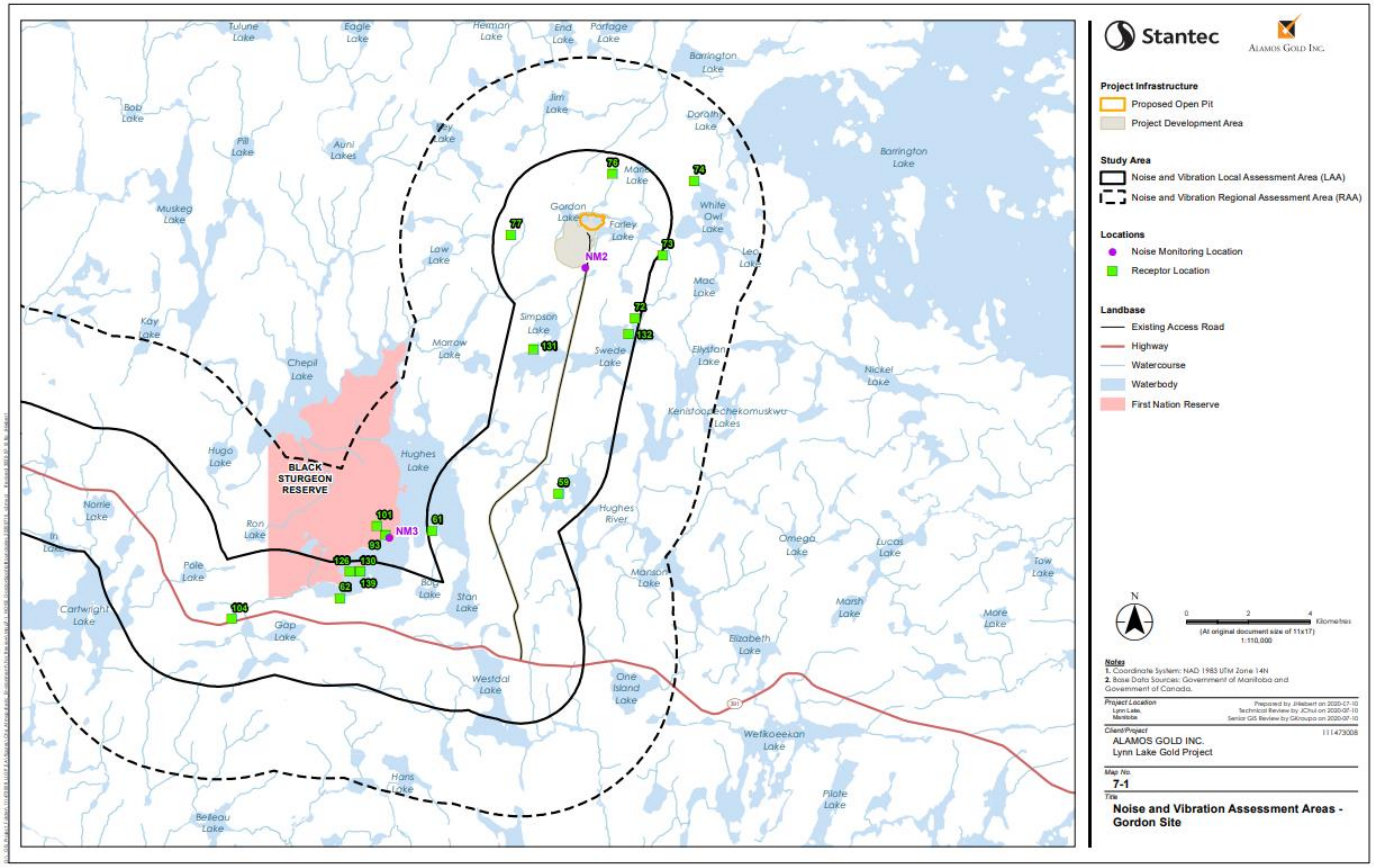
Figure C-1 Local and Regional Assessment Area for Air Quality



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Local Assessment Area (LAA) extends from Raven Lake to the north to Dufresne Lake to the south, and from the Town of Lynn Lake to the west to Nickel Lake to the east. The LAA includes the Gordon and MacLellan site Project Development Areas (PDAs), the Black Sturgeon Reserve, and the Town of Lynn Lake. The Regional Assessment Area (RAA) is the same as the LAA.*

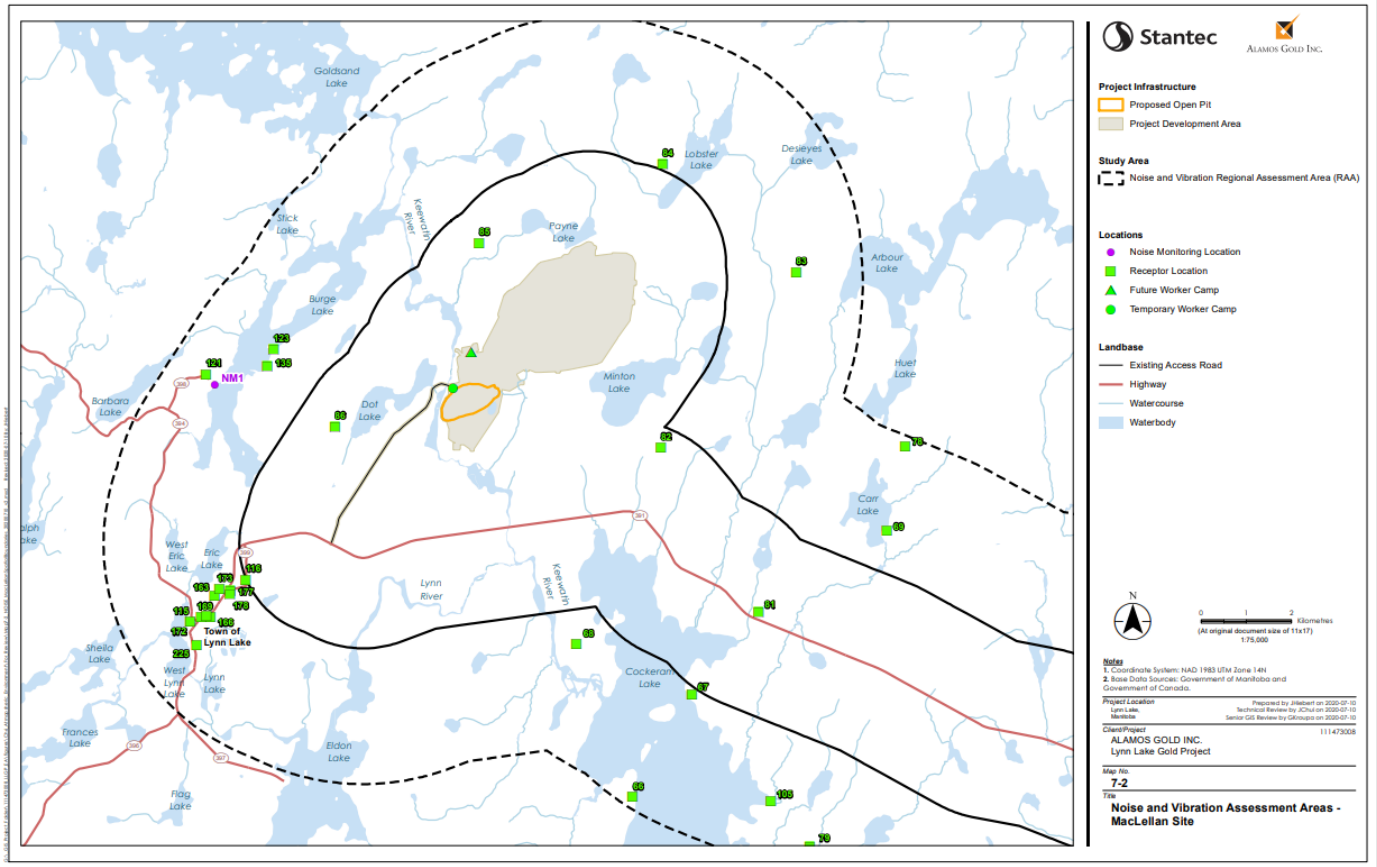
Figure C-2 Local and Regional Assessment Areas for Noise and Vibration for the Gordon Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon site Local Assessment Area (LAA) and the Regional Assessment Area (RAA) include the area within a two kilometre and five kilometre radius, respectively, of the Gordon site Project Development Area and the section of Provincial Road 391 (PR 391) between the Gordon site access road and the midway point on PR 391 between the Gordon and MacLellan site access roads. The Black Sturgeon Reserve is partially captured within the LAA and RAA.*

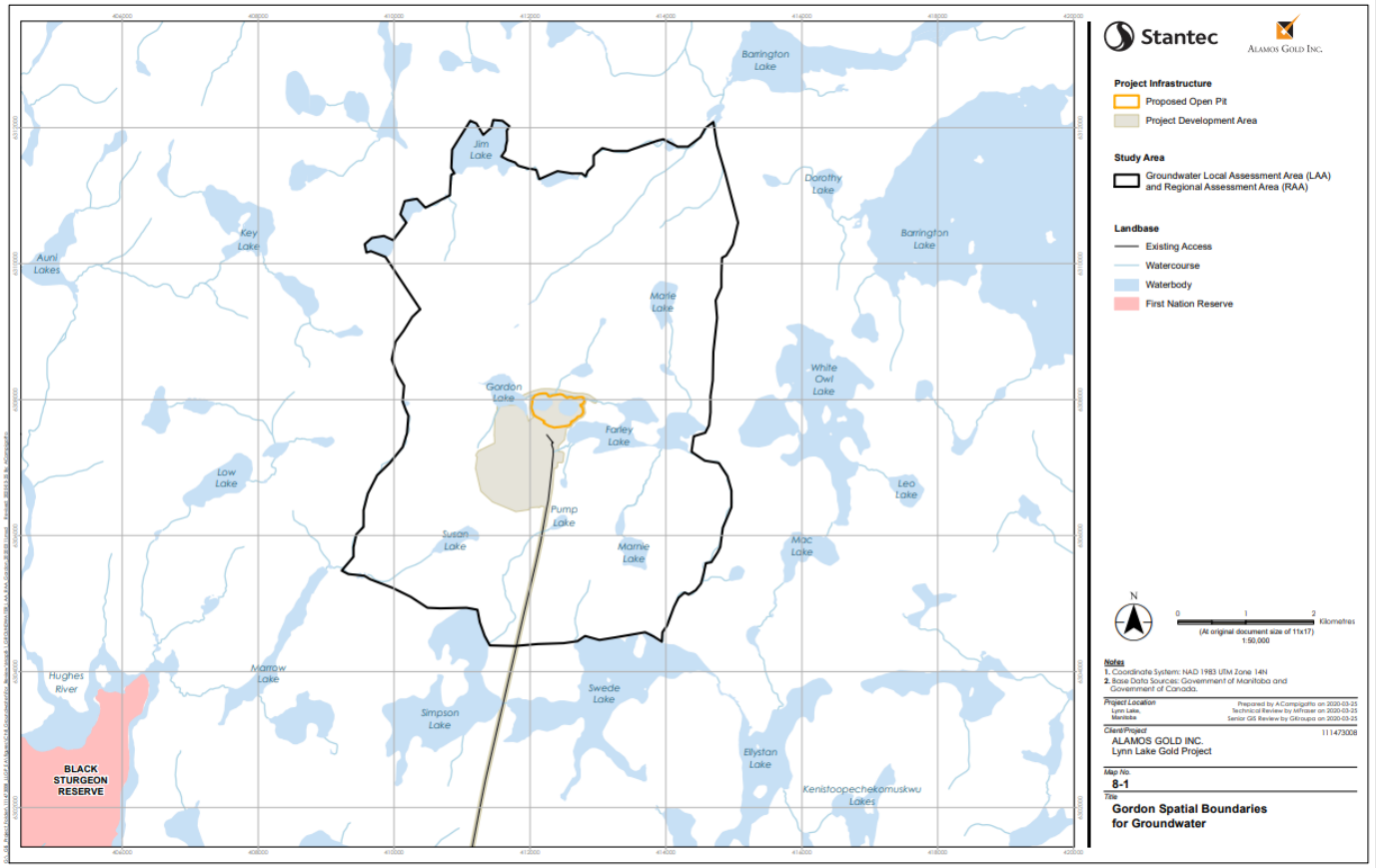
Figure C-3 Local and Regional Assessment Areas for Noise and Vibration for the MacLellan Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The MacLellan site Local Assessment Area and Regional Assessment Area (RAA) includes the area within a two kilometre and five kilometre radius, respectively, of the MacLellan site Project Development Area and the portion of Provincial Road 391 (PR 391) between the Gordon site access road and the midway point on PR 391 between the Gordon and MacLellan site access roads. The Town of Lynn Lake is included in the RAA.*

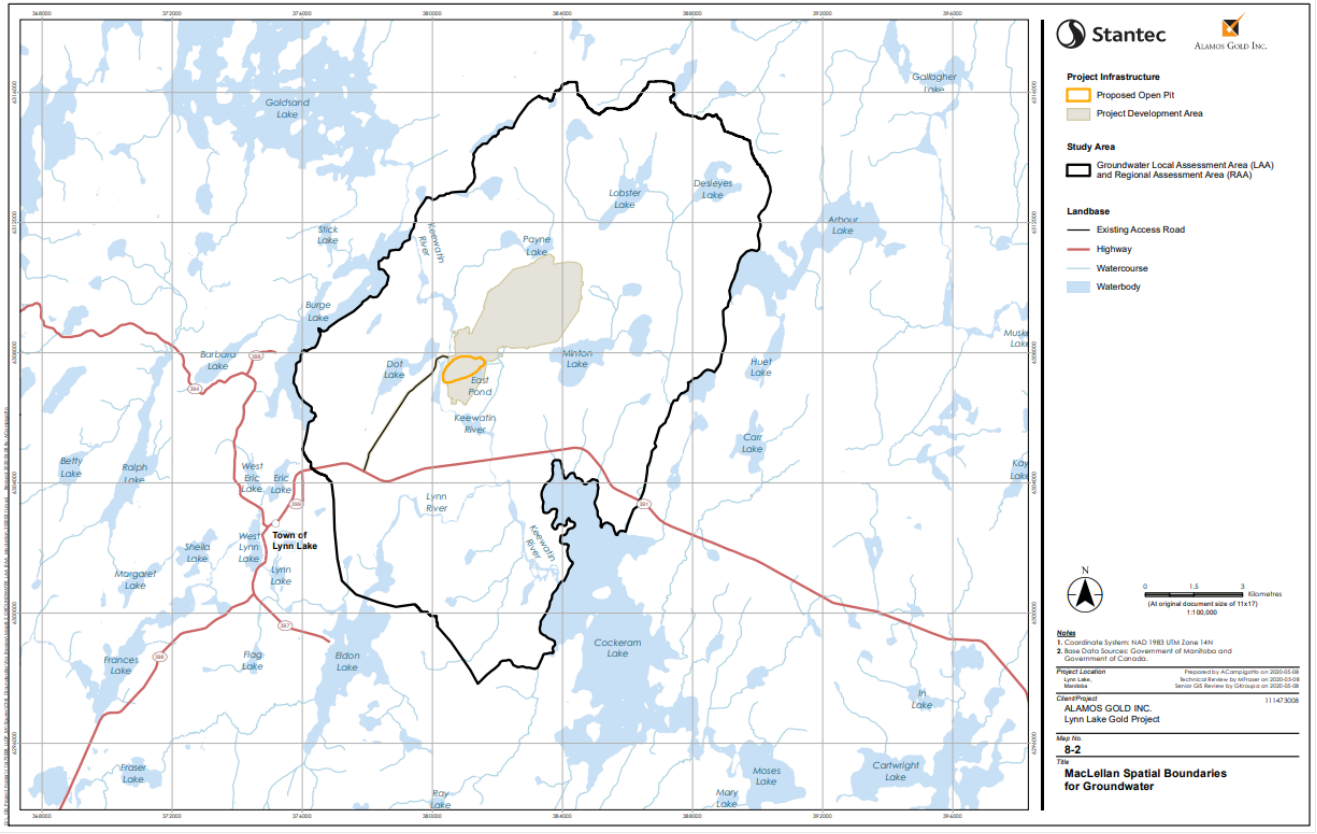
Figure C-4 Local and Regional Assessment Areas for Groundwater for the Gordon Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon site Local Assessment Area (LAA) includes the Gordon site Project Development Area and follows the northern shore of Jim Lake and a series of unnamed lakes to the north; a series of drainage divides between White Owl Lake and Marie Lake, and between Mac Lake and Marnie Lake to the east; the northern shores of Swede Lake and Simpson Lake to the south; and the drainage divide for Susan Lake and Gordon Lake to the west. The Gordon site Regional Assessment Area is the same as the LAA.*

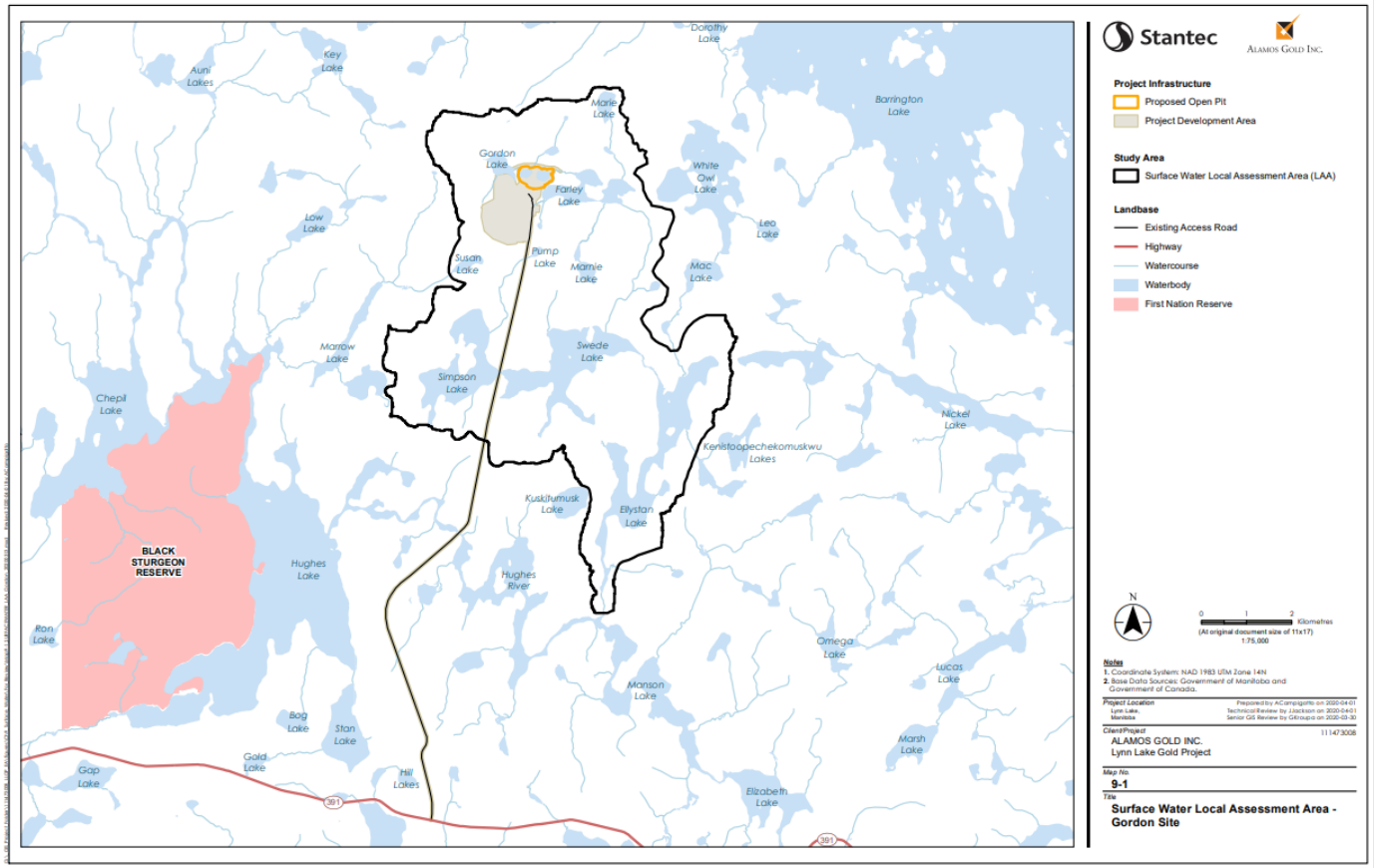
Figure C-5 Local and Regional Assessment Areas for Groundwater for the MacLellan Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The MacLellan site Local Assessment Area (LAA) includes the MacLellan site Project Development Area and follows the northern drainage divide for Lobster and Deseyes Lakes to the north; the eastern drainage divide for Deseyes Lake and the eastern shore of Arbour Lake, continuing south to the northern shore of Cockeram Lake to the east; the northern shore of Cockeram Lake and the northern shore of Eldon Lake to the south; and the eastern drainage divide of the Lynn River and the eastern shores of Burge Lake and other unnamed lakes to the west. The MacLellan site Regional Assessment Area is the same as the LAA.*

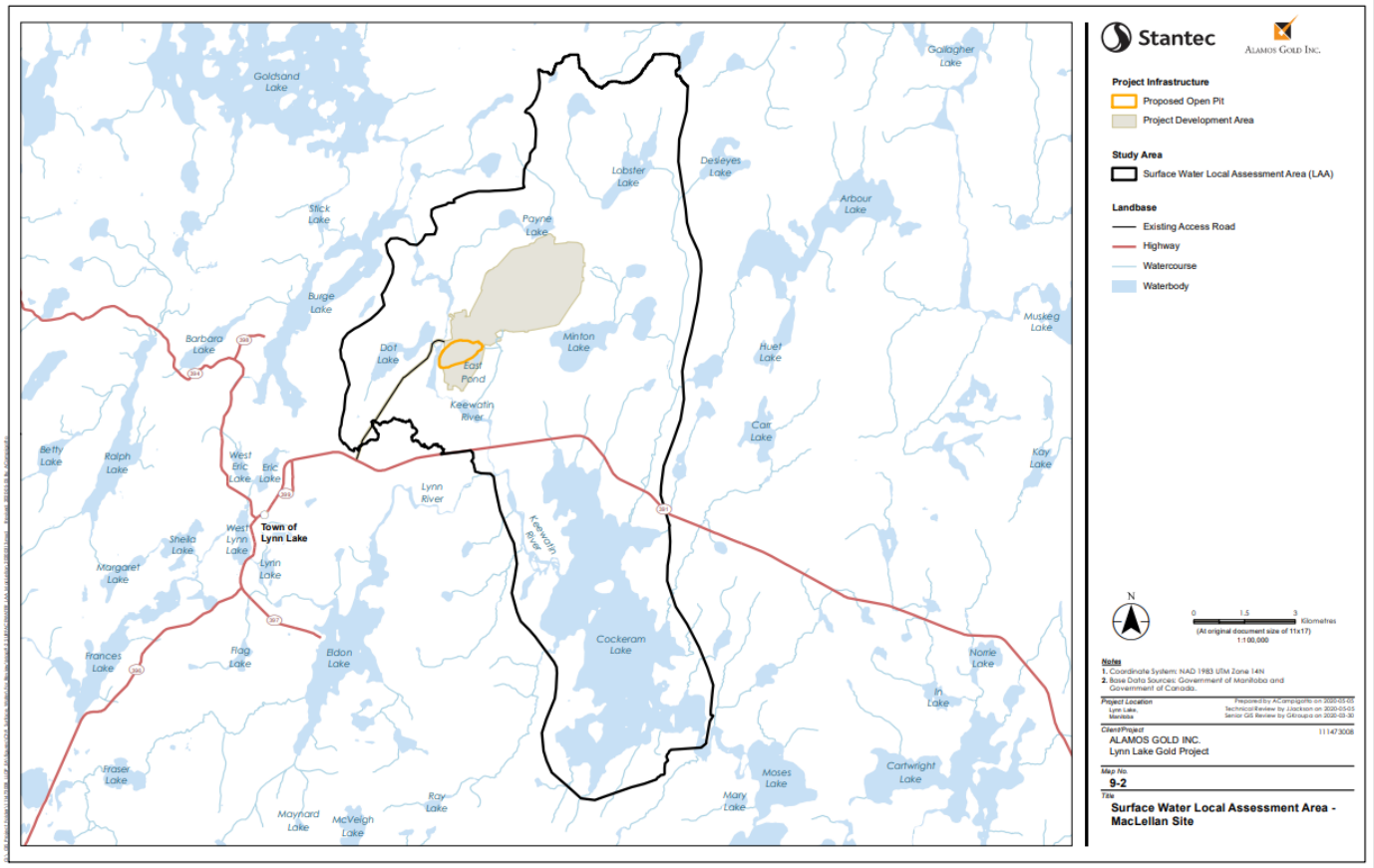
Figure C-6 Local Assessment Area for Surface Water for the Gordon Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon site Local Assessment Area (LAA) includes the Gordon site Project Development Area, Susan Lake, and lakes and streams within the Ellystan Lake watershed (e.g. Gordon Lake, Farley Lake, Marnie Lake, Swede Lake, Simpson Lake, Ellystan Lake) and extends to the outlet of Ellystan Lake. The Black Sturgeon Reserve is located approximately 2.5 kilometres west of the LAA.*

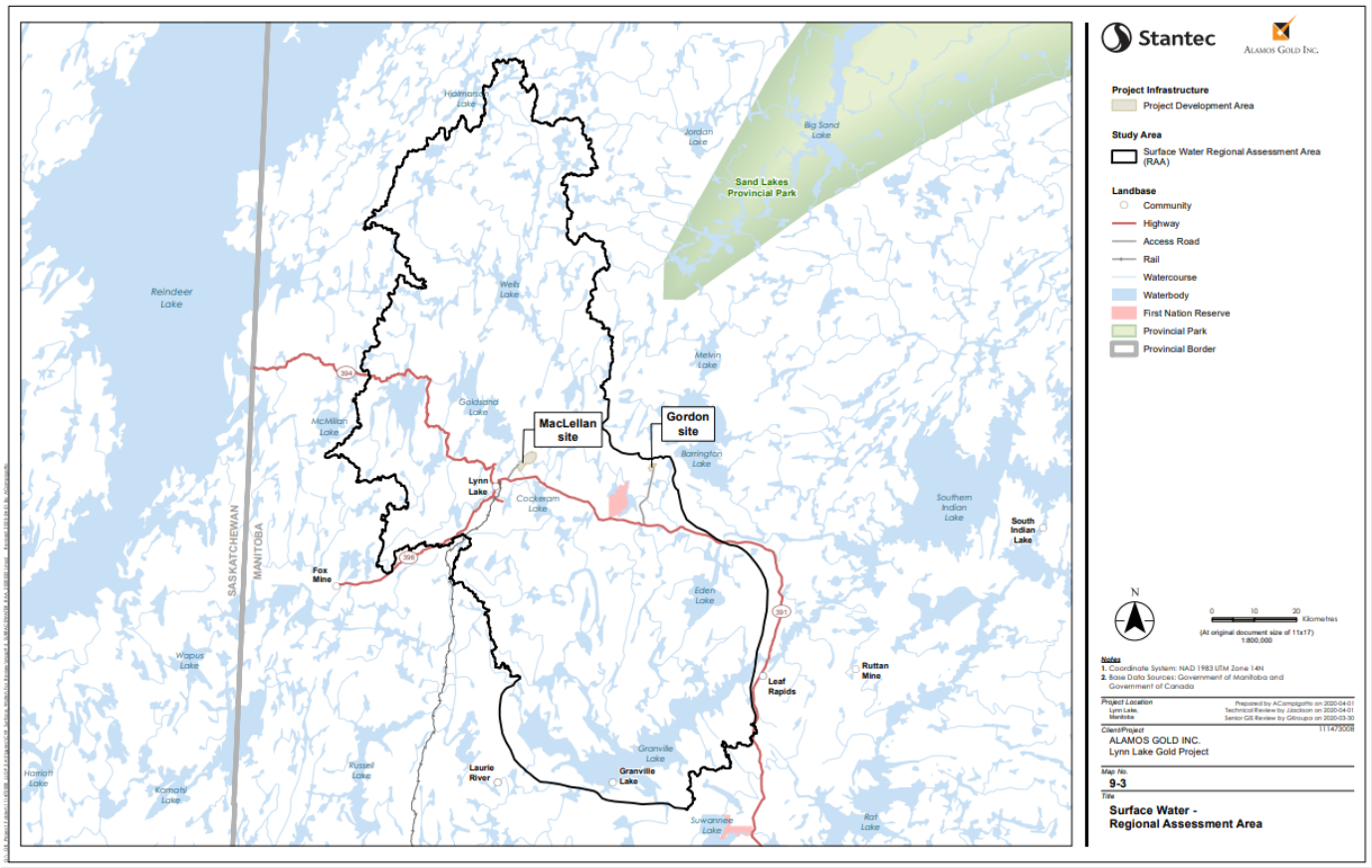
Figure C-7 Local Assessment Area for Surface Water for the MacLellan Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The MacLellan site Local Assessment Area (LAA) includes the MacLellan site Project Development Area and portions of the Cockeram River and Keewatin River watersheds, extending downstream of the outlet of Cockeram Lake. The Town of Lynn Lake is located approximately three kilometres southwest of the LAA.*

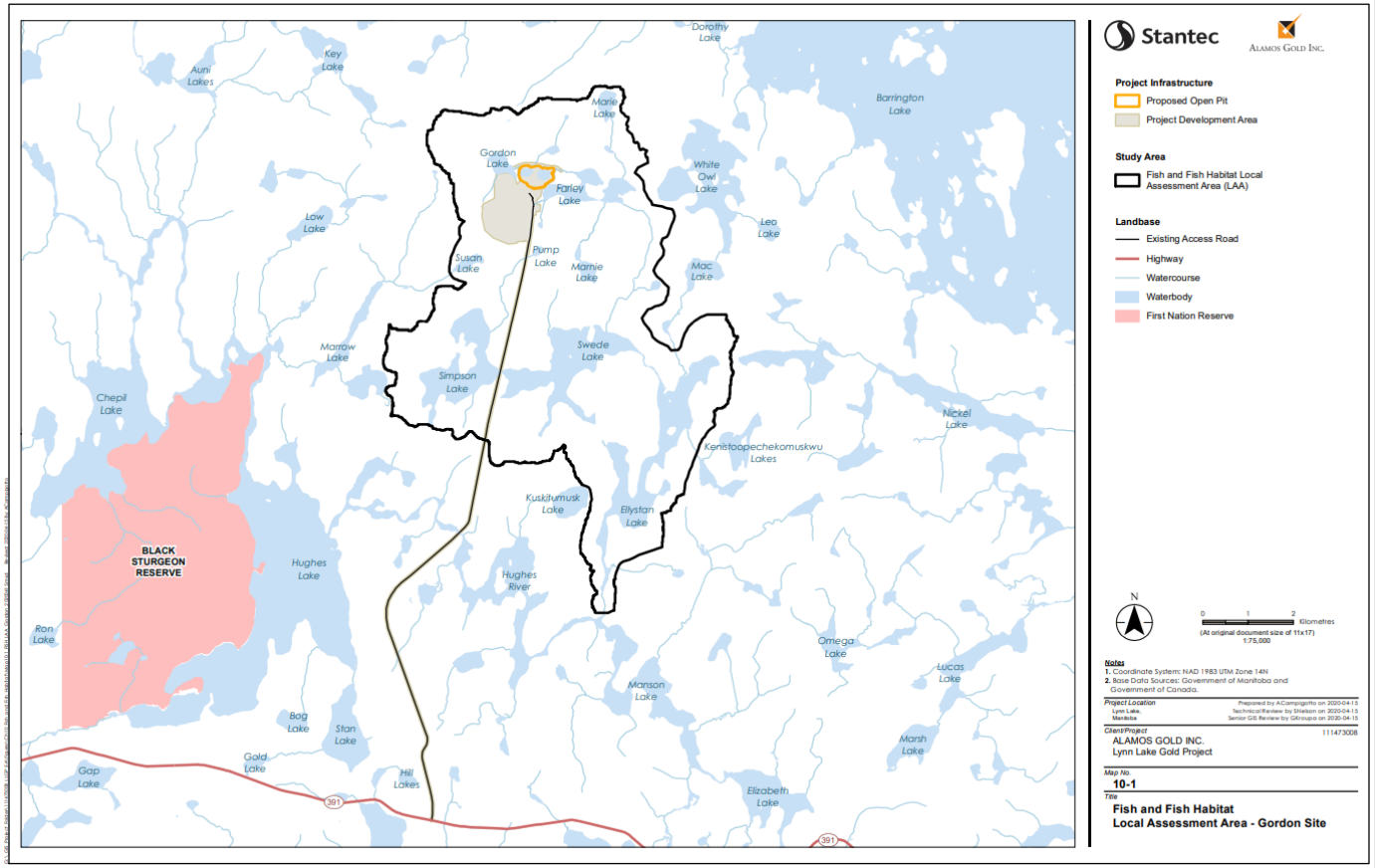
Figure C-8 Regional Assessment Area for Surface Water for the Gordon and MacLellan Sites



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon and MacLellan site Regional Assessment Area includes the Gordon and MacLellan site Project Development Areas (PDAs), the Black Sturgeon Reserve, the drainage area that encompasses the PDAs and Local Assessment Areas (LAAs) of the Gordon and MacLellan sites, streams and lakes that drain into the LAAs to Granville Lake, and upstream lakes and streams within the Keewatin River watershed.*

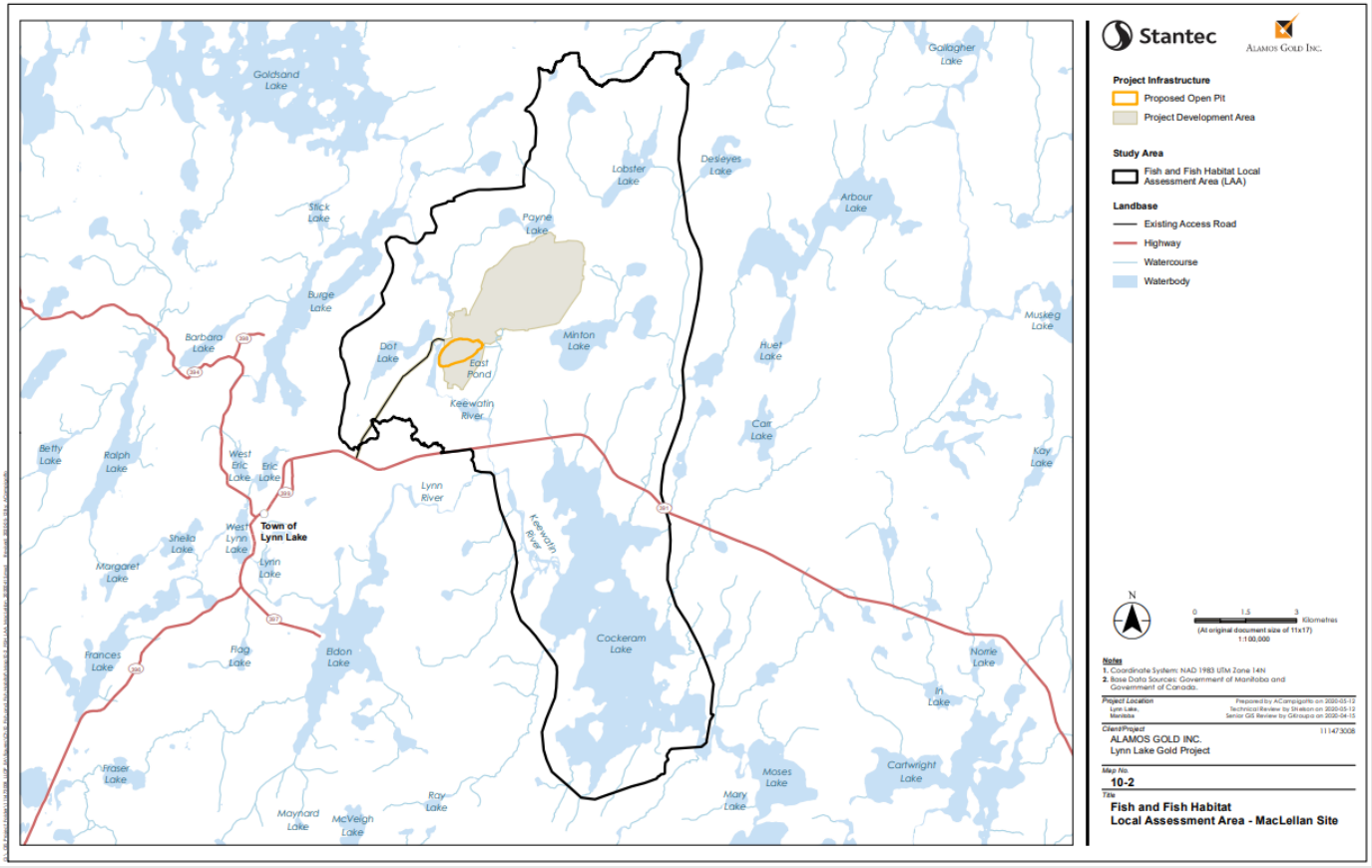
Figure C-9 Local Assessment Area for Fish and Fish Habitat for the Gordon Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon site Local Assessment Area (LAA) includes the Gordon site Project Development Area, Susan Lake, and lakes and streams within the Ellystan Lake watershed (e.g. Gordon Lake, Farley Lake, Marie Lake, Marnie Lake, Swede Lake, Simpson Lake, Ellystan Lake). The Black Sturgeon Reserve is located approximately three kilometres west of the LAA.*

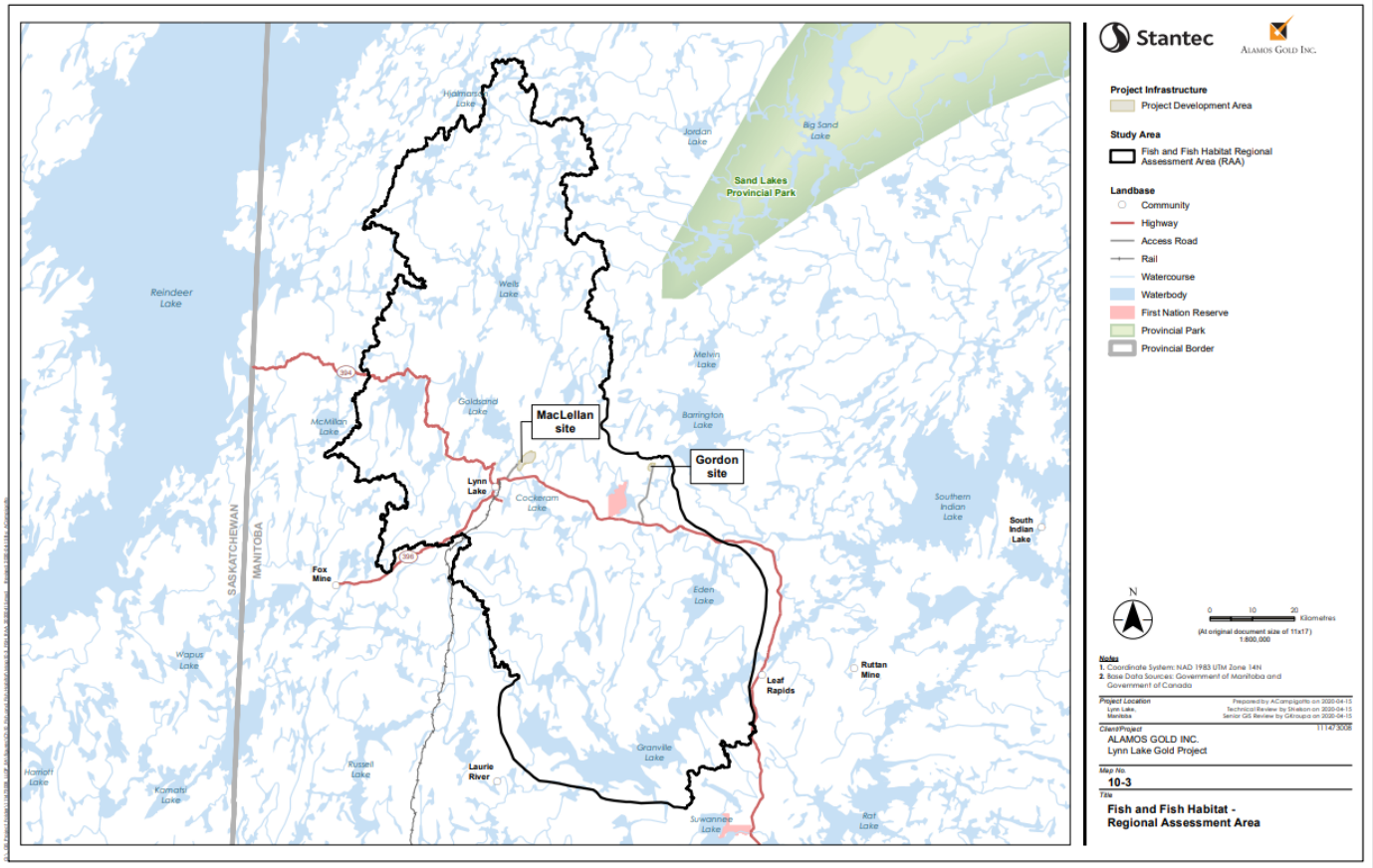
Figure C-10 Local Assessment Area for Fish and Fish Habitat for the MacLellan Site



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The MacLellan site Local Assessment Area (LAA) includes the MacLellan site Project Development Area and select lakes, rivers, and tributaries within the Cockeram Lake watershed (e.g. Lobster Lake, Payne Lake, Minton Lake, Dot Lake, the Keewatin River, Cockeram Lake). The Town of Lynn Lake is located approximately three kilometres southwest of the LAA.*

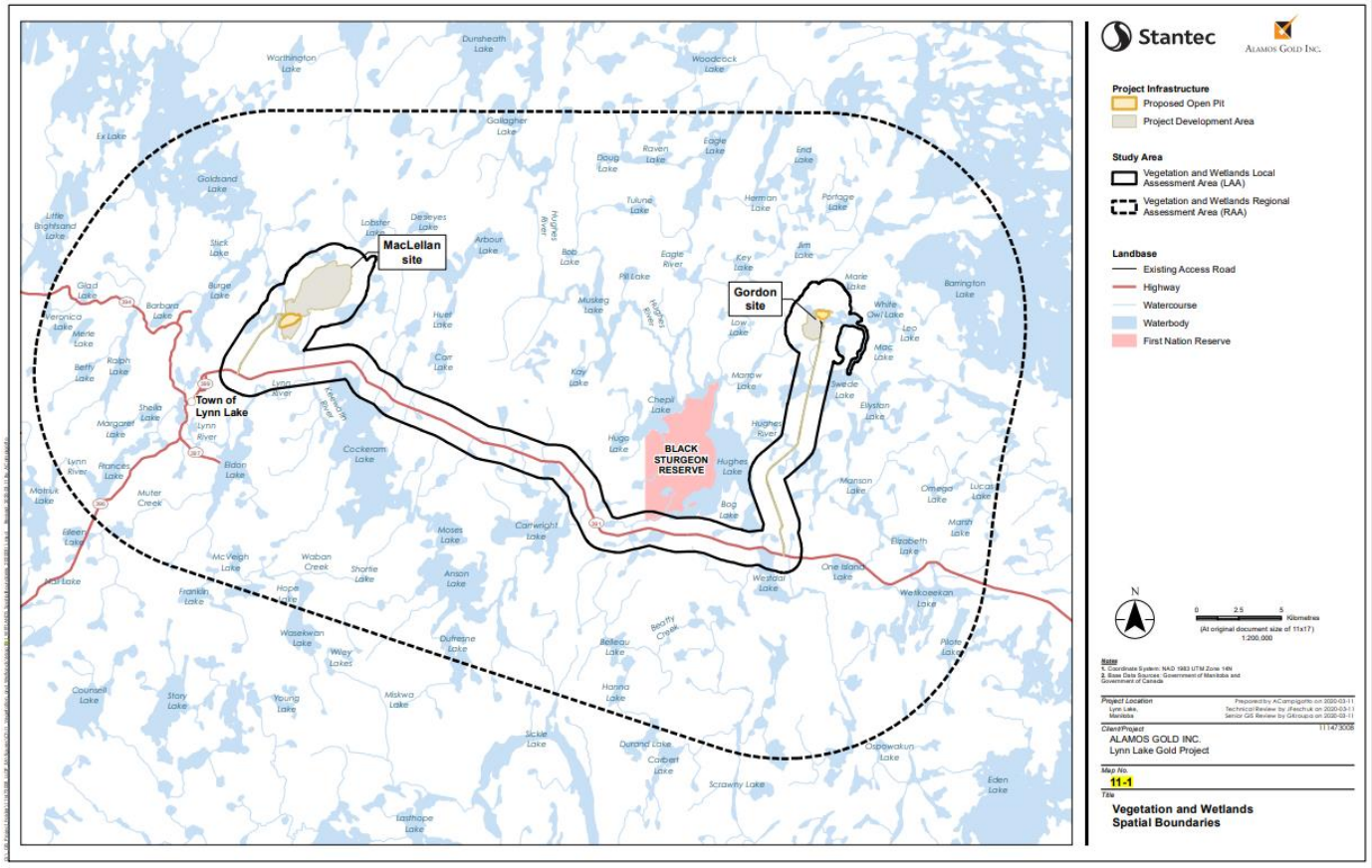
Figure C-11 Regional Assessment Area for Fish and Fish Habitat for the Gordon and MacLellan Sites



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon and MacLellan site Regional Assessment Area includes the Gordon and MacLellan site Project Development Areas and Local Assessment Areas (LAAs), the Town of Lynn Lake, the streams and lakes that drain the LAAs into Granville Lake, upstream lakes and streams in the Keewatin River watershed, and the Lynn River watershed.*

Figure C-12 Local and Regional Assessment Areas for Vegetation and Wetlands

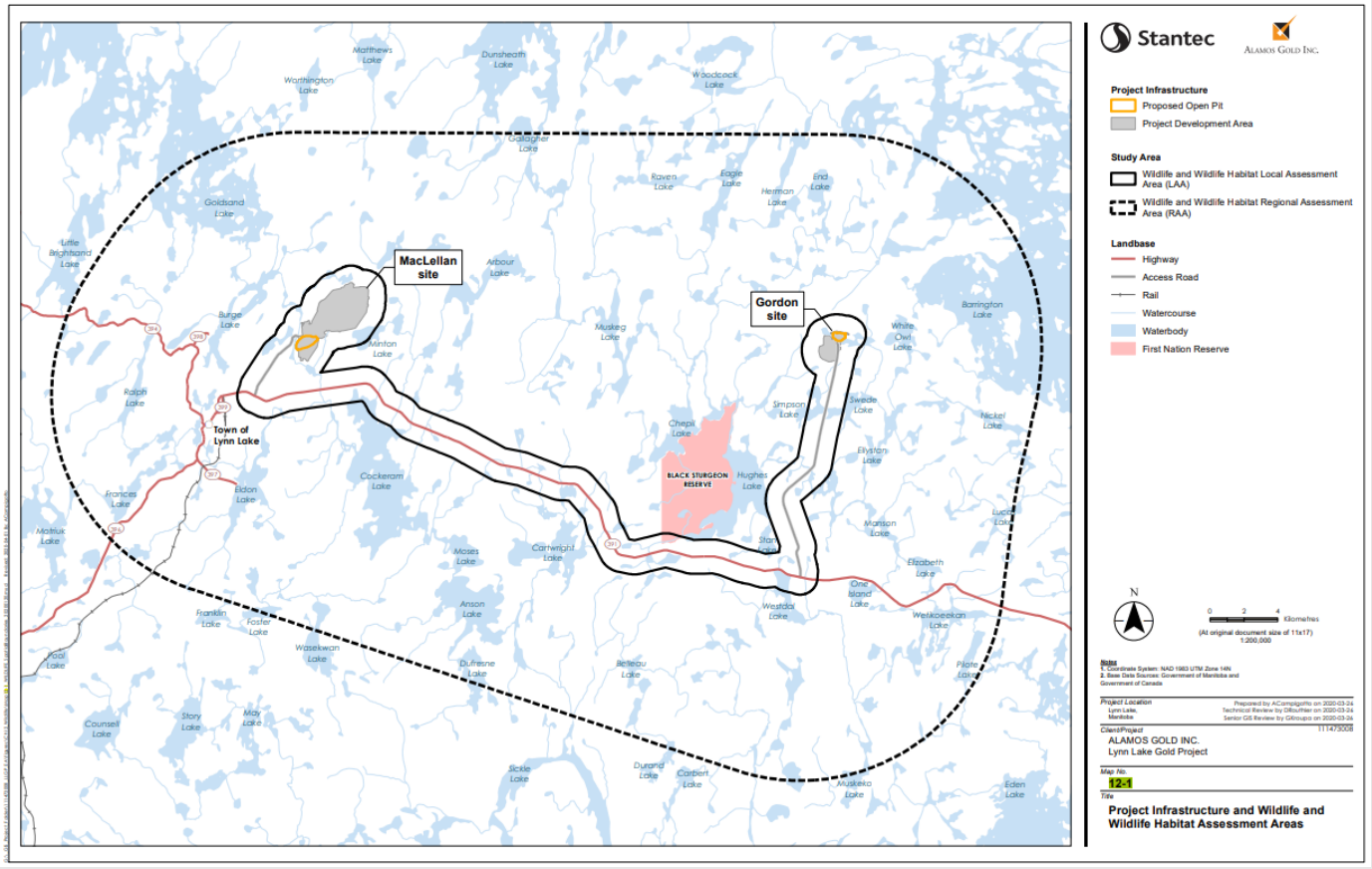


Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon and MacLellan site Local Assessment Area (LAA) includes the area within a one kilometre buffer of the Gordon and MacLellan site Project Development Areas (PDAs) and the section of Provincial Road 391 between the Gordon and MacLellan site access roads, and a 100 metre buffer around Gordon Lake, Farley Lake, and Farley Creek. The Gordon and MacLellan site RAA includes the Gordon and*

MacLellan site PDAs and LAA, and a 12 kilometre buffer surrounding the PDAs. The Regional Assessment Area includes the Black Sturgeon Reserve and the Town of Lynn Lake.

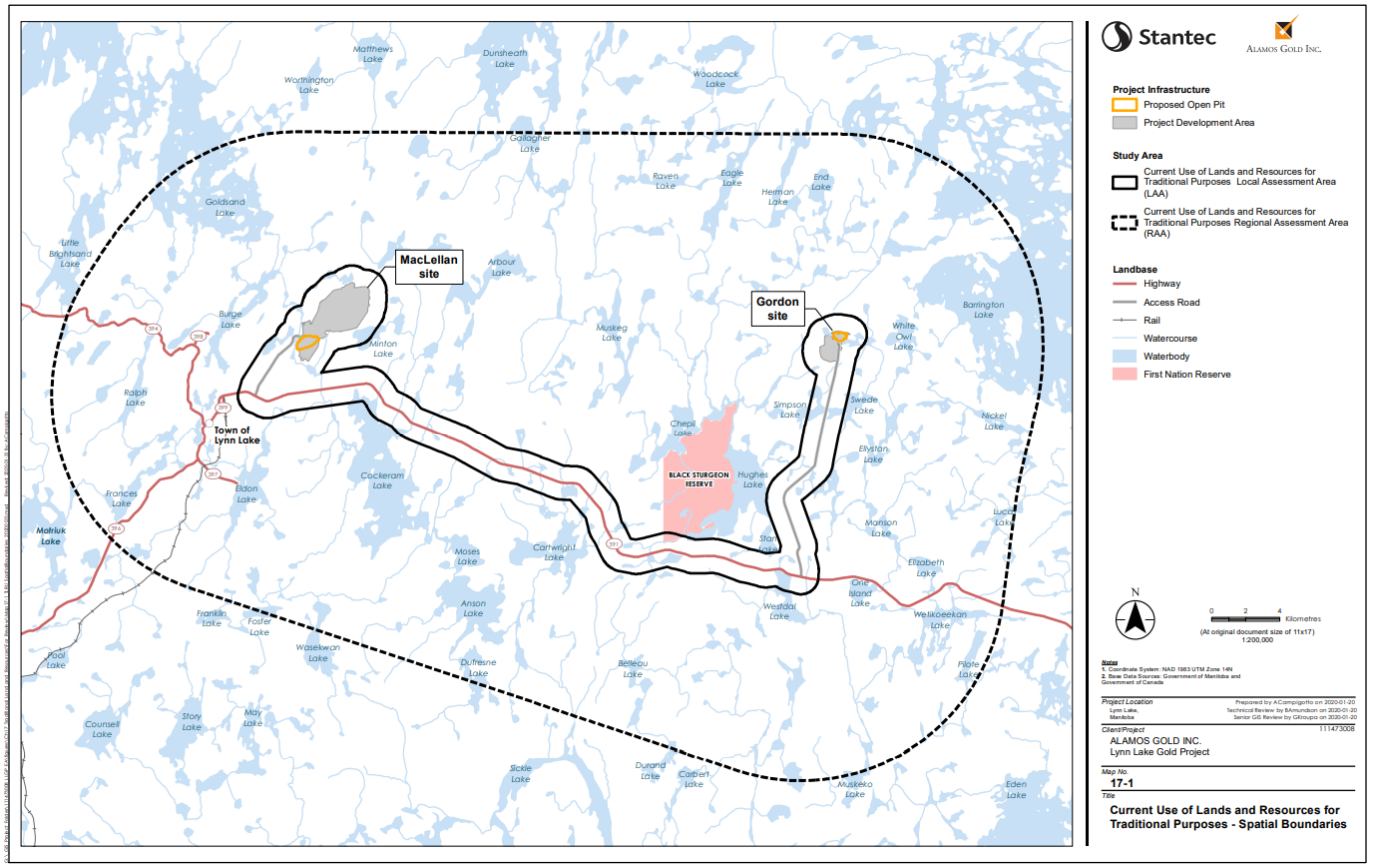
Figure C-13 Local and Regional Assessment Areas for Wildlife and Wildlife Habitat



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon and MacLellan site Local Assessment Area (LAA) includes the area within a one kilometre buffer of the Gordon and MacLellan site Project Development Areas (PDAs) and the section of Provincial Road 391 between the Gordon and MacLellan site access roads. The Gordon and MacLellan site Regional Assessment Area (RAA) includes the Gordon and MacLellan site PDAs and LAA, and a 12 kilometre buffer surrounding the PDAs. The RAA includes the Black Sturgeon Reserve and the Town of Lynn Lake.*

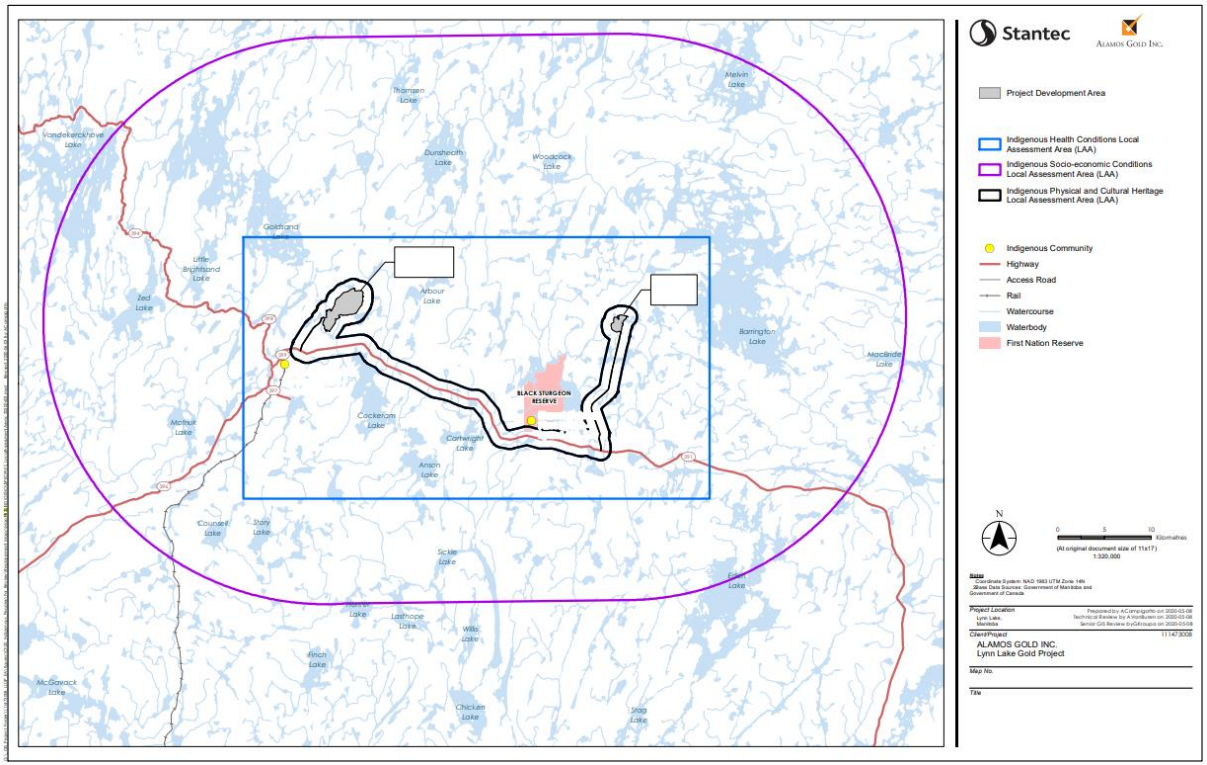
Figure C-14 Local and Regional Assessment Areas for the Current Use of Lands and Resources for Traditional Purposes by Indigenous Peoples



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon and MacLellan site Local Assessment Area (LAA) includes the area within a one kilometre buffer of the Gordon and MacLellan site Project Development Areas (PDAs) and the section of Provincial Road 391 between the Gordon and MacLellan site access roads. The Gordon and MacLellan site Regional Assessment Area (RAA) includes the Gordon and MacLellan site PDAs and LAA, and a 12 kilometre buffer surrounding the PDAs. The RAA includes the Black Sturgeon Reserve and the Town of Lynn Lake.*

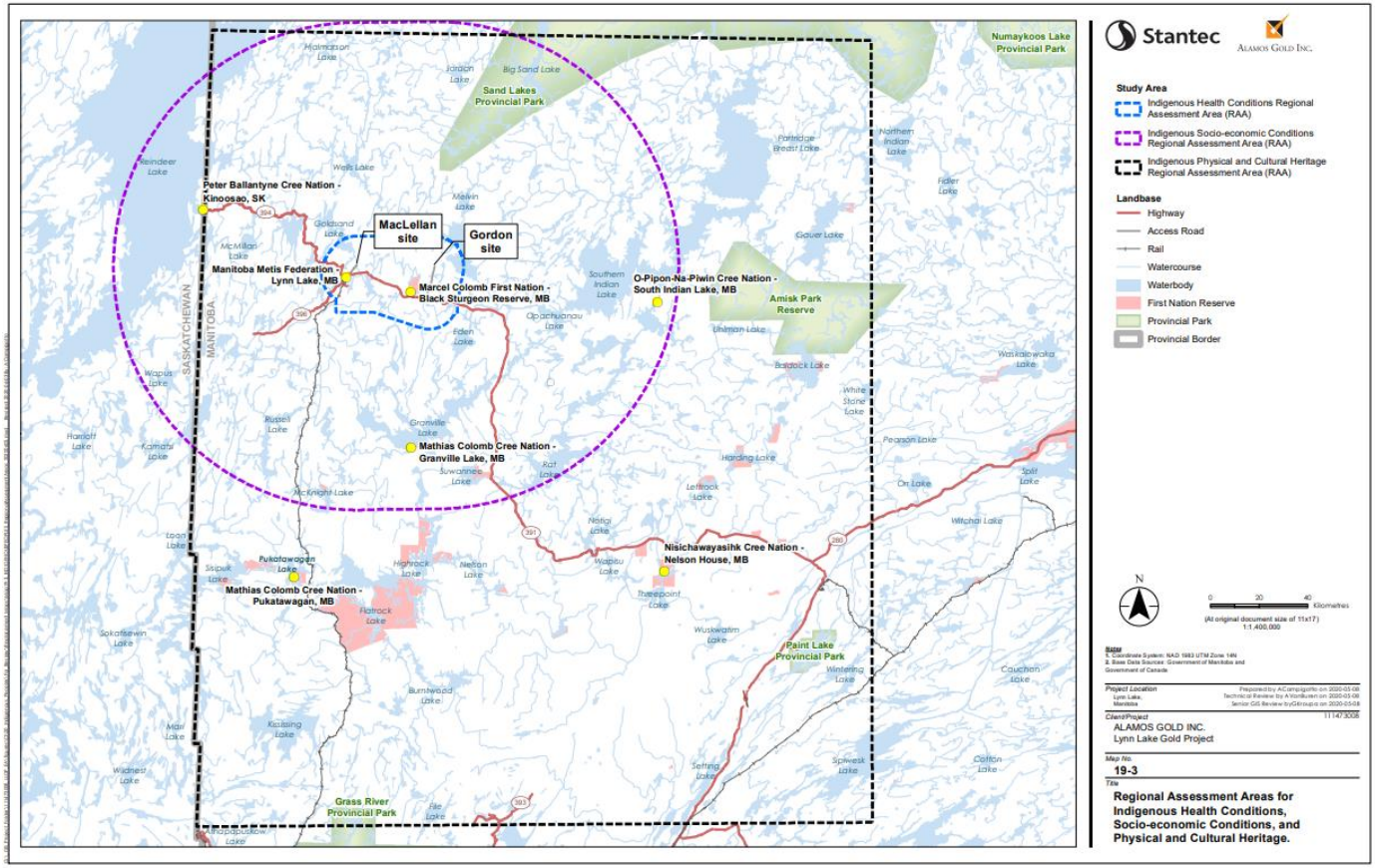
Figure C-15 Local Assessment Areas for Indigenous Health and Socio-economic Conditions and Physical and Cultural Heritage



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The Gordon and MacLellan site physical and cultural heritage resources Local Assessment Area (LAA) includes the Gordon and MacLellan site Project Development Areas (PDAs) and the section of Provincial Road 391 between the Gordon and MacLellan site access roads. The Gordon and MacLellan site Indigenous health conditions LAA extends from Raven Lake to the north to Dufresne Lake to the south and from the Town of Lynn Lake to the west to Nickel Lake to the east, and includes the Gordon and MacLellan site PDAs, the Black Sturgeon Reserve, and the Town of Lynn Lake. The Gordon and MacLellan site Indigenous socio-economic conditions LAA includes the Gordon and MacLellan site PDAs and the area within an approximately 30 kilometre buffer around the PDAs, including the Black Sturgeon Reserve and the Town of Lynn Lake.*

Figure C-16 Regional Assessment Areas for Indigenous Health and Socio-economic Conditions and Physical and Cultural Heritage



Source: Lynn Lake Gold Project, Environmental Impact Statement, Volume 1 (May 2020)

Figure Description: *The site physical and cultural heritage resources Regional Assessment Area (RAA) encompasses the area from the Manitoba-Saskatchewan border to the west; White Stone Lake to the east; Big Sand Lake to the north; and Grass River Provincial Park to the south, and includes the Gordon and MacLellan site Project Development Areas (PDAs), the Black Sturgeon Reserve, and the Town of Lynn Lake. The Indigenous health conditions RAA includes the Gordon and MacLellan site PDAs and Local Assessment Area, and a 12 kilometre buffer*

surrounding the PDAs; this includes the Black Sturgeon Reserve and the Town of Lynn Lake. The Indigenous socio-economic conditions RAA includes the Gordon and MacLellan site PDAs, the area within a 30 kilometre buffer of the PDAs, the Town of Leaf Rapids, the Black Sturgeon Reserve, Granville Lake and South Indian Lakes Indian Settlements, the Kinoosao-Thomas Clarke Reserve, and the City of Thompson.

Appendix C Summary of Crown Consultation with Indigenous Nations

Appendix C contains a summary of the issues of concern identified by Indigenous nations throughout the environmental assessment, along with Alamos Gold Inc.'s (the Proponent) and the Impact Assessment Agency of Canada's (the Agency) responses.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
A	Accidents and Malfunctions			
A1	Mathias Colomb Cree Nation, Manitoba Metis Federation	Concerns regarding potential accidents and malfunctions, such as Tailings Management Facility dam breaches, and associated effects to the environment and Indigenous Peoples, including potential impacts to rights and effects to current use. Request that the Proponent develop emergency response procedures to be deployed immediately in the event of an accident or malfunction.	The Proponent committed to developing emergency response procedures that would be implemented in the event of an accident or malfunction at the project sites to mitigate adverse effects to the environment and Indigenous Peoples. The Proponent stated that, while potential effects associated with a failure of the Tailings Management Facility dams during operation would be high magnitude, the likelihood of a dam breach and the overall risks associated with the Tailings Management Facility during construction and operation would be low, in recognition of contingency planning, and engineering and quality controls that would be implemented during all project phases. The Proponent committed to conducting a Dam Breach Assessment for the Tailings Management Facility prior to construction, which would assess the likelihood, potential modes of failure, and consequences of a dam breach or failure. The results of the assessment	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures, including the development of emergency response procedures, are appropriate to mitigate potential adverse environmental effects and effects to Indigenous Peoples. The Agency understands that the Proponent would take reasonable measures to minimize the probability of accidents and malfunctions. 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.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			would be used in the next phase of project design.	
A2	Mathias Colomb Cree Nation, Manitoba Metis Federation. Peter Ballantyne Cree Nation	Request that Indigenous nations continue to be engaged regarding mitigation and accommodation measures to address potential effects of accidents and malfunctions. Request that Indigenous nations be informed of accidents and malfunctions, and any associated adverse effects to the environment, immediately and be provided with summary reports of follow-up programs.	The Proponent committed to developing an Emergency Communication Plan, which would describe the means of communication (i.e. including notification of potentially affected Indigenous nations), notification procedures, and urgent and longer-term communication requirements for possible] emergency events. The Proponent committed to engaging with Indigenous nations throughout the life of the Project. Indigenous nations would be invited to participate on an Indigenous Environmental Advisory Committee for the Project, which would facilitate the participation of interested Indigenous nations in environmental aspects of ongoing project activities, including the development and implementation of follow-up and monitoring plans.	The Agency is satisfied with the Proponent's response and agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project and to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations. The Agency recommends, for consideration in the Minister of Environment and Climate Change's (the Minister) Decision Statement that summary reports from monitoring and follow-up programs be shared with potentially affected Indigenous nations.
B	Alternative Means of Carrying Out the Project			
B1	Mathias Colomb Cree Nation	Concerns regarding the alternative means assessment for mine waste disposal and management of seepage from the Tailings Management Facility, including the level of detail provided regarding potential effects to valued	The Proponent completed cost-benefit analyses to determine which mine waste disposal and management options would be selected as the preferred option, including for disposal of tailings and mine rock, and management of seepage from the Tailings Management Facility. These analyses considered potential effects to the environment and the technical and economic feasibility of each option. Storage of mine rock and tailings in mine rock storage areas and the Tailings Management	The Agency is satisfied with the Proponent's response and is of the view that the Proponent adequately considered the potential environmental effects and the economic and technical feasibility of alternative means of carrying out the Project in selecting the preferred alternatives.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		components of each alternative.	Facility, respectively, were chosen as the preferred alternatives as other options were not considered economically feasible and would result in additional effects to the environment. Bedrock grouting and installation of seepage collection systems to manage seepage from the Tailings Management Facility were selected as the preferred alternatives as other options were not considered economically feasible.	
B2	Mathias Colomb Cree Nation	Concerns that the alternative time frames for the life of the Project did not adequately consider potential economic benefits associated with an extended mine life.	The Proponent completed a cost-benefit analysis to determine the appropriate length of the mine life based on the projected useful life span of major equipment and infrastructure, mine sequencing (i.e. rock extraction and stockpiling) required to maintain a consistent maximum mill feed rate, and economic and technical feasibility. An operational duration of six years and 11 years were initially chosen for the Gordon and MacLellan sites, respectively. Upon discovery of additional resources at the MacLellan site, the mine life was extended to 13 years, which was determined to have positive effects on local socio-economic conditions, including for Indigenous Peoples who may be employed during the life of the Project. The Proponent committed to informing Indigenous nations of job and procurement opportunities for the Project in advance and working with Indigenous nations to provide training and education opportunities to enhance participation of Indigenous Peoples and Indigenous-owned businesses in the Project.	The Agency is satisfied with the Proponent's assessment of alternative time frames for the length of mine life, including the Proponent's consideration of potential economic benefits and the economic and technical feasibility of an extended mine life.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
B3	Mathias Colomb Cree Nation	Concerns regarding the lack of engagement with Indigenous nations regarding the selection and evaluation of alternative means for project activities and components.	The Proponent indicated that Indigenous knowledge and the current use of lands and resources for traditional purposes were considered in the assessment of alternative means, project design, and project siting. The Proponent also considered potential impacts on the rights and interests of Indigenous nations in conducting cost-benefit analyses for the Project to evaluate the environmental effects and technical and economic feasibility of each alternative. The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2).	The Agency is satisfied with the Proponent's assessment of alternative means of carrying out the Project and is of the view that potential effects to the environment and Indigenous Peoples were adequately considered. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project and to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations.
C	Cumulative Effects			
C1	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	Concerns regarding contributions of the Project to cumulative effects to traditional lands and resources of importance to Indigenous nations, which have already been depleted due to past and present projects and physical activities.	The Proponent completed an assessment of the effects of past, present, and reasonably foreseeable projects and physical activities that may interact cumulatively with residual project effects on the current use of lands and resources for traditional purposes (current use). The Proponent is of the view that the effects of past, present, and reasonably foreseeable projects and physical activities in combination with project effects would not prevent Indigenous Peoples from practicing current use activities within the Local Assessment Areas (LAAs) and Regional Assessment Area (RAA).	The Agency is satisfied with the Proponent's assessment of potential cumulative effects of the Project in combination with other past, present, and reasonably foreseeable projects and physical activities. Recognizing that some uncertainty remains regarding the extent and magnitude of cumulative effects to current use, the Agency is of the view that the Project's contributions to cumulative effects on current use will be appropriately mitigated and are unlikely to threaten the ability of Indigenous Peoples to practice traditional and cultural use activities within the LAAs and RAA.
C2	Sayisi Dene First Nation, Peter Ballantyne	Concerns regarding the Project's contributions to cumulative lake level drawdown in Gordon	The Proponent completed an assessment of the effects of past, present, and reasonably foreseeable projects and physical activities that may interact cumulatively with residual project	The Agency acknowledges that there would be overlap between project effects and the effects of past and present projects and physical activities on surface water and fish

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Cree Nation, Manitoba Metis Federation	Lake and associated effects to fish and fish habitat. Alterations to drainage patterns associated with historical mining operations have resulted in lower water levels in Gordon Lake than were present under pre-disturbance conditions. Concerns that effluents and discharges from the Project would act cumulatively with other past projects and activities, including the East Tailings Management Area and the historical mines at the Gordon and MacLellan sites, to adversely affect surface water quality in the LAAs and RAA.	effects on surface water and fish and fish habitat. The Proponent is of the view that, while past, present, and reasonably foreseeable projects and physical activities may adversely affect surface water and fish and fish habitat, the effects of these projects and activities would be unlikely to overlap spatially with the residual effects of the Project. The effects of historical mining at the Gordon and MacLellan sites are reflected in the baseline datasets and predictive modelling for the Project and were considered in the assessment of project-specific residual effects presented in this EA Report.	and fish habitat. The Agency is satisfied with the Proponent's assessment of cumulative effects to surface water and fish and fish habitat and is of the view that the Proponent's proposed mitigation measures, monitoring, and follow-up programs and the key mitigation measures identified by the Agency will adequately minimize the Project's contributions to cumulative effects on surface water and 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 *Fisheries Act* authorization process.
C3	Chemawawin Cree Nation, Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation,	Request for additional information regarding how present and reasonably foreseeable projects and physical activities in the RAA may contribute to	The Proponent stated that the Project would result in the direct loss or alteration of approximately 1,207 hectares of wildlife habitat, including habitat for migratory birds and species at risk, in the RAA (i.e. less than 1% reduction in the available habitat area relative to existing conditions). As cumulative habitat losses	The Agency is satisfied with the Proponent's assessment of potential cumulative effects of the Project in combination with other past, present, and reasonably foreseeable projects and physical activities. Recognizing that some uncertainty remains regarding the extent and magnitude of cumulative effects to species at

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Sayisi Dene First Nation	habitat losses in the Kamuchawie Management Unit and how that will affect the ongoing viability and sustainability of boreal caribou populations. Comment that boreal caribou are an important species to many Indigenous nations for the continued exercise of hunting rights, autonomy, and governance rights.	associated with the Project, in combination with past, present, and reasonably foreseeable projects and physical activities, would be relatively small in comparison to the available habitat in the RAA, the Proponent predicted that cumulative losses of wildlife habitat would not threaten the persistence or viability of wildlife species, including species at risk, in the RAA. Although the Kamuchawie Management Unit is below the minimum 65% threshold for undisturbed habitat, project contributions to cumulative habitat losses in this range would represent a loss of only 0.01% of available habitat. Therefore, the Project's contribution to cumulative effects to boreal caribou habitat would be minimal.	risk, including boreal caribou, the Agency is of the view that the Project's contributions to cumulative effects to species at risk will be appropriately mitigated and are unlikely to threaten the long-term persistence or viability of species at risk populations in the RAA. The Agency recommends, for consideration in the Minister's Decision Statement, that the Proponent implement mitigation measures to prevent or offset adverse project effects to boreal caribou, including their habitat, health, and mortality risk.
C4	Mathias Colomb Cree Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation, Marcel Colomb First Nation	Concerns regarding potential cumulative degradation and losses of physical and cultural heritage sites and values within the RAA, including as yet unidentified sites and resources, as a result of the Project in combination with other past, present, and reasonably foreseeable projects and physical activities.	The Proponent stated that residual project effects, in combination with past, present, and reasonably foreseeable projects and physical activities, may affect the ability of Indigenous Peoples to practice traditional use activities and physical and cultural heritage sites by altering the availability, quality, and access to traditional, cultural, or spiritual use sites or resources. The Proponent predicted that, with the implementation of mitigation measures and based on currently available data and Indigenous knowledge, project effects to physical and cultural heritage sites and values within the LAAs would be limited, thereby limiting the Project's contribution to potential cumulative effects. Further, as no other reasonably foreseeable projects and physical activities would occur within the PDAs or LAAs, the Proponent predicted that project effects to physical and cultural heritage sites would not	The Agency is satisfied with the Proponent's assessment of potential cumulative effects of the Project in combination with other past, present, and reasonably foreseeable projects and physical activities. Recognizing that some uncertainty remains regarding the extent and magnitude of cumulative effects to physical and cultural heritage sites and values, the Agency is of the view that the Project's contributions to cumulative effects will be appropriately mitigated and are unlikely to threaten the ability of Indigenous Peoples to practice traditional and cultural use activities within the LAAs and RAA.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			overlap with the effects of these projects and physical activities.	
C5	Mathias Colomb Cree Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation, Marcel Colomb First Nation	Concerns regarding potential cumulative effects on Indigenous Peoples' health, including from cumulative effects on drinking water, air quality, and the quality and quantity of country foods. Concerns were also noted that perceived regional contamination of country foods could affect harvesting practices and the exercise of rights by Indigenous Peoples in the region.	The Proponent completed an assessment of the effects of past, present, and reasonably foreseeable projects and physical activities that may interact cumulatively with residual project effects on Indigenous Peoples health conditions. Cumulative effects to Indigenous Peoples' health conditions may include changes to the availability of, access to, and quality of country foods, changes to water and air quality, and changes to noise and vibration levels. The Proponent was of the view that, despite predicted cumulative effects, the harvest of country foods in the LAAs and RAA would be able to continue with minor alterations to behavior, such as changes in patterns of access or travel routes. Project contributions to cumulative effects on the availability of and access to country foods were anticipated to cease following the decommissioning/closure phase.	The Agency acknowledges that past, present, and reasonably foreseeable projects and activities may interact cumulatively with residual project effects to cause adverse effects to Indigenous Peoples' health, including both measurable and perceived effects, within the RAA. The Agency is satisfied with the Proponent's assessment of potential cumulative effects of the Project in combination with other past, present, and reasonably foreseeable projects and physical activities. Recognizing that some uncertainty remains regarding the extent and magnitude of cumulative effects to Indigenous Peoples' health conditions, the Agency is of the view that the Project's contributions to cumulative effects will be appropriately mitigated and are unlikely to prohibit Indigenous Peoples from harvesting and consuming country foods within the LAAs and RAA.
D	Effects of the Environment on the Project			
D1	Mathias Colomb Cree Nation	Concerns regarding the Proponent's lack of consideration of the potential effects of climate change, including extreme climate change scenarios, in water balance modelling.	The Proponent utilized climate normals for the period between 1981 and 2010 from the Lynn Lake A meteorological station to represent long-term average precipitation conditions for the RAA. Extreme precipitation conditions were modelled using 1:25-year wet and dry annual precipitation scenarios. As predicted annual average precipitation values under climate change (i.e. from the Climate Atlas for the	The Agency is satisfied with the Proponent's response and acknowledges that the precipitation values used by the Proponent in its water balance model are inclusive of annual average precipitation values determined to be likely under a high carbon climate change scenario.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			Municipality of Lynn Lake for a high carbon scenario) are within the range of values utilized for the water balance model, the Proponent was of the view that potential effects of climate change were adequately considered in the water balance model. The Proponent committed to including extreme precipitation scenarios based on climate change predictions in the next phase of project design.	The Agency supports the inclusion of extreme precipitation scenarios based on climate change predictions in the next phase of project design.
D2	Manitoba Metis Federation, Sayisi Dene First Nation	Concerns that Indigenous knowledge regarding historic flooding in the PDAs, LAAs, and RAA have not been incorporated into flood modelling.	The Proponent completed a flood modelling assessment to assess potential effects of the environment on the Project, which took into consideration historical flood records, where available. The Proponent is of the view that this assessment provided sufficient information to inform the environmental assessment. Opportunities to provide Indigenous knowledge of historical flooding in the PDAs, LAAs, and RAA will be available during the detailed design phase through ongoing engagement and the establishment of the Indigenous Environmental Advisory Committee (see row A2).	The Agency is satisfied with the Proponent's assessment of potential effects of the environment on the Project and agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project, to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations, and to consider Indigenous knowledge regarding historic flooding during the detailed design phase.
D3	Manitoba Metis Federation	Concerns regarding potential effects of permafrost thaw to project infrastructure and site stability. Request that the Proponent conduct an assessment of the effects of climate change to permafrost and that Métis citizens be invited to participate in any decisions regarding permafrost	The Proponent stated that the potential for permafrost thaw settlement and terrain instability within the PDAs would be limited, as construction activities (i.e. excavation of organic topsoil and overburden) would remove permafrost soils from the PDAs. If permafrost soils are not removed during construction, mitigation measures to reduce the effects of permafrost degradation and effects to the Project would be implemented.	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 permafrost thaw on the Project. The Agency recommends, for consideration in the Minister's Decision Statement that the Proponent develop and implement a follow-up program, in consultation with Indigenous nations and relevant authorities, to monitor any remaining permafrost soils following construction.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		management and monitoring.		
E	Federal Lands			
E1	Marcel Colomb First Nation	Concerns regarding the predicted increase in non-local project personnel and contractors, and potential increases in the demand for on-reserve community services, infrastructure, and housing.	The Proponent completed an assessment of potential project effects to federal lands, including reserve lands, and undertook engagement with Indigenous nations to determine the current state of the environment on federal lands, including the collection of traditional knowledge. The Proponent predicted that residual project effects to federal lands, including Marcel Colomb First Nation's Black Sturgeon Reserve, would be minimal (i.e. changes to air quality, wildlife species of importance to Indigenous Peoples, and services and infrastructure) or would not occur (i.e. changes to noise and vibration levels, surface water, and vegetation and wetlands).	The Agency is satisfied with the Proponent's assessment of effects to federal lands and is of the view that the Proponent's proposed mitigation, monitoring, and follow-up measures would adequately address potential project effects to federal lands.
F	Fish and Fish Habitat			
F1	Peter Ballantyne Cree Nation	Concerns with the Proponent's definition of low, moderate, and high magnitude residual effects for fish and fish habitat, particularly the lack of quantitative measures.	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 Agency is satisfied that the Proponent's definition of low, moderate, and high 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.
F2	Mathias Colomb Cree Nation, Peter Ballantyne Cree Nation,	Concerns that the Proponent's assessment of potential residual effects to fish and fish habitat may	The Proponent indicated that the focal species selected for the assessment of effects to fish and fish habitat represent the variety of life history, habitat requirements, and trophic levels of the fish species known to inhabit the Gordon	The Agency is satisfied with the Proponent's response and is of the view that potential project effects to burbot and lake sturgeon have been adequately considered, based on known information about the species' life

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Manitoba Metis Federation	have underestimated potential effects to culturally important fish species, including lake sturgeon and burbot, due to the different habitat requirements, life history, and ecology of these species compared to the focal species selected. Request that the Proponent develop mitigation measures specific to fish species of cultural importance to Indigenous Peoples.	and MacLellan site LAAs, including lake sturgeon and burbot. However, a separate assessment was conducted for lake sturgeon and burbot due to their importance for conservation and for Indigenous cultural and traditional purposes. The Proponent was of the view that potential effects to these species would be adequately addressed by the mitigation measures proposed to address potential effects to fish and fish habitat and surface water quality and quantity. The Proponent committed to monitoring and adaptively managing potential project effects to fish species of cultural importance to Indigenous nations throughout the life of the Project through its Aquatic Effects Monitoring Plan and Surface Water Management and Monitoring Plan, which would be developed and implemented in consultation with Indigenous nations and relevant authorities. The Proponent also committed to funding research for lake sturgeon populations in the Hughes River and Keewatin River and developing a fish habitat offsetting plan, as part of the *Fisheries Act* authorization process for the Project, to offset fish habitat losses in the PDAs and LAAs.	history requirements and distribution within the LAAs. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent undertake monitoring of fish species, in consultation with Indigenous nations, prior to and during construction, operation, and decommissioning/closure to verify the results of the environmental assessment and inform the need for contingency measures to address project effects to species of cultural importance, as identified by Indigenous nations. The Agency understands that the monitoring of burbot may be difficult and could result in an increase risk of mortality to the species. The Agency encourages the Proponent to reconsider burbot monitoring should new methods be developed that do not increase burbot mortality risk. 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 *Fisheries Act* authorization process.
F3	Peter Ballantyne Cree Nation, Manitoba Metis Federation	Concerns regarding the lack of monitoring of plankton and periphyton as indicators of nutrient levels and water toxicology in the Proponent's Aquatic Effects Monitoring Plan.	The Proponent indicated that a detailed Aquatic Effects Monitoring Plan would be developed during the permitting phase, in consultation with federal and provincial authorities and Indigenous nations, and baseline data to inform this Plan would be collected prior to project construction. It is anticipated that this Plan would include effluent characterization, and	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent include collection of chorophyll a for the monitoring of plankton, periphyton, and benthic invertebrates as part of its fish and fish habitat follow-up program to enable detection of project-related changes in nutrient and contaminant levels and food web dynamics,

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			water quality, sediment quality, benthic invertebrate, and fish tissue sampling.	and to inform adaptive management responses.
F4	Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	Concerns regarding potential effects to fish and fish habitat in Farley Creek (i.e. reduced fish habitat variability and sedimentation of spawning habitat) as a result of project-related changes in flow and channel morphology, and the lack of mitigation and offsetting measures proposed to address these effects. Requested that effects to fish and fish habitat in Farley Creek be monitored and adaptively managed during all project phases.	The Proponent indicated that, based on the hydraulic model developed for Farley Creek, increased flows in the creek attributable to the Project would be within the range of natural variability and therefore measures to mitigate potential project effects to fish and fish habitat in Farley Creek would not be implemented, unless required. Monitoring of flows and fish habitat presence and utilization in Farley Creek would be included in the Surface Water Management and Monitoring Plan and Aquatic Effects Monitoring Plan for the Project, which would be developed with input from Indigenous nations. If effects to fish and fish habitat in Farley Creek are detected, contingency measures would be implemented. The Proponent committed to working with Fisheries and Oceans Canada, the Province of Manitoba, and Indigenous nations to develop a Fish Habitat Offsetting Plan that counterbalances unavoidable alteration, disturbance, or destruction of fish habitat caused by the Project.	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent: • monitor the amount and quality of fish habitat present in Farley Creek prior to construction to establish a baseline dataset to inform follow-up and monitoring programs; and • conduct comprehensive flow monitoring in Farley Creek to verify the results of the hydraulic model developed for Farley Creek, monitor changes in flow, and monitor potential project effects to fish and fish habitat. The Agency recommends the monitoring program for Farley Creek be based on flow and habitat metrics rather than fish utilization due to safety concerns for project personnel. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations, the Province of Manitoba, and Fisheries and Oceans Canada to develop a fish habitat offsetting plan.
F5	Manitoba Metis Federation	Concerns regarding potential effects to fish and fish habitat, including spawning habitat, in the Hughes River due to upgrades	The Proponent indicated that, as upgrades to the existing clear-span bridge over the Hughes River would involve replacement of timber and planks only and would not involve alteration to the bridge abutments or abutment armouring,	The Agency is satisfied with the Proponent's response and is of the view that effects to fish and fish habitat in the Hughes River as a result of the bridge upgrades would be unlikely, given that upgrades to the Hughes River bridge would involve the replacement of

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		to the Hughes River bridge along the Gordon site access road.	adverse effects to fish and fish habitat, including fish passage, were not anticipated.	timber and planks only and would not involve works below the high water mark.
F6	Manitoba Metis Federation	Concerns regarding the lack of consideration of effects to fish species other than brook stickleback in Gordon Lake. While brook stickleback may be the only fish species able to overwinter in Gordon Lake, this lake may provide important rearing and nursery habitat for large-bodied fish and may act as a movement corridor.	The Proponent stated that brook stickleback are the only fish species that can use Gordon Lake for all life history requirements (i.e. spawning, rearing, foraging, overwintering) as this is the only fish species present in the Gordon site LAA capable of surviving the low dissolved oxygen conditions that occur in Gordon Lake in winter. While other fish species could reach Gordon Lake from Farley Lake via the existing diversion channel during the open water season, these species would not be able to complete all life history requirements in Gordon Lake. Further, movement of these large-bodied fish species between the two lakes is restricted by the presence of numerous beaver dams in the existing diversion channel. Therefore, effects to large-bodied fish species as a result of project-related effects to Gordon Lake were not predicted.	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures would adequately mitigate potential project effects to fish habitat in Gordon Lake. The Agency recognizes that uncertainty exists regarding habitat availability and utilization in Gordon Lake for large-bodied fish species and recommends, for inclusion in the Minister's Decision Statement, that the Proponent monitor project effects to fish and fish habitat in Gordon Lake throughout the life of the Project.
F7	Mathias Colomb Cree Nation, Sayisi Dene First Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation, Chemawawin Cree Nation	Concerns regarding the lack of detail provided regarding the Proponent's Fish Habitat Offsetting Plan, including how equivalency, uncertainty, and time lags were considered, and the need to ensure that a net gain of fish habitat is achieved. Request that Indigenous nations be	The Proponent indicated that a discussion of how fish habitat offsets would counterbalance unavoidable serious harm to fish and the uncertainty and time lags associated with offsets was provided in the *Lynn Lake Gold Project – Fisheries Offset Habitat Balance* submitted to Fisheries and Oceans Canada on April 13, 2020. An updated submission is currently being prepared and will be provided to Fisheries and Oceans Canada following engagement with Indigenous nations and the completion of additional field work and data collection, required as part of the *Fisheries Act* authorization process. The updated submission will include a revised habitat balance that	Recognizing that uncertainty remains regarding the location, nature, and suitability of habitat offsets to counterbalance project-related fish habitat losses or alteration, the Agency is of the view that the Proponent's commitment to collect additional baseline data to support offsetting quantifications and the commitment to continue to work with Fisheries and Oceans Canada and Indigenous nations to develop appropriate habitat offsets would address this uncertainty. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent share a draft of the final Fish

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		provided an opportunity for involvement in the construction of fish habitat enhancement, restoration, and creation projects, and that a draft copy of the Fish Habitat Offsetting Plan be provided to Indigenous nations for review at least 30 days prior to formal submission to Fisheries and Oceans Canada.	considers equivalency using an accounting of the quantity, quality, and known fish utilization of habitat affected by the Project and the quantity, quality, and anticipated fish utilization of habitat offsets required to counterbalance project-related habitat losses and any remaining uncertainty and time lags. The Proponent committed to working with Fisheries and Oceans Canada, the Province of Manitoba, and Indigenous nations to develop a Fish Habitat Offsetting Plan that counterbalances unavoidable alteration, disturbance, or destruction of fish habitat caused by the Project.	Habitat Offsetting Plan with Indigenous nations for review at least 30 days prior to formal submission to Fisheries and Oceans Canada.
F8	Chemawawin Cree Nation, Sayisi Dene First Nation, Mathias Colomb Cree Nation, Manitoba Metis Federation	Concerns regarding predicted federal water quality guideline exceedances in fish-bearing waterbodies in the PDAs and LAAs, and associated effects to fish. Concerns that the conservative nature of federal water quality guidelines should not be used to conclude that effects to fish and aquatic biota would not occur despite these exceedances. Concerns regarding potential effects to	The Proponent indicated that, although the concentrations of some water quality parameters and contaminants may exceed federal and provincial water quality standards as a result of the Project, the anticipated average and maximum concentrations of contaminants in fish-bearing waterbodies were not predicted to exceed thresholds at which toxic effects to fish would occur. Exceedances of provincial and federal water quality standards for contaminants were predicted to occur infrequently; therefore adverse effects to fish and aquatic biota were considered unlikely to occur. Mitigation measures would be implemented during all project phases to mitigate potential project effects to groundwater and surface water quality.	The Agency is of the view that the Proponent's proposed mitigation and monitoring measures would minimize potential project effects to surface water quality due to the release of contact water and water from the pit lakes to the surrounding environment. The Agency also understands that the Proponent will be required to comply with the MDMER and the pollution prevention provisions of the *Fisheries Act*. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent: • implement mitigation measures, including collection and treatment of contact water and seepage before depositing it into the receiving environment, to prevent project-related exceedances of federal water

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		surface water quality and fish and fish habitat due to the release of water from pit lakes during post-closure and the need to monitor water quality to determine whether water is of suitable quality for release. Request that the Proponent monitor and treat contact water from the project sites prior to release to receiving waterbodies, including the Keewatin River and Farley Lake, in perpetuity until federal and provincial water quality criteria are consistently achieved at the point of discharge.	During decommissioning/closure, water quality monitoring in the pit lakes would be conducted and would continue until water is of sufficient quality to allow unabated discharge to the surrounding environment. Should water quality monitoring indicate that water quality is exceeding water quality criteria in the pit lakes, treatment options would be implemented.	quality guidelines in all surface waterbodies within the Gordon and MacLellan site PDAs, and LAAs. For waterbodies with contaminant concentrations in excess of federal water quality guidelines under baseline conditions, mitigation measures will be implemented to reduce project-related increases in contaminant concentrations to the greatest extent possible; and • monitor pit lake water quality throughout the decommissioning/closure and post-closure phases until water quality meets federal water quality guidelines for the protection of aquatic life.
F9	Manitoba Metis Federation	Request that additional mitigation measures be developed to reduce arsenic levels in the unnamed tributary of the Keewatin River during post-closure, due to the toxicity of arsenic in aquatic environments, the potential for bioaccumulation, and the anticipated long-term nature of the	The Proponent noted that, although concentrations of arsenic in surface water may exceed federal and provincial water quality guidelines in the unnamed tributary of the Keewatin River as a result of the Project, arsenic levels were predicted to be below concentrations at which adverse effects to fish health are generally observed. Therefore, adverse effects to the health, growth, or survival of fish and aquatic biota were not expected. Further, maximum arsenic concentrations were predicted to occur only twice throughout the project life, otherwise arsenic levels would be much lower. Mitigation measures would be	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent implement mitigation measures, including collection and treatment of contact water and seepage before depositing it into the receiving environment, to prevent project-related exceedances of federal water quality guidelines in all surface waterbodies within the Gordon and MacLellan site PDAs and LAAs. For waterbodies with contaminant concentrations in excess of federal water quality guidelines under baseline conditions, mitigation measures will be implemented to reduce project-related increases in

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		exceedance of federal guidelines.	implemented during all project phases to mitigate potential project effects to groundwater and surface water quality.	contaminant concentrations to the greatest extent possible.
F10	Manitoba Metis Federation, Mathias Colomb Cree Nation	Concerns regarding the potential for mercury methylation, and consequent effects to fish, as a result of project-related water level fluctuations in waterbodies within the LAAs. Request that a methyl-mercury monitoring plan be developed and that Indigenous nations be consulted regarding the fish species to be monitored.	The Proponent indicated that mercury methylation was not expected to occur as a result of the Project as virtually no change in water depths in Farley Creek was predicted to occur and flooding of streams, wetlands, and lakes would not occur. Therefore, no currently dry areas would be flooded that would promote mercury methylation as a result of the Project. Further, the Project would not result in the introduction of new sources of inorganic mercury into nearby lakes or watercourses. Mercury would be included as a parameter to be monitored in all water and fish tissue samples collected as part of the Aquatic Effects Monitoring Plan.	The Agency agrees that the Project may result in fluctuating water levels and/or temporary flooding of areas that may promote mercury methylation. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop a monitoring program, in consultation with Indigenous nations and relevant authorities, to monitor methyl-mercury concentrations in both environmental (e.g. surface water) and fish tissue samples throughout the life of the Project and to mitigate and manage any detected methyl-mercury spikes.
F11	Peter Ballantyne Cree Nation	Concerns regarding potential project effects to sensitive fish species due to exceedances of *Metal and Diamond Mining Effluents Regulations* (MDMER) limits for ammonia due to the release of effluents during project operation.	The Proponent stated that, although ammonia levels in the Tailings Management Facility may exceed MDMER limits, the Facility would be designed to prevent the release of tailings and contact water to the surrounding environment. Mitigation measures would be implemented during all project phases to mitigate potential project effects to groundwater and surface water quality.	The Agency understands that the Proponent will be required to comply with the MDMER and the pollution prevention provisions of the *Fisheries Act*. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent treat collected water to meet the MDMER and the pollution prevention provisions of the *Fisheries Act* prior to discharge.
F12	Manitoba Metis Federation	Concerns regarding potential project effects to fish and fish habitat due to reduced	The Proponent stated that the Project would be unlikely to affect dissolved oxygen concentrations in Gordon Lake and Farley Lake as water level changes were predicted to be	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

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		dissolved oxygen levels and changes in water temperatures in lakes within the PDAs and LAAs. Request that the Proponent monitor changes in water depth, dissolved oxygen concentrations, and temperature in waterbodies within the PDAs and LAAs, and adaptively manage any project-related changes.	minor (i.e. one to two centimetres or less). While dissolved oxygen concentrations in Minton Lake may be affected by the predicted decrease in water levels during winter, adverse effects to fish species present in the Lake would be unlikely as they are tolerant of low dissolved oxygen levels. Groundwater collected by interceptor wells and water from the Wendy and East pit lakes would be aerated prior to dewatering to increase dissolved oxygen concentrations, and would be released in a manner that maintains lake temperature at the point of release within baseline temperature variations, unless authorized by Fisheries and Oceans Canada. Dissolved oxygen concentrations, water levels, and water temperature in lakes and watercourses that may be affected by project activities would be monitored as part of the Aquatic Effects Monitoring Program.	address potential effects of the Project to dissolved oxygen levels and water temperatures in waterbodies within the PDAs and LAAs.
F13	Manitoba Metis Federation, Mathias Colomb Cree Nation	Concerns regarding potential project effects to fish and fish habitat and the cultural and traditional practices of Indigenous Peoples due to effects to surface water and groundwater quality from acid rock drainage, metal leaching, and seepage of contaminated water from project facilities, particularly during the closure and post-closure phases. Request that the	The Proponent indicated that the Tailings Management Facility and ore, overburden, and mine rock stockpiles at the MacLellan and Gordon sites are not expected to affect fish habitat or fish health, growth, or survival as these facilities have been designed to avoid direct disturbance of fish-bearing waterbodies. Mitigation measures would be implemented during all project phases to mitigate potential project effects to groundwater and surface water quality, such as the installation of contact water and seepage collection systems and blending of potentially acid generating and non-potentially acid generating rock to limit acid rock drainage and metal leaching.	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent: • implement mitigation measures, including collection and treatment of contact water and seepage before depositing it into the receiving environment, to prevent project-related exceedances of federal water quality guidelines in all surface waterbodies within the Gordon and MacLellan site PDAs and LAAs. For waterbodies with contaminant concentrations in excess of federal water quality guidelines under baseline conditions, mitigation measures will be implemented to reduce project-related increases in contaminant

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		Proponent line the Tailings Management Facility, mine rock storage areas, and ore stockpiles with an impermeable foundation to limit seepage and effects to groundwater and surface water quality.	Lining the Tailings Management Facility was considered during early phases of project design; it was determined that lining the Tailings Management Facility was not economically feasible and may result in overtopping of the Facility's dams.	concentrations to the greatest extent possible; and • develop and implement a follow-up program to monitor potentially acid generating rock, including from the mine rock storage areas, ore stockpiles, and Tailings Management Facility, for signs of acid rock drainage and metal leaching during all project phases.
F14	Mathias Colomb Cree Nation	Concerns regarding potential effects to surface water quantity in the Keewatin River due to project-related water withdrawals.	The Proponent indicated that the volume of water withdrawals required from the Keewatin River would be limited through reuse and recycling of water to the extent possible, including reuse of contact water from the Ore Milling and Processing Plant and the Tailings Management Facility. Water withdrawals from the Keewatin River would not exceed 10% of instantaneous stream discharge. The Proponent was of the view that this withdrawal rate would have a low probability of detectable effects on ecosystems that support commercial, recreational, or Indigenous fisheries. The Surface Water Management and Monitoring Plan that would be developed for the Project would include monitoring of surface water quantity, including streamflows, in the Keewatin River.	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 project effects to surface water quantity in the Keewatin River.
F15	Manitoba Metis Federation	Concerns regarding potential effects to groundwater quality and quantity, and the need for groundwater	The Proponent stated that, while the Project may result in low to high magnitude residual effects to groundwater quantity, including groundwater-surface interactions, during construction and operation, effects were	The Agency is satisfied with the Proponent's assessment of potential project effects to groundwater and surface water quantity, including potential changes to groundwater discharge rates to surface waterbodies. The

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		monitoring during all project phases. Concerns regarding potential changes to the rate of groundwater discharge to surface water features and resultant changes to lake levels and the amount of fish habitat available in waterbodies within the LAAs.	predicted to be lessened or reversible following decommissioning/closure, as groundwater levels would return to near-baseline conditions. While measurable changes in lake levels and stream flows would occur during construction and operation, changes were not expected to exceed a 30% relative change from baseline conditions. Therefore effects to surface water quantity and associated effects to fish and fish habitat were predicted to be minor. The Proponent committed to working with Fisheries and Oceans Canada, the Province of Manitoba, and Indigenous nations to develop a Fish Habitat Offsetting Plan that counterbalances unavoidable alteration, disturbance, or destruction of fish habitat caused by the Project. While the Project may result in adverse effects to groundwater quality, effects were not predicted to extend into the LAAs or RAA. Further, as no groundwater well users exist within the RAA and the installation of new groundwater wells would not be permitted within the PDAs, project effects to groundwater quality would not result in adverse effects to human health or the availability or quality of drinking water. A Surface Water Management and Monitoring Plan and Groundwater Monitoring Plan would be developed and implemented prior to construction, which would include monitoring of potential changes in surface water quantity in waterbodies within the Gordon and MacLellan site PDAs and LAAs and monitoring and adaptive management of any project-related changes in groundwater quantity.	Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations, the Province of Manitoba, and Fisheries and Oceans Canada to develop a fish habitat offsetting plan, and to monitor and adaptively manage project-related changes to groundwater and surface water quantity for the life of the Project. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent implement mitigation measures to prevent project-related exceedances of federal and provincial groundwater quality guidelines. For contaminants with concentrations that are in excess of federal and provincial groundwater quality guidelines under baseline conditions, the Proponent will implement mitigation measures to reduce project-related contaminant inputs to groundwater to the greatest extent possible.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
F16	Manitoba Metis Federation	Concerns regarding potential downstream changes to water quality in Cockeram Lake due to project-related effects to surface water quality in the Keewatin River.	The Proponent predicted that, following the implementation of mitigation measures, project-related residual effects to surface water quality in the Keewatin River would not extend downstream to Cockeram Lake, based on the results of hydrologic modelling. A Surface Water Management and Monitoring Plan would be developed and implemented for the life of the Project, which would include monitoring of potential changes in surface water quality in waterbodies within the Gordon and MacLellan site PDAs and LAAs.	The Agency is satisfied with the Proponent's assessment of potential project effects to surface water quality and is of the view that the Proponent's proposed mitigation measures would adequately address potential project effects to Cockeram Lake. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent implement mitigation measures to prevent project-related exceedances of federal water quality guidelines in all surface waterbodies within the Gordon and MacLellan site PDAs and LAAs. For waterbodies with contaminant concentrations in excess of federal water quality guidelines under baseline conditions, mitigation measures will be implemented to reduce project-related increases in contaminant concentrations to the greatest extent possible.
G	Follow-up and Monitoring			
G1	Manitoba Metis Federation, Sayisi Dene First Nation, Mathias Colomb Cree Nation	Concerns regarding the lack of detail provided regarding the Proponent's monitoring plans for all valued components.	Additional details regarding the Proponent's proposed follow-up and monitoring plans, including the parameters to be measured, monitoring locations, adaptive management thresholds, and contingency measures, were provided in response to the Agency's Round 2 Information Requests. Follow-up and monitoring plans will be finalized during detailed project design and following consultation with Indigenous nations and relevant authorities. The Proponent committed to conduct follow-up and monitoring for all valued components under	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 nations and relevant authorities. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop, in consultation with Indigenous nations and relevant authorities, follow-up and monitoring programs for all valued components under federal jurisdiction and that reports from follow-up and monitoring

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			federal jurisdiction to verify the accuracy of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for contingency measures.	programs be shared annually with the Agency and other parties.
G2	Mathias Colomb Cree Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	Concerns regarding the lack of engagement by the Proponent regarding mitigation, monitoring, and follow-up programs for the Project. Request that Indigenous nations be involved in the development and implementation of follow-up and monitoring plans; be provided opportunities and relevant training to allow participation in monitoring activities, including decision-making; and be involved in co-development of monitoring and management plans.	Follow-up and monitoring plans will be finalized during detailed project design and following consultation with Indigenous nations and relevant authorities. Results of follow-up and monitoring will be summarized in annual reports. The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2).	The Agency is satisfied with the Proponent's response and agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project and to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations, including with respect to the development and implementation of follow-up and monitoring plans.
G3	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation,	Request that the Proponent develop distinctions-based monitoring and advisory committees to facilitate participation of Indigenous nations in follow-up and monitoring.	The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2). Members of the Indigenous Environmental Advisory Committee would provide advice and Indigenous knowledge, as available, to the Proponent to	The Agency is satisfied with the Proponent's response and agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project and to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations, including with respect to the development and

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Peter Ballantyne Cree Nation, Manitoba Metis Federation	Request that additional information be provided regarding the scope, terms of reference, structure, and funding available for the Indigenous Environmental Advisory Committee.	inform follow-up, monitoring, and adaptive management. The format, structure, and mandate of the Indigenous Environmental Advisory Committee would be defined in a formal Terms of Reference, to be developed collaboratively with participating Indigenous nations.	implementation of follow-up and monitoring plans.
H	Impacts to Rights			
H1	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	Concerns regarding potential impacts to rights as a result of project effects to wildlife, plant, and fish species and populations of cultural importance, due to increased hunting, plant gathering, and fishing pressures from the predicted influx of non-local project personnel and contractors; vegetation clearing and land disturbance; and adverse effects to water quality and quantity, including streamflows.	The Proponent completed an assessment of impacts to rights, including from project-related changes to wildlife, fish, and plant species of importance; vegetation clearing and land disturbance; and effects to surface water quantity and quality. The Proponent was of the view that, following the implementation of mitigation, follow-up, and monitoring measures, including the implementation of project-specific recreational fishing and hunting restrictions for project personnel, project effects to the biophysical environment would not prevent the exercise of rights within the LAAs and RAA. The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including with respect to the Closure Plan and potential end land uses for the PDAs following reclamation.	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures will adequately address potential project effects to plant, fish, and wildlife species and populations of importance for the exercise of rights and traditional and cultural practices. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent prohibit project employees and contractors who reside outside of the RAA from fishing or hunting within the PDAs or in areas accessed using the PDAs, unless an employee or contractor is provided access by the Proponent for exercising Aboriginal rights.
H2	Mathias Colomb Cree Nation,Marcel Colomb First	Concerns regarding the use of biophysical components of the environment as a proxy	The Proponent completed an assessment of impacts to rights, taking into consideration information, including traditional knowledge and data, provided by Indigenous nations	The Agency's methodology for assessing impacts to rights considered all available information in the environmental assessment, including submissions from Indigenous nations

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	for impacts to rights, as some impacts to rights may not be tied directly to the biophysical environment (e.g. governance rights, right of access, right to cultural practice, etc.). Concerns regarding the lack of consideration of intangible values held by Indigenous nations as they relate to impacts to rights.	throughout the environmental assessment process. While potential project effects to biophysical valued components were used to inform the assessment of impacts to rights (i.e. as the ability to exercise rights and related practices, traditions, and customs depends upon the health of the land to support these practices), effects to biophysical valued components were not used as a proxy for the assessment of impacts to rights. The Proponent will continue to work with Indigenous nations to better understand the nature and extent of the exercise of their rights in the project study areas. While the Proponent considered effects to intangible aspects of rights and current use, the Proponent noted that project effects to the quality of experience and other intangible effects would be best evaluated by Indigenous Peoples that would experience the changes within their own cultural context. The Proponent acknowledged that mitigation of physical effects may not fully mitigate effects to intangible values and committed to ongoing engagement with Indigenous nations throughout the life of the Project to work towards addressing these concerns.	potentially impacted by the Project. This included: consideration of Indigenous views on conditions of use, the Project's residual and cumulative effects to the physical and biological conditions of resources, pre-existing impacts, cultural factors[30], consultation activities, and socio-economic conditions that support the exercise of each right. The Agency acknowledges that each Indigenous nation is unique in its exercise of rights and that project impacts will vary for each Indigenous nation. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project.
H3	Mathias Colomb Cree Nation,Marcel Colomb First Nation, Sayisi Dene First Nation,	Concerns that the Proponent has not provided Indigenous nations with opportunities or capacity to identify areas of importance for	The Proponent indicated that, prior to completing the Environmental Impact Statement (EIS), capacity funding for Traditional Land and Resource Use (TLRU) studies was made available to Indigenous nations that identified current use by their members in the project area, and that could therefore experience	The Agency supports Indigenous participation in the environmental assessment process through its Participant Funding Program. Funds were made available to reimburse eligible expenses of Indigenous nations that participated in the technical review process. A total of $727,918.25 in participant funding was

[30] Customs, practices, values, and traditions that are connected to and support the right.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	the exercise of rights in the PDAs, LAAs, and RAA to ensure that effects to these areas are mitigated. Without sufficient capacity, Indigenous nations cannot understand whether and, if so, how the Project may impact their rights and interests.	impacts to the exercise of their rights as a result of the Project. Information provided by each Indigenous nation, including information contained in TLRU studies, was considered in the effects assessment for all valued components and in the impacts to rights assessment.	allocated for the 13 Indigenous nations consulted as part of the environmental assessment for the Project. The Agency acknowledges that funds are not always sufficient to cover the work required to gather information and accurately assess potential effects to reserve lands, traditional territory, rights and interests, and to address information gaps.
H4	Chemawawin Cree Nation	Concerns regarding the Proponent's approach to determining which Indigenous nations to engage with and the level of engagement required, particularly the use of the proximity of traditional lands to the project sites to determine the extent of impacts to rights rather than the asserted rights of each Nation.	The Proponent noted that, in the EIS Guidelines, the Agency identified Indigenous nations that may be affected by the Project and with which the Proponent was expected to strive towards developing a productive and constructive relationship. On June 8, 2020, the Agency informed the Proponent that Chemawawin Cree Nation would be added to the list of potentially affected Indigenous nations that the Proponent is expected to engage with as part of the federal environmental assessment process. The Proponent committed to engaging with Indigenous nations, including Chemawawin Cree Nation, for the life of the Project.	The Agency agrees with the Proponent's characterization of the requirements of the EIS Guidelines as it relates to the list of Indigenous nations to be engaged as part of the environmental assessment process for the Project. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project. The federal Crown has a duty to consult, and, where appropriate, accommodate when the Crown contemplates conduct that may adversely impact potential or established Aboriginal or treaty rights. The Agency is conducting Crown consultation, on behalf of the federal Crown, as it relates to the environmental assessment process for the Project.
H5	Sayisi Dene First Nation	Concerns regarding potential impacts to rights and permanent	The Proponent acknowledged that the Project may result in the permanent loss of some wetland areas directly affected by the Project.	The Agency is satisfied with the Proponent's response and agrees that, while the Project will result in the loss of or changes to wetland

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		displacement of harvesters due to project-related wetland losses and the anticipated reclamation lag time (i.e. 50 years or more) following project operation.	Indirect effects to wetlands were predicted to be reversible, as groundwater levels were predicted to return to near-baseline conditions following decommissioning/closure. Mitigation measures to prevent or minimize project effects to wetland areas within the PDAs and LAAs where direct removal is not required to construct the Project would be implemented, such as the establishment of 30 metre buffers around wetland areas to prevent soil compaction. The Proponent was of the view that project-related effects to wetlands would not prevent the exercise of rights by Indigenous nations in the LAAs and RAA. The Proponent committed to developing and implementing follow-up and monitoring plans to monitor and adaptively manage project effects to wetlands, in consultation with Indigenous nations and relevant authorities.	areas in the PDAs and LAAs, project effects are not likely to prevent the exercise of rights by Indigenous nations within the LAAs and RAA. The Agency agrees with the Proponent's commitment to monitor project effects to wetlands for the life of the project.
H6	Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	Concerns regarding the lack of disaggregated baseline data used to inform the impacts to rights assessment. Request that a disaggregated assessment of potential impacts to rights be conducted for each Indigenous nation. Concerns that the results of TLRU studies completed by Indigenous nations were not considered in	The Proponent provided a disaggregated assessment of project effects and impacts to rights for each Indigenous nation in response to the Agency's Round 2 Information Requests. This assessment considered publicly available data, information contained in TLRU studies made available to the Proponent, and comments, concerns, and Indigenous knowledge shared during engagement activities. Based on this assessment, the Proponent was of the view that project activities and effects would likely not prevent the exercise of rights by Indigenous Peoples within the LAAs and RAA, following the implementation of mitigation measures. The Proponent committed to engaging with Indigenous nations for the life of the Project to	The Agency is satisfied with the Proponent's response and is of the view that the Proponent assessed nation-specific impacts to rights in a manner consistent with the EIS Guidelines. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project and to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		the impacts to rights assessment	better understand the nature and extent of the exercise of rights within the RAA, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2).	
H7	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation	Concerns regarding impacts to rights and effects to current use as a result of the construction of fish habitat offsets. Request that the Proponent consider in the impacts to rights assessment that rights cannot be practiced in any location; if Indigenous nations are displaced to a location where rights cannot be practiced, impacts to rights may be more severe than anticipated.	The Proponent committed to engaging with potentially affected Indigenous nations to identify fish habitat enhancement, restoration, or creation opportunities that could be included in the Fish Habitat Offsetting Plan for the Project. Fish habitat enhancement, restoration, or creation methods would be prioritized based on those that: provide the greatest benefit for the fish populations most directly affected by the project; have the least uncertainty of success and shortest time lag before being fully functional; are most likely to provide a net gain of fish habitat and/or fish production; are supported by the greatest number of Indigenous nations; and best address the factors that Fisheries and Oceans Canada must consider prior to issuing a *Fisheries Act* authorization. The Proponent committed to working with Fisheries and Oceans Canada, the Province of Manitoba, and Indigenous nations to develop a Fish Habitat Offsetting Plan that counterbalances unavoidable alteration, disturbance, or destruction of fish habitat caused by the Project.	The Agency acknowledges that fish habitat offsetting and any other offsetting measures that may be required for the Project may result in adverse effects to current use activities, the quality of experience of Indigenous Peoples on the landscape, and impacts to rights, including displacement of Indigenous land users from areas currently used for the exercise of traditional and cultural practices. The Agency also acknowledges the importance of place for the exercise of rights and that some rights cannot be practiced anywhere on the landscape. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations, the Province of Manitoba, and Fisheries and Oceans Canada to develop a Fish Habitat Offsetting Plan.
H8	Sayisi Dene First Nation	Concerns regarding the Proponent's selection of plant species for inclusion in native seed	The plant species selected for inclusion in native seed mixes were species identified by Indigenous nations as important species for traditional and cultural use activities. The	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent engage with Indigenous nations regarding the selection of plant species

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		mixes for reclamation as they are not reflective of plant species used by Indigenous nations for the exercise of rights.	Proponent committed to engaging with Indigenous nations throughout the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2).	included in native seed mixes to be used to re-vegetate the PDAs.
I	Indigenous Peoples – Current Use of Lands and Resources for Traditional Purposes			
I1	Sayisi Dene First Nation, Chemawawin Cree Nation	Concerns regarding the use of chemical dust suppressants as the use of these substances could result in measurable or perceived effects to surface water quality, wildlife health, and air quality, which may deter Indigenous Peoples from practicing current use activities in the LAAs.	The Proponent committed to not using chemical dust suppressants to mitigate fugitive dust emissions within the PDAs during any project phase in response to concerns expressed by Indigenous nations.	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.
I2	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation,	Concerns regarding the potential loss of cultural connection to the PDAs and LAAs; disruptions to cultural transmission activities, knowledge sharing, and teaching; adverse effects to cultural and spiritual practices as a result of project effects to the landscape and access restrictions to the PDAs. Concerns that the Proponent did not	The Proponent completed an assessment of potential project effects to the quality of experience of Indigenous Peoples on the landscape. The Proponent acknowledged that Indigenous land users may choose not to pursue traditional land use activities near the PDAs for a variety of personal, perceptual, practical, aesthetic, and spiritual reasons. The magnitude of project effects to cultural transmission and other intangible effects was not directly assessed as these effects would be best evaluated by Indigenous Peoples that would experience the changes within their own cultural context. The Proponent also acknowledged that mitigation of effects to the biophysical environment may not fully mitigate	The Agency recognizes that the Project may result in residual adverse effects to the quality of experience of Indigenous Peoples on the landscape and may disrupt cultural connections with lands and resources. While some residual project effects would be reversible following reclamation of the PDAs, some effects to the landscape would be permanent. The Agency acknowledges the importance of place for the exercise of traditional and cultural activities and the exercise of rights and recognizes that some rights and traditional and cultural use activities cannot be practiced everywhere on the landscape.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Peter Ballantyne Cree Nation, Manitoba Metis Federation	adequately consider the locational importance of harvesting. The location in which harvesting is conducted and its importance for knowledge and cultural transmission is just as significant as the resources harvested.	effects to intangible values held by Indigenous Peoples. The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2).	The Agency is satisfied that the Proponent's response and is of the view that the proposed mitigation measures would help to minimize the potential loss of cultural connection to the PDAs and LAAs as a result of the Project. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project and to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations.
I3	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Métis Federation	Concerns regarding access restrictions to harvesting areas within the PDAs and areas within the LAAs accessed through the PDAs as a result of the presence of the Project on the landscape and due to disturbance or removal of existing trails and travel routes that overlap with the PDAs.	The Proponent acknowledged that, due to access restrictions to the PDAs that would be in place throughout the life of the Project and effects to existing trails and travel routes that intersect with the PDAs, the ability of Indigenous Peoples to access some harvesting areas within the PDAs and LAAs may be restricted. However, the Proponent predicted that, with the implementation of mitigation measures and slight adjustments to harvesting practices, the Project would not prevent the exercise of current use activities within the LAAs and RAA by Indigenous Peoples. Further, the Proponent was of the view that effects to current use as a result of access restrictions would be reversible, following decommissioning/closure and reclamation of the PDAs. The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including with respect to the Closure	The Agency acknowledges that the Project would result in residual effects to access for current use through direct removal of trails and travel routes and access restrictions to the PDAs. The Agency is of the view that, with the implementation of mitigation measures, the Project would not prevent the exercise of current use activities within the LAAs and RAA. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project, including with respect to the Closure Plan and planned end land uses for the PDAs following reclamation.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			Plan and potential end land uses for the PDAs following reclamation.	
I4	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation, Chemawawin Cree Nation, Barren Lands First Nation, Nisichawayasihk Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	Concerns regarding project effects to current use, including effects to wildlife and migratory bird distribution near the PDAs and LAAs, as a result of blasting and elevated noise and vibration levels. Concerns regarding the receptor locations selected for the assessment of effects to current use, as the locations selected may not provide an accurate representation of actual receptor locations.	The Proponent completed an assessment of project effects to noise and vibration levels as a result of blasting, including the effects of sensory disturbance on wildlife and Indigenous Peoples, applying a conservative approach to the assessment of effects by assuming that Indigenous receptors were present year-round within the LAAs. The Proponent predicted that, following the implementation of mitigation measures, residual effects to noise and vibration levels in the LAAs and RAA would be low for all project phases. However, the Proponent acknowledged that perceived effects to noise and vibration levels could result in adverse effects to the quality of experience of Indigenous Peoples on the landscape. The Proponent committed to developing noise and vibration monitoring plans and a Public Complaints Protocol, prior to construction and in consultation with Indigenous nations and relevant authorities, to monitor project effects to noise and vibration levels and to address ongoing concerns related to project odours.	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures would adequately address potential project effects to noise and vibration levels, including effects to wildlife and current use activities. The Agency agrees with the Proponent's commitment to develop follow-up programs to monitor noise and vibration levels and to develop a complaints protocol to address ongoing concerns related to noise and vibration levels. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop a follow-up program, in consultation with Indigenous nations and relevant authorities, to monitor noise and vibration levels at key receptor locations for the life of the Project to verify the accuracy of the environmental assessment, verify the effectiveness of mitigation measures, and inform the need for contingency measures. Monitoring reports will be submitted annually to regulatory authorities and shared with interested Indigenous nations and stakeholders.
I5	Sayisi Dene First Nation, Chemawawin Cree Nation	Concerns regarding potential project-related odours and associated effects to current use activities and impacts to rights due to avoidance behaviours and perceived contamination.	The Proponent completed an assessment of project effects to the atmospheric environment and current use, which included consideration of project effects to odour levels and associated effects to Indigenous Peoples. The Proponent was of the view that project contributions to odour (i.e. nitrogen dioxide (NO_2) emissions) would not be detectable outside of the PDAs and therefore would be unlikely to result in sensory disturbance or otherwise affect	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures would adequately address project effects to odour levels in the LAAs. The Agency agrees with the Proponent's commitment to develop a complaints protocol to address ongoing concerns related to odour emissions.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			Indigenous Peoples, including current use activities and the exercise of rights. The Proponent committed to developing a Public Complaints Protocol, prior to construction and in consultation with Indigenous nations and relevant authorities, to address ongoing concerns related to odour emissions.	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent develop a plan, in consultation with Indigenous nations and relevant authorities, to monitor project-related NO_2 emissions during year two of the Project's operation phase and the effectiveness of proposed measures to mitigate NO_2 emissions.
J	Indigenous Peoples – Health and Socio-economic Conditions			
J1	Sayisi Dene First Nation, Chemawawin Cree Nation, Manitoba Metis Federation, Mathias Colomb Cree Nation, Marcel Colomb First Nation, Peter Ballantyne Cree Nation	Concerns regarding project-related effects to the quality and availability of country foods and effects to Indigenous health from elevated fugitive dust emissions and contaminant concentrations in the environment, including measurable and perceived effects.	The Proponent completed an assessment of effects to Indigenous Peoples' health conditions, including consideration of effects associated with project-related fugitive dust emissions, effects to the quality and availability of country foods, and changes to contaminant concentrations in the surrounding environment. The Proponent was of the view that, with the implementation of mitigation measures, project effects to Indigenous Peoples' health would be minimal as the Project would not result in long-term effects to the availability of country foods and contaminant concentrations would not exceed federal or provincial guidelines or guideline exceedances would only occur for a limited period. The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2).	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures, including the establishment of an Indigenous Environmental Advisory Committee, along with the Agency's proposed key mitigation measures, will adequately address potential effects to country foods and Indigenous Peoples' health, including measurable and perceived effects.
J2	Sayisi Dene First Nation,	Concerns regarding the baseline ambient air	The Proponent indicated that baseline ambient air quality data used to inform the assessment	The Agency is satisfied with the Proponent's response and is of the view that the baseline

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Mathias Colomb Cree Nation	quality monitoring stations selected by the Proponent and concerns that the monitoring stations chosen may not be representative of the actual conditions in the PDAs, LAAs, and RAA. Concerns that Indigenous knowledge was not considered in the assessment of project-related effects to air quality and Indigenous Peoples' health.	of project effects to the atmospheric environment and Indigenous Peoples' health was derived from a monitoring station in the Northwest Territories as there are no monitoring stations in the RAA and ambient air quality in the RAA was not measured during baseline studies. Data from the Fort Smith monitoring station in the Northwest Territories was chosen as the Proponent was of the view that the meteorological conditions and other characteristics (e.g. its remote nature, no major industrial developments) are similar to those in the RAA. It is also the closest monitoring station to the RAA. The Proponent indicated that Indigenous knowledge, including from TLRU studies and engagement activities, was used to inform the effects assessments for the Project when it was made available by Indigenous nations. The Proponent committed to developing an Air Quality Management Plan, prior to construction and in consultation with Indigenous nations, to monitor project effects to air quality. The Proponent also committed to engaging with Indigenous nations for the life of the Project.	data presented for ambient air quality is sufficient for the purposes of the environmental assessment. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project and develop a follow-up program to monitor and adaptively manage project effects to air quality and Indigenous health.
J3	Sayisi Dene First Nation	Concerns regarding potential effects to community well-being and the potential for an increase in tension between Indigenous Peoples and non-local project personnel, due to the expected influx of non-local project	The Proponent completed an assessment of project effects to Indigenous Peoples' socio-economic conditions and acknowledged that the Project may result in an influx of non-local personnel and contractors during construction and operation, which may increase demands on community services and infrastructure and affect Indigenous Peoples' ability to access infrastructure and services. The Proponent was of the view that measurable effects to Indigenous Peoples' well-being and socio-economic conditions would be minimal as a	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures are appropriate to reduce potential project effects to Indigenous Peoples' socio-economic conditions and well-being. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations for the life of the Project, promote cultural sensitivity training, and to establish an Indigenous Environmental

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		personnel and contractors.	result of the predicted influx of non-local project personnel and contractors, given the mitigation measures proposed. The Proponent committed to engaging with Indigenous nations throughout the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2), to address ongoing concerns.	Advisory Committee to facilitate ongoing engagement with Indigenous nations.
J4	Sayisi Dene First Nation, Mathias Colomb Cree Nation, Barren Lands First Nation, Marcel Colomb First Nation, Manitoba Metis Federation, Chemawawin Cree Nation, Nisichawayasihk Cree Nation	Concerns that Indigenous nations will not be provided opportunities to benefit from project-related employment and economic opportunities.	The Proponent committed to informing Indigenous nations of job and procurement opportunities for the Project in advance and working with Indigenous nations to enhance participation of Indigenous Peoples and Indigenous-owned businesses in the Project.	The Agency recognizes that equal access to economic and employment opportunities associated with the Project is important to Indigenous nations. The Agency encourages the Proponent to work with Indigenous nations to provide opportunities for Indigenous Peoples and Indigenous-owned businesses to benefit from employment and contract opportunities associated with the Project.
J5	Sayisi Dene First Nation	Concerns regarding the lack of Gender Based Analysis Plus considerations in the assessment of project effects to Indigenous Peoples' health and socio-economic conditions, including	The Proponent acknowledged that the Project may result in disproportionate or unequitable effects on vulnerable populations, including youth, women, and Indigenous Peoples. The Proponent committed to requiring project personnel and contractors to complete sensitivity training. The Proponent also noted that the effects assessments for the Project were conducted in accordance with the	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures would aid in preventing or minimizing project-related effects to Indigenous Peoples' health and socio-economic conditions as a result of the predicted influx of project personnel and contractors. The Agency agrees with the Proponent's commitment to continue

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
		effects to vulnerable populations (e.g. youth, women, Indigenous Peoples).	requirements of the EIS Guidelines. Any areas of disparity that remain would be addressed on an ongoing basis through engagement with Indigenous nations for the life of the Project, including through the establishment of an Indigenous Environmental Advisory Committee (see row A2).	engagement activities with Indigenous nations for the life of the Project, promote cultural sensitivity training, and to establish an Indigenous Environmental Advisory Committee to facilitate ongoing engagement with Indigenous nations.
J6	Mathias Colomb Cree Nation, Manitoba Metis Federation, Chemawawin Cree Nation	Concerns regarding potential project effects Indigenous land users who rely on traditional harvesting for subsistence and/or commercial purposes as a result of project effects to lands and resources of importance for these activities.	The Proponent completed an assessment of project effects to Indigenous Peoples' socio-economic conditions, including consideration of how project effects to the biophysical environment may affect the ability of Indigenous Peoples' to continue practicing harvesting and other land use activities important for subsistence and/or commercial purposes. The Proponent was of the view that, with the implementation of mitigation measures, subsistence and commercial harvesting by Indigenous Peoples' within the LAAs and RAA would be able to continue to a similar degree as before the Project, with minor alterations to harvesting practices. The Proponent committed to engaging with Indigenous nations for the life of the Project, including local resource users (e.g. hunters, outfitters, trappers, commercial fish harvesters, anglers) to address ongoing concerns and conflicts with project activities.	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures would adequately address potential effects to Indigenous Peoples' socio-economic conditions as a result of effects to the quality and quantity of resources of importance for subsistence and commercial harvesting. The Agency agrees with the Proponent's commitment to continue engagement activities with Indigenous nations and commercial harvesters for the life of the Project.
K	Indigenous Peoples – Physical and Cultural Heritage and Sites of Historical, Archaeological, Paleontological, or Architectural Significance			
K1	Mathias Colomb Cree Nation, Marcel Colomb First Nation, Sayisi Dene First Nation,	Concerns regarding the lack of project-specific baseline data for physical and cultural heritage resources and regarding potential project effects to	For the Gordon site, the Proponent noted that, during baseline studies, no physical or cultural heritage sites or resources, nor sites of significance to Indigenous Peoples were identified within the PDA or LAA and predictive modelling showed a low likelihood for such resources to be present. For the MacLellan site,	The Agency is satisfied with the Proponent's response and is of the view that the Proponent's proposed mitigation measures would adequately address potential project effects to physical and cultural heritage sites and resources, and sites of significance.

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
	Chemawawin Cree Nation, Peter Ballantyne Cree Nation, Manitoba Metis Federation	physical and cultural heritage sites and sites of significance that are or may be present in the PDAs and LAAs. Concerns regarding the lack of meaningful engagement in the development of the Heritage and Cultural Resource Protection Plan for the Project.	the Proponent identified 11 heritage resource sites within the PDA and LAA. However, construction and operation activities would not result in the disturbance or direct removal of these sites, as the Project was designed to avoid known and intact physical and cultural heritage resources and sites of significance. The Proponent committed to developing a Heritage and Cultural Resource Protection Plan, prior to construction and in consultation with Indigenous nations and relevant authorities, to monitor for as yet unidentified physical and cultural heritage sites and resources and sites of significance. This plan would also outline protocols and procedures to be implemented in the event that chance finds are discovered. All discoveries of physical and cultural heritage resources and sites of significance during all project phases would be communicated to Indigenous nations and relevant authorities.	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent provide opportunities for Indigenous nations to conduct ceremonies prior to construction for any sites of significance for which disturbance cannot be avoided and provide opportunities for Indigenous nations to be involved in monitoring activities for physical and cultural heritage sites and resources, and sites of significance to Indigenous Peoples.
L	Migratory Birds			
L1	Mathias Colomb Cree Nation	Concerns regarding potential effects to migratory bird population levels due to increased harvesting by non-local project personnel and contractors.	The Proponent committed to implementing project-specific recreational hunting restrictions for project personnel and prohibiting workers from bringing firearms onto the PDAs. The Proponent was of the view that these mitigation measures would prevent measurable effects to migratory bird populations as a result of increased hunting pressure.	The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent prohibit project employees and contractors who reside outside of the RAA from hunting within the PDAs or in areas accessed using the PDAs, unless an employee or contractor is provided access by the Proponent for exercising Aboriginal rights.
M	Species at Risk			

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
M1	Sayisi Dene First Nation, Chemawawin Cree Nation, Mathias Colomb Cree Nation	Concerns regarding the lack of baseline data regarding the population size and distribution of boreal caribou within the Kamuchawie Management Unit and the effect this lack of baseline data may have on the accuracy of the Proponent's conclusions regarding project effects to boreal caribou. Request that the Proponent commit to conducting vegetation clearing and site preparation activities outside the caribou calving and calf rearing period regardless of whether caribou have been detected within the LAAs.	The Proponent completed field studies to assess the presence and distribution of boreal caribou within the PDAs, LAAs, and RAA to inform the environmental assessment for the Project. While boreal caribou were not observed within the PDAs and LAAs during baseline studies, the Proponent assumed that boreal caribou utilize the PDAs and LAAs for the purpose of the effects assessment to account for the uncertainty regarding the population status, habitat usage, and distribution of boreal caribou within the PDAs and LAAs. The Proponent committed to supporting a collaring program for boreal caribou, in partnership with the Province of Manitoba, and using data from this program to inform mitigation measures, monitoring, and adaptive management for the Project. The Proponent also committed to developing a Wildlife Monitoring and Management Plan, prior to construction and in consultation with Indigenous nations and relevant authorities, to monitor for the presence of boreal caribou in the PDAs and LAAs and adaptively manage project effects on boreal caribou.	The Agency is of the view that the Proponent's proposed mitigation measures, including supporting a boreal caribou collaring program, would address uncertainties regarding the population status, habitat usage, and distribution of boreal caribou within the PDAs, LAAs, and RAA, and therefore uncertainties with respect to the conclusions of the effects assessment. The Agency recommends, for inclusion in the Minister's Decision Statement, that the Proponent: • implement mitigation measures to prevent or offset adverse project effects to boreal caribou, including their habitat, health, and mortality risk; and • conduct vegetation clearing and other site preparation activities outside of the boreal caribou calving and calf-rearing period.
M2	Mathias Colomb Cree Nation	Concerns regarding the Proponent's selection of indicator species for the assessment of project effects to species at risk. As each species at risk is unique, project effects to each species must be assessed separately.	The Proponent indicated that the selection of focal species for the assessment of effects to species at risk focused on species that had the highest potential to interact with the Project, are known to regularly occupy the RAA, and were identified as species of importance to Indigenous nations. The remaining species at risk were considered unlikely to occur in the RAA, based on known species' distributions and the availability of suitable habitat within the RAA. The Proponent was of the view that the	The Agency is of the view that the Proponent adequately characterized potential effects to species at risk for the purpose of the environmental assessment for the Project. 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 boreal caribou and their habitat within the PDAs. The Proponent will use the results of these surveys

#	Indigenous Nation	Comment or Concern	Summary of Proponent's Response	Agency Response
			focal species selected adequately reflected the species with the highest potential to be affected by the Project. The Proponent committed to developing a Wildlife Monitoring and Management Plan, prior to construction and in consultation with Indigenous nations and relevant authorities, to monitor and adaptively manage project effects to species at risk.	to verify the results of the environmental assessment, verify whether existing mitigation measures will adequately address potential effects to boreal caribou, and inform the need for contingency measures.
M3	Chemawawin Cree Nation, Mathias Colomb Cree Nation, Sayisi Dene First Nation	Concerns regarding the Proponent's rationale for the selection of spatial boundaries for the assessment of project effects to species at risk (i.e. PDAs, LAAs, and RAA).	The Proponent was of the view that the spatial boundaries selected for the assessment of effects to species at risk 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 species at risk.	The Agency 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 extent of project effects to species at risk for the purpose of the environmental assessment.

Appendix D Proponent Proposed Mitigation Measures, Monitoring, and Follow-up Programs

Mitigation Measures	Follow-up and Monitoring Measures
Atmospheric Environment (Chapter 6.1)	
• Oversized stationary machinery would be sheltered indoors, where technically feasible, and conveyors would be enclosed between buildings within the Ore Milling and Processing Plant to limit fugitive dust emissions and noise and vibration levels. • Dust collection systems (e.g. baghouse and protective covers) would be installed at the crushing plant to reduce fugitive dust emissions from ore transfer and crushing activities. • A maximum explosives weight of 207.9 kilograms, one hole per delay per blast, and a minimum of eight milliseconds per time delay would be used at both the Gordon and MacLellan sites to minimize noise and vibration levels from blasting. Receptor site-specific mitigation measures would be implemented to reduce the blast charge during Indigenous trapping activities or to achieve overpressure levels of up to 120 decibels and 125 decibels at the Gordon and MacLellan sites, respectively. • The location of haul roads and infrastructure would be optimized as part of project design to reduce transportation and haul distances, and therefore atmospheric emissions. Fugitive dust would be monitored through routine inspections. • The concentration of sulphur in diesel fuel would not exceed 15 milligrams per kilogram, as per the *Sulphur in Diesel Fuel Regulations* for on-road vehicles and off-road equipment. • To limit contaminant and fugitive dust emissions, mobile equipment would be regularly maintained and policies would be established to reduce idling times, limit cold starts, and control the speed of mobile equipment within the Project Development Areas	• Prior to construction, the Proponent would develop and implement, in consultation with federal authorities, Indigenous nations, Manitoba Environment, Climate, and Parks, and other relevant parties, a Greenhouse Gas (GHG) Management and Monitoring Plan that details technically and economically feasible mitigation measures to manage and reduce GHG emissions throughout the life of the Project. As part of this Plan, the Proponent would report annual project-related GHG emissions to Environment and Climate Change Canada, if emissions are greater than the reporting threshold defined by Environment and Climate Change Canada as part of its GHG Reporting Program, including emissions associated with site electricity production, mine production, incineration (i.e. waste emissions), blasting emissions, and fuel consumption for transportation activities. Results from these monitoring activities would be used to verify the accuracy of the environmental assessment and assess the effectiveness of mitigation measures. ○ Monitoring reports would be shared annually with external stakeholders and the GHG Management and Monitoring Plan would be reviewed annually for effectiveness, implementation, suitability, and adequacy, including consideration of technological advancements, community complaints and corrective actions, environmental compliance changes, including legislative and environmental compliance approval changes, and based on feedback from community and regulatory bodies.

Mitigation Measures	Follow-up and Monitoring Measures
(PDAs). Dust sweeping and truck wheel washing stations would be used to reduce track-out of particulate matter. • Compliance with Tier 4 emission standards[31] would be required for off-road equipment with off-road diesel engines. • High efficiency wet scrubbers or equivalent would be installed to control emissions from project facilities, where feasible. • Water would be applied three times per day on haul roads, access roads, and arid areas during dry periods (i.e. periods with measured precipitation less than 2.54 millimetres per day for more than 24 hours and with a 24 hour average temperature greater than 15°C) or periods of high wind (i.e. periods with a measured hourly average wind speed greater than five metres per second) to control fugitive dust emissions. • Chemical dust suppressants would not be used during any project phase, to avoid potential effects to the environment and Indigenous Peoples. • Chemical processes within the Ore Milling and Processing Plant would be enclosed to reduce fugitive hydrogen cyanide emissions due to volatilization losses. • The design of the Tailing Management Facility would be optimized to reduce the area of exposed dry surfaces to reduce the potential for erosion and fugitive dust. • Vegetation or other coverings would be used to stabilize exposed topsoil and overburden stockpiles, particularly when there would be extended periods between uses of the stockpiles. • To reduce noise and vibration levels during ore transport, large haul trucks would be used to minimize the number of trips	• Prior to construction, the Proponent would develop and implement, in consultation with federal authorities, Indigenous nations, Manitoba Environment, Climate, and Parks, and other relevant parties, an Air Quality Management Plan, which would provide a framework for monitoring meteorological conditions (e.g. wind speed, wind direction) and ambient air quality, including total suspended particulates and small particulate matter (PM_{10} and $PM_{2.5}$) concentrations, during construction and operation. Monitoring data would be used to verify the results of the environmental assessment, assess the effectiveness of mitigation measures, and inform the need for adaptive management. Monitoring stations would be installed to measure both background ambient air quality concentrations (i.e. in an upwind location from the project sites) and ambient air quality concentrations in locations influenced by the Project (i.e. in downwind locations). Reports from the ambient air quality monitoring program would be submitted annually to Manitoba Environment, Climate, and Parks and shared with interested Indigenous nations and stakeholders. • Prior to construction, the Proponent would develop, in consultation with federal authorities, Indigenous nations, Manitoba Environment, Climate, and Parks, and other relevant parties, a Noise Monitoring Program to verify the accuracy of the environmental assessment and determine the effectiveness of mitigation measures. Long-term continuous noise monitoring would occur during all project phases and monitoring reports

[31] As per the United States Environmental Protection Agency's *Regulations for Emissions from Heavy Equipment with Compression-Ignition (Diesel) Engines*.

Mitigation Measures	Follow-up and Monitoring Measures
between the Gordon and MacLellan sites and mobile equipment would be equipped with exhaust mufflers. • Noise insulated panels, double pane windows, and insulated doors would be installed in the work camp to limit health effects due to increased noise and vibration levels from project activities.	would be submitted annually to regulatory authorities and shared with interested Indigenous nations and stakeholders. ◦ As part of the Noise Monitoring Program, a Public Complaints Protocol would be developed to receive and address noise or vibration complaints in a timely manner. Information on this protocol and how to file a complaint would be made publically available online. • Prior to construction, the Proponent would develop, in consultation with federal authorities, Indigenous nations, Manitoba Environment, Climate, and Parks, and other relevant parties, a Vibration Monitoring Program to monitor potential increases in vibration levels at specific receptor locations, including the work camp. Monitoring results would be used to verify the results of the environmental assessment, verify the effectiveness of mitigation measures, determine if adaptive management is required, and determine whether blast charge reductions could be relaxed.
Groundwater (Chapter 6.2)	
• The construction footprint (i.e. PDAs) would be limited to the extent possible to reduce the potential for reductions in groundwater recharge and limit the number of watersheds overprinted by the PDAs. • Standard construction methods would be used, such as installation of seepage cut-off collars where trenches extend below the water table, to mitigate preferential flow paths. • Groundwater interceptor wells would be installed at the Gordon site to intercept groundwater flowing towards the open pit prior to discharge at the pit wall to limit contact water volumes and would operate during construction, operation, and decommissioning/closure. Pumping rates would be progressively reduced during decommissioning/closure until the water level in the open pit reaches the elevation of the regional groundwater table.	• Prior to construction, the Proponent would finalize a Groundwater Management Plan, in consultation with Indigenous nations, other stakeholders, and local and regional government agencies. The Groundwater Management Plan would provide a framework for monitoring potential changes in groundwater quantity and quality and verifying the effectiveness of mitigation measures. Monitoring results would also be used to verify the results of the environmental assessment, including model predictions, and inform adaptive management decisions. • The Groundwater Management Plan would include: ◦ a description of the location of monitoring wells. Currently, groundwater monitoring wells and/or drive point piezometers would be located:

Mitigation Measures	Follow-up and Monitoring Measures
○ Groundwater collected by interceptor wells at the Gordon site would be returned to Gordon Lake and Farley Lake to offset a reduction in groundwater inputs. Water would be treated, including aeration, to meet federal and provincial regulatory requirements prior to discharge. • Groundwater that flows into the open pit at the Gordon and MacLellan sites would be pumped to a settling pond prior to discharge to the environment. Water would be treated to meet federal and provincial regulatory requirements prior to discharge. • Contact water collection ditches would be installed around the perimeter of the mine rock storage areas, overburden stockpiles, and ore stockpiles to collect seepage and prevent or limit the migration of seepage from these areas. • Seepage collection ditches would be installed around the Tailings Management Facility to collect seepage and groundwater recharge originating from the Tailings Management Facility. • Groundwater seepage from the historical underground workings at the MacLellan site would be collected to prevent seepage of process-affected water into groundwater. • The mine rock storage areas would be designed to increase the amount of runoff and reduce the amount of infiltration through the material piles, thereby reducing recharge and contaminant loading to groundwater.	▪ at select locations around the open pit at each site to monitor groundwater levels during all phases of the Project, as the open pit is dewatered and subsequently recovers, ▪ in the vicinity of key waterbodies and watercourses near the PDAs to monitor the effects of the Project on groundwater levels, and ▪ up-gradient, cross-gradient, and down-gradient of the ore stockpiles, Tailings Management Facility, and mine rock storage areas, and adjacent to the Tailings Management Facility and mine rock storage areas to monitor groundwater levels, flow, and quality during all phases. Additional locations at a distance down-gradient of the Tailings Management Facility and mine rock storage areas would be established to confirm attenuation and parameter concentrations prior to discharge to surface waterbodies; ○ a description of the analytical parameters to be monitored, parameters of interest, and monitoring frequency; and ○ regulatory and project-specific requirements and guidelines that monitoring results would be compared to. • The Proponent would maintain communication with Indigenous nations, other stakeholders, and provincial and federal regulators regarding implementation of the Groundwater Management Plan throughout construction and operation, and into decommissioning/closure on at least an annual basis. • Groundwater monitoring results would be shared with Indigenous nations, other stakeholders, and provincial and federal regulators. Reporting would include groundwater quantity and quality monitoring results, trend analysis, and comparison of results to

Mitigation Measures	Follow-up and Monitoring Measures
	applicable guidelines, triggers, and thresholds as outlined in the Groundwater Management Plan.
Surface Water (Chapter 6.3)	

• The construction footprint would be limited to the extent possible to limit changes to surface drainage, runoff patterns, and surface waterbodies.
• Water from the Wendy and East pit lakes would be aerated prior to dewatering to encourage precipitation of oxide-forming elements, break down thermal and chemical stratification, and increase dissolved oxygen concentrations prior to release of this water to Gordon and Farley Lakes.
• Extraction of fresh water from the Keewatin River to meet project requirements for process make-up water (i.e. year one only), potable water, and other uses would not exceed 10% of instantaneous stream discharge to prevent adverse effects to fish and fish habitat.
• Potable water would be trucked from the MacLellan site to the Gordon site to limit fresh water withdrawal requirements at the Gordon site to only that required for fire suppression, safety showers, and truck washes.
• Use of cyanide in the cyanidation process to extract gold from ore would only occur in the Ore Milling and Processing Plant. Cyanide detoxification or destruction would be conducted prior to the release of any tailings or effluents from the Ore Milling and Processing Plant to the Tailings Management Facility to maintain cyanide concentrations below limits set out in the *Metal and Diamond Mining Effluents Regulations* (MDMER).
• The Tailings Management Facility would be designed so that no discharge to the environment would occur under normal operating conditions through reclaiming and recycling surplus contact water to augment project water requirements. The Facility would be
	• Prior to construction, the Proponent would finalize a Surface Water Monitoring and Management Plan, in consultation with Indigenous nations, relevant federal authorities, local and regional government agencies, and other stakeholders, which would provide a framework for monitoring potential changes in surface water quantity and quality and to verify the effectiveness of mitigation measures. This Plan would be used to monitor the following parameters: instantaneous flows, lake levels, pH levels, and concentrations of contaminants identified in the MDMER, including fluoride, phosphorus, aluminum, arsenic, copper, cyanide, antimony, and total and dissolved cadmium.
	• The Surface Water Monitoring and Management Plan would include a description of:
	  ○ surface water monitoring locations at the Gordon and MacLellan sites, including locations for Gordon Lake, Farley Lake, Swede Lake, Minton Lake, Ellystan Lake, the Keewatin River, the unnamed tributary of the Keewatin River, the pit lakes, Cockeram Lake, Arbor Lake, Burge Lake, and the Tailings Management Facility collection pond;
	  ○ analytical parameters to be monitored and monitoring frequency; and
	  ○ standard mitigation measures and adaptive management that would be implemented to address project effects to surface water quality and quantity.
	• Prior to construction, the Proponent would develop an Erosion and Sediment Control Plan, in consultation with Indigenous nations, federal authorities, Manitoba Conservation and Climate, and other stakeholders, which would provide a framework to establish guidelines and procedures to reduce the potential for erosion and

Mitigation Measures	Follow-up and Monitoring Measures
designed with two cells to allow progressive development and rehabilitation. • Should discharge of effluents from the Tailings Management Facility be required, effluents would be treated to meet limits set out in the MDMER, *Canadian Water Quality Guidelines – Freshwater Aquatic Life*, and *Manitoba Water Quality Standards, Objectives, and Guidelines – Freshwater Aquatic Life*. • Soil covers would be placed over the Tailings Management Facility during decommissioning/closure to limit the infiltration of precipitation and ingress of oxygen, to mitigate the risk of acid rock drainage and metal leaching in the Tailings Management Facility. • Potentially acid-generating and non-potentially acid-generating waste rock in the mine rock storage areas would be blended during operation and mine rock would be encapsulated with overburden and soil at closure to limit acid rock drainage and metal leaching. • Water management structures would be installed to collect, divert, and release non-contact water to the surrounding environment and reduce contact water volumes. • Contact water and seepage collection systems would be constructed within the PDAs to collect and store contact water for reuse to meet process water requirements or for treatment prior to release to the surrounding environment. • Contact water collection ditches and contact water collection ponds would be designed to convey a 1:25 year and 1:100 year precipitation event (i.e. as modelled by the Proponent to represent changes in flow associated with a wet scenario), respectively; to have positive gradients to limit standing water; and with sufficient	sedimentation; develop erosion and sediment control measures; and outline monitoring activities that would be used to verify the effectiveness of erosion and sediment control measures. • The Erosion and Sediment Control Plan would include a description of: ◦ the location, frequency, timing, and duration of sampling; ◦ the methods of sampling to be used; ◦ the parameters to be measured; ◦ the quantitative thresholds that would trigger adaptive management actions; and ◦ contingency measures that will be implemented if mitigation measures are not effective and/or unanticipated effects occur. • The Proponent would develop and implement, in consultation with Indigenous nations, relevant federal authorities, local and regional government agencies, and other stakeholders, management plans pertaining to the source(s) of surface water contaminants and other indirect effects to surface water quality and quantity, including: ◦ a Mine Rock Management Plan and Acid Rock Drainage and Metal Leaching Monitoring and Management Plan, which would guide the handling, storage, and management of mine rock for the Project. These Plans would outline procedures and test methods to classify the acid rock drainage and metal leaching potential and other geochemical properties of mine rock; and ◦ an Environmental Effects Monitoring Plan, which would be developed to address the potential treatment of discharge water and to outline project-specific details for monitoring and reporting, as required under the MDMER.

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capacity to store contact water in winter when ice would be present.
• Collection pond inlets and outlets would be designed to reduce water velocities, scour (i.e. erosion of sediment), and chemical or thermal stratification potential.
• Culverts would be used to maintain existing drainage patterns and inspections would be conducted periodically to remove accumulated material and debris to avoid erosion, flooding, habitat damage, property damage, and mobilization of sediment.
• Measures to mitigate erosion and sedimentation would be implemented to limit project-related increases in turbidity and total suspended sediments in surface waterbodies with the PDAs and Local Assessment Areas (LAAs).
• Domestic waste and sewage would be treated at the MacLellan site in accordance with the *Wastewater Systems Effluent Regulations* pursuant to the *Fisheries Act* prior to discharge to the Keewatin River.
• Upon decommissioning/closure of the Project, the open pits would be filled with contact water to return groundwater levels and groundwater-surface water interactions to near baseline conditions and to limit exposure of pit walls and weathering that may result in adverse effects to surface water quality, such as acid rock drainage and metal leaching.
• After the open pits are filled, if pit water quality is not suitable for release to the surrounding environment, passive treatment options would be implemented to improve water quality, such as controlled pit stratification, fertilizer amendment, and flow segregation.
	• Prior to construction, a detailed Closure Plan that complies with the requirements of the *Mines and Minerals Act Closure Regulation* would be developed to direct closure and reclamation activities to restore the Gordon and MacLellan site PDAs to a satisfactory condition in accordance with provincial legislation and guidelines. The Closure Plan would include monitoring plans for surface water quality, groundwater quality, and the aquatic and terrestrial environments, including:
	  ○ surface water chemistry monitoring in the pit lakes, Tailings Management Facility collection pond, and receiving waterbodies and watercourses upstream and downstream of discharge flows from the Project;
	  ○ groundwater quality monitoring near the open pits, in the vicinity of Gordon and Farley Lakes and the Keewatin River, and in monitoring wells located up gradient and down gradient of the Tailings Management Facility, mine rock storage areas, and other material stockpiles; and
	  ○ monitoring of the aquatic and terrestrial environments to assess the effectiveness of revegetation and reclamation of wildlife and fish habitat.
	• Maintenance and monitoring as part of the Closure Plan would continue through the decommissioning/closure and post-closure phases until water from the pit lakes is of sufficient quality to allow unabated discharge to the surrounding environment. After that time, monitoring and maintenance would cease.
	• The Proponent would maintain ongoing communication with Indigenous nations, other stakeholders, and provincial and federal regulators, as necessary, regarding implementation of the Surface Water Monitoring and Management Plan throughout construction and operation, and into decommissioning/closure. As monitoring results become available, they would be shared with Indigenous nations, other stakeholders, and provincial and federal regulators

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	in a fashion, frequency, and format determined to be appropriate to the applicable audience. • A communication and reporting mechanism would be established to distribute information and accept inquiries from Indigenous nations, the public, and other stakeholders. An office at the project site would be maintained and a smaller office in the Town of Lynn Lake may be established during operation to further facilitate communication. • Project-specific water quality objectives for iron and hexavalent chromium would be developed using the formula identified in the *Federal Environmental Quality Guidelines for Freshwater Aquatic Life*, which incorporates more rigorous water quality guidelines than the *Canadian Water Quality Guidelines – Freshwater Aquatic Life*.
Terrestrial Landscape (Chapter 6.4)	
• Vegetation clearing would occur during dry and frozen conditions to prevent soil compaction. • A protective layer such as matting or biodegradable geotextile and clay ramps or other approved materials would be used between wetland root and seed beds and construction equipment if ground conditions are encountered that could result in rutting, admixing, or soil compaction. • Grading within wetland boundaries would be reduced unless required for site-specific purposes. • Native upland seed mixes would be used to re-seed areas disturbed by project activities following operation to reduce the establishment of invasive and weed species, to restore native species assemblages, and to reduce erosion of exposed soils; a	• Monitoring of soil stockpiles for weed and invasive species during construction and operation would be conducted annually during the growing season. • Post-reclamation monitoring of revegetated areas would occur five years after revegetation and would be evaluated for self-sufficiency and native species composition. If needed, supplementary mitigation measures would be applied, including re-seeding and weed control. • Prior to construction, a Vegetation and Weed Management Plan would be developed, in consultation with Indigenous nations and relevant provincial and federal authorities, to monitor erosion and soil movement, litter quality and quantity, plant cover, plant diversity and vigour, and weed abundance to verify the accuracy of the environmental assessment, verify the effectiveness of

Mitigation Measures	Follow-up and Monitoring Measures
reclamation seed mix would be used for the Tailings Management Facility. • During construction, control measures, such as spraying and hand-pulling, would be used as necessary to limit the growth and establishment of weeds and invasive species. Visual inspection for weeds and invasive species, including their propagules, in construction materials would take place when needed. • Equipment would be inspected to ensure that no attached soil or vegetative debris are introduced to the project sites, to limit the introduction and spread of invasive and weed species. • To limit the effects of fragmentation and changes in habitat, construction and landscape disturbance would be limited to the Gordon and MacLellan site PDAs; sensitive habitat areas would be avoided. • A 30 metre buffer zone would be established around waterbodies and sensitive riparian habitat areas, including wetlands and fish-bearing waterbodies, prior to work in these areas to limit disturbance, maintain existing riparian vegetation, and promote recovery of riparian vegetation. When work near waterbodies or riparian areas is required, existing access routes and weight-distributing materials under machinery would be used to the extent possible to limit soil compaction. • Silt fencing would be installed around wetlands to prevent the introduction of deleterious substances, erosion, and sedimentation. • If federally listed plant species at risk are identified within the PDAs during construction and operation, these areas would be avoided. If avoidance is not possible, transplantation or seed collection would occur to propagate the species. • The application of herbicides for weed control would not occur within 30 metres of waterbodies, wetlands, or known areas of plant species of conservation concern.	mitigation measures, and to inform the need for adaptive management. • Prior to construction, a Soil Management and Rehabilitation Plan would be developed, in consultation with Indigenous nations and relevant provincial and federal authorities, to monitor soil quality and quantity and reclamation suitability, to verify the accuracy of the environmental assessment, verify the effectiveness of mitigation measures, and to inform the need for adaptive management. ◦ Qualified personnel would provide on-site guidance to prevent compaction, rutting, and admixing during soil handling activities, including soil stripping and movement of salvaged topsoil and peat to storage locations; monitor and determine the need to temporarily halt construction activities due to windy or wet weather conditions; and provide advice to reduce erosion risk, as necessary. ◦ Sampling and analysis of excavated topsoil and peat would be carried out to verify that acceptable soil quality is being maintained for land capability and reclamation suitability.

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• If pesticide use is required, a pesticide use permit would be obtained from Manitoba Environment, Climate, and Parks pursuant to Manitoba's *The Environment Act*. • Where possible, the removal of vegetation in wetlands would be limited, grading would direct runoff away from wetlands, and ground level cutting, mowing, and mulching would be conducted instead of grubbing. • Cross drainage would be maintained along permanent access roads to allow water to move freely from one side of the road to the other to limit project effects to wetland hydrology. • Following operation, the Proponent would undertake, in consultation with Indigenous nations and relevant authorities, reclamation of areas disturbed by the Project.	
Fish and Fish Habitat (Chapter 7.1)	
• Culverts would be designed to convey a 1:100 year flood event and with open-bottom structures to maintain fish habitat values and fish passage. • Fish passage would be maintained by avoiding the obstruction of watercourses or otherwise interfering with fish movement. • New road crossings would be sized and installed in accordance with Manitoba Infrastructure's *Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat* and perimeter and access roads would be graded to divert runoff away from the open pits and fish-bearing waterbodies. Access roads would be maintained by periodically re-grading and ditching to improve water flow and reduce erosion. • Outlets of the open pit installed during decommissioning/closure would be designed to be impassable to fish to discourage fish from colonizing the open pits during post-closure.	• Culverts along the Gordon and MacLellan site access roads would be monitored twice annually (i.e. in summer following the spring freshet and in fall prior to freezing) and, if required, maintained to ensure that erosion and debris accumulation are not hindering fish passage. • Prior to construction, the Proponent would develop an Aquatic Effects Monitoring Plan, in consultation with Indigenous nations, relevant federal authorities, Manitoba Environment, Climate, and Parks, and other stakeholders, which would provide a framework for effluent characterization; monitoring potential changes in surface water quality (i.e. contaminant concentrations, total suspended solids and/or turbidity, temperature, dissolved oxygen, etc.), sediment quality, benthic invertebrates, aquatic vegetation, fish habitat quantity and quality, and fish health, survival, growth, and reproduction; and to verify the environmental assessment, the effectiveness of mitigation measures, and the need for adaptive

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• Intake and effluent discharge pipes would be screened with the smallest available screen pod of 0.24 cubic metres to prevent fish impingement or entrainment and would be equipped with diffusers to slow water velocity at the discharge point. The ends of intake and effluent pipes would be pointed upwards to avoid scouring and disturbing sediments.
• With respect to the transmission line from the Town of Lynn Lake to the MacLellan site:
  ○ poles would not be installed in watercourses or their associated riparian areas;
  ○ erosion and sedimentation control measures would be put in place; and
  ○ construction would occur in winter to the extent possible.
• Heavy machinery working near fish-bearing waterbodies would be kept in good working condition, re-fuelled no closer than 50 metres from any waterbody, and biodegradable hydraulic fluids would be used.
• Any in-water project activities would be conducted outside of the *Manitoba Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat* established by Fisheries and Oceans Canada and in-water work areas would be isolated to reduce potential effects to water quality and fish.
• Fish rescues would be conducted prior to any dewatering activities, including for East Pond, the Wendy and East pit lakes, the existing diversion channel, and other locations where in-water works may be required. As many fish as possible would be captured and live transferred from affected waterbodies to similar unaffected waterbodies nearby.
• Blasting protocols tailored to the Gordon and MacLellan sites and their respective fish species assemblages would be developed prior to construction to avoid percussive injuries to fish or damage to incubating eggs, in accordance with Fisheries and Oceans
	management. This Plan would align with Environment and Climate Change Canada's *Metal Mine Technical Guidance for Environmental Effects Monitoring*.
	  ○ The Proponent would conduct fish tissue sampling as part of the Aquatic Effects Monitoring Plan to monitor for increases in mercury, arsenic, and other project-related contaminants in fish downstream of the Gordon and MacLellan sites.
	  ○ The Proponent would conduct underwater noise monitoring in the Keewatin River and Gordon and Farley Lakes as part of the Aquatic Effects Monitoring Plan to monitor sound pressure and particle velocity from blasting to validate whether Fisheries and Oceans Canada's *Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters* are being achieved.
	  ○ The Proponent would monitor water temperatures in Farley Lake and Farley Creek during construction, operation, and decommissioning/closure to ensure that water temperatures do not exceed 2ºC in winter (i.e. January to April) and 22ºC in warmer months (i.e. July to September), to avoid adverse effects to fish spawning (i.e. winter spawning fish), egg incubation, and juvenile recruitment. If temperatures exceed these thresholds, contingency measures would be implemented.
	• The Aquatic Effects Monitoring Plan would include a description of:
	  ○ the location, frequency, timing, and duration of sampling;
	  ○ the methods of sampling to be used;
	  ○ the parameters to be measured;
	  ○ the quantitative thresholds that would trigger adaptive management actions; and
	  ○ contingency measures that would be implemented if mitigation measures are not effective and/or unanticipated effects occur.

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Canada's *Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters*. In general, protocols would include: ○ the establishment of appropriate setback distances from fish-bearing waterbodies; ○ the size of explosive charges would be limited when there is potential to exceed Fisheries and Oceans Canada's 100 kilopascal sound pressure or 13 millimetres per second peak particle velocity guidelines; and ○ blasting would be restricted to the reduced risk timing windows for northern Manitoba (i.e. July 15 to April 15) when explosive charges larger than those to maintain peak particle velocities of less than 13 millimetres per second are required to develop the open pits. • If blasting exceeding a peak particle velocity of 13 millimetres per second is required outside of the reduced risk timing window at the Gordon site, the Proponent would install block nets across the western basin of Farley Lake and the southeastern corner of Gordon Lake and conduct fish salvages in fall or early winter to prevent fish from spawning in spring along the shorelines closest to the open pit. • A worker code of conduct for project personnel would be established prior to construction to limit potential over-fishing of waterbodies in the LAAs and RAA. This may include restricting fishing by project personnel in waterbodies used by Indigenous nations for subsistence or traditional purposes, waterbodies that may contain already depressed fish populations, or waterbodies that are not of a sufficient size to support fishing, and implementing a catch-and-release policy for all outside project personnel.	• Water level monitoring in fish-bearing wetlands within the Gordon and MacLellan site PDAs and LAAs would be conducted during construction and operation to monitor the effects of project-related groundwater drawdown, including the timing, magnitude, extent, and duration of effects, on fish habitat within these wetlands. • Reports from monitoring programs would be submitted annually to applicable regulatory authorities and shared with interested Indigenous nations and stakeholders. • Community members from potentially affected Indigenous nations would be provided opportunities to participate in follow-up and monitoring programs, including participation in data collection.

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Fish Habitat Offsetting • A Fish Habitat Offsetting Plan that is compliant with Fisheries and Oceans Canada's *Applicant's Guide Supporting the Authorizations Concerning Fish and Fish Habitat Protection Regulations, Fish and Fish Habitat Protection Policy*, and *Measures to Protect Fish and Fish Habitat* would be developed to counterbalance residual harmful alteration, disruption, or destruction of fish habitat, and death of fish. This offsetting plan would also include funding for research related to the spawning success, juvenile recruitment, and genetic composition of lake sturgeon populations in the Hughes River and Keewatin River. Indigenous nations would be engaged regarding the field work required for this research. ◦ Fish habitat offsets would be developed for fish habitat losses associated with dewatering and removal of the Wendy and East pit lakes, removal or alteration of fish-bearing wetlands within the PDAs and LAAs, dewatering and removal of the existing diversion channel at the Gordon site, and any other infrastructure or activities required for the Project that Fisheries and Oceans Canada determines likely to pose an unavoidable risk of death of fish by means other than fishing or the harmful alteration, disruption, or destruction of fish habitat. In addition to construction of a new diversion channel with fish habitat enhancement features, fish habitat offsets may also include replacement of culverts along the Burnt Timber Mine access road, creation of off-channel ponds, and other fish habitat restoration and enhancement measures. ◦ A beaver management plan would be implemented for the new diversion channel between Gordon and Farley Lake during construction, operation, and decommissioning/closure to restrict beaver dam construction, limit flooding, and permit the uninterrupted conveyance of water and fish movement between the two lakes. This plan would be shared with the Indigenous	

Mitigation Measures	Follow-up and Monitoring Measures
Environmental Advisory Committee for review and comment prior to construction. • To support fish habitat offsetting quantifications with respect to culvert replacements on the Burnt Timber Mine access road, prior to construction, fish habitat and fish utilization data would be collected in the Waban Creek watershed, including in Waban Creek upstream and downstream of the culverts to be replaced. • Additional field data regarding the fish-bearing status of wetlands within the Gordon and MacLellan site PDAs and LAAs would be collected prior to construction to verify the spatial extent of fish-bearing wetlands that may be directly or indirectly affected by the Project and to inform the need for adaptive management. • Offset monitoring, as required under conditions of a *Fisheries Act* authorization, would be undertaken to assess the condition of habitat offsetting measures, identify potential remediation measures, and determine if offsetting is functioning as intended. Remediation measures and contingencies would be developed, as conditions in an authorization under the *Fisheries Act*, to be implemented if monitoring identifies deficiencies. Offset monitoring would be conducted by a Qualified Environmental Professional. • The Proponent would engage with Indigenous nations to identify fish habitat enhancement, restoration, or creation opportunities that could be included in the Fish Habitat Offsetting Plan for the Project.	
Migratory Birds (Chapter 7.2)	
• Vegetation clearing and the demolition of existing buildings and infrastructure would take place outside of the breeding and nesting periods (i.e. May 7 to August 7) for migratory birds. Measures to manage the risk of harm to migratory birds would be included in	• Prior to construction, the Proponent would finalize a Wildlife Monitoring and Management Plan, in consultation with Indigenous nations, federal authorities, Manitoba Environment, Climate, and Parks, and other stakeholders, which would provide a framework

Mitigation Measures	Follow-up and Monitoring Measures
the project-specific Wildlife Monitoring and Management Plan, in the event that project activities that could result in the risk of harm cannot be avoided. • To limit the effects of fragmentation and changes in habitat, construction and landscape disturbance would be limited to the Gordon and MacLellan site PDAs and the proposed distribution line right of way; sensitive habitat areas of migratory birds and bird species at risk (e.g. wetland habitat) would be avoided to the extent possible. • Lights used at night-time would be aimed downwards (i.e. down-lighting) to limit effects on migratory bird and bird species at risk habitat adjacent to the Gordon and MacLellan site PDAs. • Unauthorized access by project personnel to migratory bird and bird species at risk habitat located adjacent to the Gordon and MacLellan site PDAs would be restricted. • Sensitive habitat areas within or near the PDAs that may be used by migratory birds and bird species at risk, such as stick nests, would be marked prior to construction activities. Setbacks, timing restrictions, and buffers would be employed, based on recommended setback distances by disturbance category, species, and habitat feature, as described in the *Manitoba Conservation Data Centre Recommended Development Setback Distances from Birds* (2014) and *Timing Restriction Guidelines for Birds* (2015). project-specific activity restriction guidelines, including for bird species (e.g. raptors) that breed outside of the breeding period for migratory birds would be utilized. • Where possible to do so, habitat trees of migratory birds and bird species at risk, including those with potential use or present use, would be maintained. If removal cannot be avoided, removal activities would be scheduled outside of the migratory bird breeding season (i.e. May 7 to August 7) and a qualified biologist would evaluate whether habitat trees are presently occupied.	to verify the results of the environmental assessment, the effectiveness of mitigation measures, and inform the need for adaptive management. Monitoring as part of the Wildlife Monitoring and Management Plan would include pre-construction surveys, construction monitoring, and post-construction monitoring, and would employ techniques such as remote habitat surveys, nest inventories, nest sweep surveys, and remote camera studies for habitat disturbance. ◦ Prior to construction, a project-specific Avian Monitoring Plan would be developed, in consultation with Environment and Climate Change Canada and Indigenous nations, and implemented where activities that could result in harm to breeding sites for migratory birds cannot be avoided and upon discovery of nests. The Plan would outline how risk of harm would be managed in accordance with the *Migratory Birds Convention Act, 1994* and guidance from Environment and Climate Change Canada on avoiding harm to migratory birds. • The Wildlife Monitoring and Management Plan would include a description of: ◦ the location, frequency, timing, and duration of sampling; ◦ the methods of sampling to be used; ◦ the parameters to be measured; ◦ the quantitative thresholds that would trigger adaptive management actions; and ◦ contingency measures that would be implemented if mitigation measures are not effective and/or unanticipated effects occur. • Reports from monitoring programs would be submitted annually to regulatory authorities and shared with interested Indigenous nations and stakeholders. Annual reporting would be used to document the applied mitigation measures, methods, results, and recommendations for future monitoring or adaptive management.

Mitigation Measures	Follow-up and Monitoring Measures
• A vegetative cover to reduce effects of sensory disturbance along areas of high activity, such as roadways, would be maintained where possible. • Best management practices would be implemented to reduce attraction of migratory birds and bird species at risk to the PDAs, including proper storage of food and chemicals, prompt removal of roadkill, and proper waste management. • Liquid wastes and sewage would be treated in the Sewage Treatment Plant and water management facilities prior to release to the surrounding environment to ensure federal effluent discharge guidelines for contact water are met. • Pre-construction breeding bird nest surveys would be conducted no more than seven days prior to the commencement of project activities to determine the presence of migratory birds and their nests. Project personnel and contractors would be informed of the locations of any nests discovered during surveys and follow-up action in accordance with the Avian Monitoring Plan and the Wildlife Monitoring and Management Plan would be implemented. Nests would be reported to the Wildlife and Fisheries division of Manitoba's Department of Agriculture and Resource Development for direction, if necessary. • Road safety measures, including speed limits and signage, would be established and enforced on project access roads and internal haul roads to reduce the risk of migratory bird and bird species at risk injury or mortality. • Vegetation around collection ponds and the Tailings Management Facility would be managed to deter use by migratory birds and bird species at risk. Additional deterrents, such as netting, would be considered if monitoring identifies concerns regarding use of these areas by migratory birds and bird species at risk.	

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• Project personnel would be prohibited from bringing firearms to the project sites while on duty. • Distribution lines would be routed away from areas where interactions with migratory birds are likely, such as wetlands, and bird diverters would be used to mark distribution lines to increase visibility.	
Species at Risk (Chapter 7.3)	
• Vegetation clearing activities would occur outside of the woodland caribou, boreal population (boreal caribou; *Rangifer tarandus caribou*) calving and calf-rearing period if boreal caribou are detected within the PDAs. If boreal caribou are detected within the LAAs (i.e. within one kilometre of the PDAs), site preparation activities would also be postponed until after this period to prevent mortality. • Environmentally sensitive areas, such as nesting sites, amphibian breeding ponds, dens, roosts, stick nests, and hibernacula, would be flagged prior to clearing and construction and the need for additional mitigation measures would be evaluated. Project personnel would be directed to report the discovery of nests or other dwellings of species at risk to the Proponent for appropriate action or follow-up. • Unauthorized access by project personnel to habitat areas of importance for species at risk adjacent to the PDAs would be restricted. • Demolition of existing buildings and infrastructure at the MacLellan site would occur outside of the maternity roosting period for bats (i.e. May 1 to August 31) to reduce mortality risk. • Vegetation around collection ponds and the Tailings Management Facility would be managed to deter use of these areas by species at risk. Additional mitigation measures, such as fencing, netting, or bird/bat deterrents, would be used if monitoring identifies concerns regarding use of these areas by species at risk.	• The Wildlife Monitoring and Management Plan that would be developed for the Project (see above) would also apply to species at risk. • Pre-construction surveys, construction monitoring, and post-construction monitoring would be conducted by the Proponent to monitor and detect project interactions with wildlife and wildlife habitat, including species at risk and their habitat. This monitoring would also be used to address any uncertainty in the predictions of the presence of boreal caribou and bat hibernacula in the RAA. Boreal caribou monitoring would be incorporated into the Wildlife Monitoring and Management Plan and developed in consultation with federal and provincial regulators. • Remote camera surveys would be conducted for boreal caribou and wolverine to monitor usage of the PDAs and LAAs by these species; results would be shared with provincial wildlife authorities. • The Proponent will support a collaring program for boreal caribou, in partnership with the Province of Manitoba. Data from this program will be used to inform mitigation measures, monitoring, and adaptive management with respect to boreal caribou.

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• Amphibian species at risk would be rescued and relocated prior to dewatering activities at the Gordon and MacLellan sites. • Measures to reduce human-wildlife interactions, such as the reporting of wildlife encounters, proper food and chemical storage, and wildlife awareness training, would be implemented. • Low areas would be created in ploughed snowbanks along access and on-site roads, where practical, to facilitate wildlife movement across and out of road corridors. • Waste oils, fuels, and hazardous waste would be disposed of as recommended by the manufacturers and in compliance with federal, provincial, and municipal regulations to prevent direct or indirect ingestion by wildlife. • Amphibian exclusion screens would be installed on intake pipes to prevent mortality. • Site access by resource users during post-closure would be controlled to prevent species at risk mortality due to increased harvesting pressures and wildlife predation.	
Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance (Chapter 7.4)	

Access for Current Use
• The project footprint would be limited to the extent possible, including site clearing and disturbance, access routes, and the distribution line right-of-way, to reduce disturbance of adjacent lands and resources.
• To prevent adverse effects to the safety of land users practicing current use activities near the PDAs, particularly near site access roads:
  ○ warning signs would be posted on the Gordon and MacLellan site access roads and along the distribution line right of way to notify land users of safety hazards and access restrictions;
  ○ carpooling among local project personnel would be encouraged and work shifts would be scheduled so that all workers do not arrive and leave at the same time; and
  ○ traffic control measures would be implemented, including gating approaches to project access roads, establishing speed limits, and placing large boulders or gated fencing near site access roads and other potential access points, to restrict public and Indigenous Peoples' access to the PDAs.	

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- Existing access roads, trails, and right-of-ways would be used to the extent possible for the Project to limit the need for new roads and additional disturbance.
- The Proponent would communicate the schedule of project activities during all phases to potentially affected Indigenous nations, and would engage with potentially affected Indigenous nations to address, to the extent possible, potential conflicts, disturbance, or access restrictions to harvesting areas and resources within the PDAs that may affect traditional activities.
- The Proponent would follow Transport Canada's *A Guide to the Navigation Protection Application and Review Requirements.* Conditions specified in an approval and other directives would apply to any works requiring an approval. If dewatering of, or deposit of materials in, any waterbodies is required for the Project, the Proponent would follow Transport Canada's *Applicant Guide to Governor in Council Exemptions under Section 24 of the Canadian Navigable Waters Act*.
- To mitigate changes in access to lands and resources currently used for traditional purposes, the Proponent may adjust the timing of project activities and/or the construction schedule and would engage with potentially affected Indigenous nations to identify potential alternate access routes.

Physical and Cultural Heritage and Sites of Significance

- The Proponent would develop a Heritage and Cultural Resource Protection Plan, which would include a description of:
  - engagement protocols with Indigenous nations, should physical and cultural heritage resources or sites of significance be found during construction or operation; and
  - measures to mitigate potential effects to physical and cultural heritage resources or sites of significance, which would be developed in consultation with Indigenous nations.
- The Proponent would train project personnel and contractors in the recognition of Indigenous archaeological features and review the potential and documented historical use and occupation of the PDAs and LAAs with project personnel. The Proponent would share with project personnel and construction contractors the appropriate protocols to be followed if heritage or cultural resources of Indigenous Peoples, or objects thought to be of cultural or heritage value, are discovered.
- The Proponent would work with construction monitors, including professional archaeologists, during project activities to monitor for physical and cultural heritage resources and sites of significance in areas of high historic resources potential and in areas identified as being culturally sensitive by Indigenous nations.
- Indigenous nations would be provided with opportunities to monitor for the presence of physical and cultural heritage resources and sites of significance, including chance finds, during any land disturbance activities during all project phases. This could include potential opportunities for the hiring of Indigenous field support staff as part of an environmental monitoring team.
- If physical or cultural heritage resources or sites of significance are found during construction or operation, the following actions, as part of the Heritage and Cultural Resource Protection Plan, would be taken by the Proponent and its contractors:
  - leave all artifacts in situ, protected by a barrier placed around heritage resource sites, and not remove objects from the site until advised by a permitted archaeologist;

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- no activities within a 50 metre buffer of the discovered site or resource would be undertaken until a qualified archaeologist has completed an investigation;
- controlled surface collection or salvage excavation of known heritage resource sites, or a portion thereof, that cannot be avoided would be conducted;
- in the interest of protecting potentially culturally sensitive information, no reports related to any such find would be published, other than those required by law by the Manitoba Historical Resources Branch or other agencies;
- archaeological sampling or construction monitoring activities would be conducted on landforms of similar historic potential to the discovery site within the PDAs that are planned for development, prior to development in these areas; and
- should changes to the Project be required that would result in activities occurring outside of the PDAs, a professional archaeologist would evaluate the area for physical and cultural heritage resource potential and any necessary mitigation measures would be identified and undertaken at that time.

Availability and Quality of Resources for Current Use

- Project lighting would be limited to what is necessary for safe and efficient project activities. Directional lighting would be used to limit the transmission of light outside of the PDAs. Portable lighting equipment would be positioned to limit visibility at nearby receptors, to the extent feasible.
- Project personnel would be prohibited from bringing firearms and fishing gear to the sites while working to limit competition for wildlife and fish species of value to traditional harvesters.
- Work schedules would be implemented for construction personnel (i.e. subject to fly-in and fly-out employment) to deter project personnel from hunting locally outside of working hours during a shift.
- The Proponent would engage with Marcel Colomb First Nation's Harvester's Committee regarding remote cabin usage within the LAAs to discuss occupancy, potential future usage, and potential applicable mitigation measures.
- The Proponent would engage with local resource users (i.e. hunters, outfitters, trappers, commercial fish harvesters, and anglers) and Manitoba Environment, Climate, and Parks to address, to the extent possible, potential conflicts, disturbance, or access restrictions to hunting, trapping, and fishing areas within the PDAs, and the availability of wildlife resources.
- The Proponent would avoid disturbance of plant harvesting sites within the PDAs through project design, timing, and scheduling. Plant species of interest to Indigenous nations would be incorporated into reclamation plans, where appropriate and technically feasible.
- The Proponent would undertake reclamation activities in consideration of desired end land uses that are achievable in the preparation of a Conceptual Closure Plan under the provisions of *The Mines and Minerals Act* for both the Gordon and MacLellan sites.

Mitigation Measures	Follow-up and Monitoring Measures
The mitigation, monitoring, and follow-up measures proposed by the Proponent to mitigate project effects to vegetation and wetlands, migratory birds, and species at risk would also apply to mitigating effects to the availability and quality of resources of importance for current use. The Proponent also committed to continued engagement with Indigenous nations regarding environmental aspects of ongoing project activities, including the development and implementation of follow-up and monitoring plans, through the Indigenous Environmental Advisory Committee and engagement with Indigenous nations regarding the selection of fish habitat offsets to include in the Fish Habitat Offsetting Plan for the Project. *Quality of Experience* • Indigenous nations would be invited to participate on an Indigenous Environmental Advisory Committee, which would facilitate the participation of interested Indigenous nations in aspects of ongoing project activities, including the development and implementation of follow-up and monitoring plans.	
Indigenous Peoples – Health and Socio-Economic Conditions (Chapter 7.5)	
Indigenous Peoples' Health The mitigation, monitoring, and follow-up measures proposed by the Proponent to mitigate project effects to the atmospheric environment; groundwater; surface water; the terrestrial landscape; fish and fish habitat; migratory birds; species at risk; the current use of lands for traditional purposes by Indigenous Peoples; physical and cultural heritage; and sites of significance would also apply to mitigating effects to Indigenous Peoples' health conditions. The Proponent would also provide access to an Employee Assistance Program for project personnel, including any Indigenous personnel, and would require pre-employment physicals. *Indigenous Peoples' Socio-Economic Conditions* • The Proponent would identify potential shortages of workers with specific skill requirements and develop a plan to work with Indigenous Peoples and Indigenous-owned businesses to provide training programs so that local Indigenous residents and businesses can acquire the necessary skills to qualify for project employment and contracts. • The Proponent would inform local residents and Indigenous nations of job and procurement opportunities during all project phases and implement a policy of local hire, where priority is given to the local residents within the LAAs, followed by local residents within the RAA, other parts of Manitoba, and other parts of Canada. • Project personnel (i.e. not inclusive of summer students) 19 years and younger would be required to have completed grade 12 or have an appropriate equivalency to prevent young people from leaving school prematurely. • The Project would include community services, infrastructure, and measures to protect well-being, including work site security to offset demands on local police, emergency medical services to limit demands on local health services, implementation of a Traffic Management Plan, and workforce education programs to raise awareness regarding potential effects on host communities. Cooperative protocols with responsible agencies to deal with access by project personnel to emergency and other medical services would be developed.	

Mitigation Measures	Follow-up and Monitoring Measures
• The Proponent would provide on-site power, water, and wastewater treatment and would not rely on resources within the Town of Lynn Lake or nearby Indigenous communities. • A work camp would be established at the MacLellan site to house project personnel during construction and operation to reduce demands on local accommodations. Bussing services between the work camp at the MacLellan site and the Gordon site would be provided to limit traffic along Provincial Road 391. • Work schedules would be designed to prevent project personnel from spending time off shift in local communities and accessing community recreation services and facilities outside of working hours. • The Proponent would complete timber removal in accordance with *The Forest Act* of Manitoba. Merchantable timber may be salvaged and used, if feasible, to enhance carbon storage or may be made available to local communities, including Indigenous nations, for firewood or other purposes. • The Proponent would implement standard construction procedures and a traffic management plan to reduce traffic delays during construction, and would schedule arrivals/departures of employees to occur earlier than the existing observed morning peak hour for local traffic and later than the existing observed afternoon peak hours.	
Federal Lands (Chapter 7.6)	
The mitigation, monitoring, and follow-up measures proposed by the Proponent to mitigate project effects to the atmospheric environment; groundwater; surface water; the terrestrial landscape; migratory birds; species at risk; the current use of lands for traditional purposes by Indigenous Peoples; physical and cultural heritage; sites of significance; and Indigenous Peoples' health and socio-economic conditions would also apply to mitigating effects to federal lands. No additional mitigation, follow-up, or monitoring measures specific to federal lands were proposed.	
Accidents and Malfunctions (Chapter 8.1)	
General Mitigation, Monitoring, and Follow-up • An Emergency Response and Spill Prevention and Contingency Plan would be developed to mitigate the effects of accidents and malfunctions, should they occur at the project sites. The Plan would outline monitoring measures, emergency preparation, spill prevention and contingency planning, corporate policies and emergency response procedures, best practices for protection of human health and the environment, and commitments to establish a mine rescue team to respond to emergencies at the project sites. • New project personnel would be required to complete a mandatory safety orientation. • The Proponent would provide emergency response services of sufficient capacity and capability to respond to emergency situations at the project sites, would cooperate with local officials in the incident investigation process, and conduct internal incident investigations. Any	

Mitigation Measures	Follow-up and Monitoring Measures

required remedial action would be undertaken by the Proponent in accordance with the results of the investigations following any accidents or malfunctions.

- The Proponent would work with external responders as needed or requested to provide assistance (i.e. personnel and equipment) for off-site emergencies. On and off-site vehicle collisions would be reported to outside regulatory agencies and other local officials such as the Royal Canadian Mounted Police.
- An Emergency Communication Plan describing the means of communication, notification procedures, and urgent and long-term communication requirements for possible emergency event types would be developed and would include notification of affected Indigenous nations.
- Management and monitoring plans proposed to monitor environmental effects associated with normal project operation, such as the Groundwater Management and Monitoring Plan and Surface Water Management and Monitoring Plan, would be used to identify and monitor effects from accidents and malfunctions. If monitoring and sampling indicates that an accident or malfunction occurred, mitigation measures and adaptive management would be implemented.
- Indigenous nations would be engaged regarding the design and implementation of project follow-up and monitoring programs, including the development of processes for sharing information regarding accidents and malfunctions, evaluation of program results, and subsequent updates to programs.

Open Pit Slopes

- Open pit slopes would be designed, to reduce the potential for slope failure, based on industry standards and the results of site-specific geotechnical investigations. The widths of berms on the slopes would be designed to catch localized small-scale failures. Regular slope stability inspections would be conducted during operation to monitor slope performance.
- Drainage ditches would be installed to divert surface water from the slope faces. Surface water that cannot be practically diverted from the slopes would be controlled and collected at the crest and toe of benches and discharged appropriately with a series of lined ditches.
- Dewatering systems, grouting, and seepage control measures would be implemented in the open pits to counteract the influence of groundwater on pit slope stability. Groundwater would be managed by installing sub-horizontal drains and by using sumps within the open pit; groundwater would be monitored using vibrating wire piezometers.

Uncontrolled or Unmanaged Blasting

- An Explosives Management Plan would be developed in order to ensure the safe use and storage of explosives and explosive components at the project sites, in accordance with the *Explosives Act of Canada*, Manitoba's *Workplace Safety and Health Act*, *Operation of Mines Regulation 212/2011*, and the National Standard of Canada *CAN/BNQ 2910-510 Explosives – Quantity Distances*.
- Blasting would be conducted as a series of small daily blasts and emulsion explosives with non-electric detonators would be used and stored during operation at the MacLellan site.

Mitigation Measures	Follow-up and Monitoring Measures
• Explosives storage requirements would be determined in consultation with the selected explosives supplier. The explosives mixing plant and explosives magazine would be housed separately from mine infrastructure and operations to limit damage to infrastructure in the event of an accident or malfunction. • A buffer around blasting areas would be developed to establish sufficient setback distances between valued components and blasting sites and prevent potential effects of fly rock from blasting activities. *Fire or Explosion* • Employees would be trained in fire prevention and response, fuel handling, safe use and storage of explosives, and equipment maintenance in order to reduce the likelihood of fires, explosions, spills, and leaks. Regular maintenance and inspections would be conducted on project infrastructure and equipment to prevent fire and explosion incidents. • Fire suppression systems, including a 500 cubic metre fire water tank, fire hydrants, indoor fire hoses, sprinklers, fire extinguishers, and other firefighting equipment, would be available at each project site. First response firefighting activities would be conducted by the mine rescue team, utilizing on-site water trucks and emergency response equipment. • A network of fire hydrants would be located outdoors close to project site assets. Indoor fire hose cabinets would be located within most buildings and fire extinguishers would be located indoors at strategic locations. Sprinklers would be installed in office and shop areas, including change rooms, the warehouse, and laboratory areas. Fire walls and fire rated floors to limit the spread of fire, high temperatures, and smoke would be installed, as required. • Automatic fire detection and fire protection systems would be installed in various areas, including in the crushing, grinding, and processing plant buildings, the warehouse, fuel storage areas, and other areas, as required. • Buffer zones around critical mine infrastructure would be cleared of vegetation to impede the spread of potential facility fires to surrounding woodlands. • Project activities and schedules would consider and control the risks of wildfires through compliance with Manitoba's *The Wildfires Act*. Burning permits would be obtained under *The Wildfires Act* for any applicable burning activities between April 1 to November 15 annually and the conditions of burning permits would be adhered to. *Ore Milling and Processing Plant* • Project activities would be aligned with the *International Cyanide Management Code*. If a release of cyanide were to occur during milling or processing, it would be contained within the Ore Milling and Processing Plant, which would be designed to contain the maximum capacity of a worst-case scenario failure.	

Mitigation Measures	Follow-up and Monitoring Measures

- Use of cyanide in the cyanidation process to extract gold from ore would only occur in the Ore Milling and Processing Plant. Cyanide detoxification (i.e. via air/SO_2 oxidation and precipitation of metals) or destruction would be conducted prior to the release of any tailings or effluents from the Ore Milling and Processing Plant to the Tailings Management Facility to maintain cyanide concentrations below limits set out in the MDMER.
- Hydrogen cyanide gas detectors would be installed near the Tailings Management Facility and in the Ore Milling and Processing Plant to identify malfunctions within the Ore Milling and Processing Plant.

Sewage Treatment Plant and Discharge Pipeline

- The Sewage Treatment Plant would be built in accordance with applicable industry standards and codes and would be maintained and inspected on a regular basis.
- The Sewage Treatment Plant would be constructed on a concrete pad surrounded by ditching to capture potential releases and would be maintained and inspected on a regular basis.
- A leak or spill from the discharge pipeline from the Sewage Treatment Plant would release treated effluent that meets the applicable standard for release and would be rapidly responded to and cleaned up, as required.

Tailings Management Facility

- The containment structures (i.e. dams) of the Tailings Management Facility would be designed in accordance with the *Canadian Dam Association Dam Safety Guidelines*.
- The Tailings Management Facility would be equipped with an emergency spillway to allow safe routing of flows from precipitation events to prevent dam overtopping.
- A network of groundwater monitoring wells would be installed downstream of each of the Tailings Management Facility dams during the initial phases of construction to monitor groundwater seepage through and under the dams.
- If fill material is not suitable or difficulties with fill placement are identified during construction of the Tailings Management Facility dams, a dam instrumentation plan would be developed and implemented to monitor the performance of the containment dams. Piezometric levels of underlying foundation soils at each of the containment dams would be monitored, and settlement plates and inclinometers would be installed to monitor settlement and lateral deformation within the dams.
- A Dam Breach Assessment would be performed prior to construction to assess the likelihood, potential modes of failure, and consequences of dam breach or failure. The results of the assessment would be used to inform the next phase of project design.
- A performance monitoring program would be developed and implemented for the dams and ancillary structures of the Tailings Management Facility, which would include visual inspections by an independent engineering firm quarterly and annually and formal dam safety reviews every five to seven years, based on the dam hazard classification.

Release of Untreated Contact Water

Mitigation Measures	Follow-up and Monitoring Measures
• Non-contact water would be diverted away from the project infrastructure using a series of diversion ditches to reduce the volume of contact water created. A series of contact water collection ditches would be installed around project infrastructure to collect contact water and convey it to contact water collection ponds, where the water would stored and treated, if required, prior to release to the surrounding environment. • At a minimum, contact water collection ponds would be sized to provide enough retention capacity for the settling of suspended solids and other required treatment measures prior to release to the surrounding environment. • During decommissioning/closure, the Tailings Management Facility would be capped with a soil cover to prevent the release of tailings or contact water to the surrounding environment. • Foundation seepage from the Tailings Management Facility would be controlled via low permeability seepage cut-offs. A downstream seepage collection system, consisting of a series of sumps in combination with a buried weeping tile or rockfill finger drain system, would be installed during dam construction. Seepage collected from the Tailings Management Facility would be pumped back to the Facility for storage. *Hazardous Materials* • Fuel at the Gordon and MacLellan sites for light vehicles would be contained in on-site, double-walled storage tanks with a capacity of 5,000 litres and a single pumping dispenser in a designated fuel area. The fuel area would be built on a concrete pad with a sump pump and oil/water separation device to collect and treat spillage. • Tanks for storing hazardous materials on site would be double-walled and surrounded by concrete trenches for secondary containment. • Reagents and other consumables would be stored in a dry storage facility separate from the reagent mixing area and would be transported between the storage and mixing area using a forklift. The reagent mixing area would be located within the Ore Milling and Processing Plant building and surrounded by containment walls to control spillage. • Contractors would be required to safely handle, transport, and store waste oils, fuels, and hazardous wastes as recommended by the manufacturers and suppliers and in compliance with applicable federal, provincial, and municipal regulations (e.g. the *Hazardous Waste Regulation* under the *Dangerous Goods Handling and Transportation Act of Manitoba*, *Canadian Environmental Protection Act* and associated regulations, and the *Transportation of Dangerous Goods Act* and associated regulations). • Biodegradable hydraulic fluid would be used and regular inspections and maintenance would be conducted on all project equipment and vehicles in order to reduce the likelihood of malfunction. *Vehicle Accidents* • Project vehicles would be driven by trained and competent drivers who would use approved routes and obey all highway laws.	

Mitigation Measures	Follow-up and Monitoring Measures
• Project vehicles would be equipped with beacon lights and flagging, and would be inspected daily. • Internal site roads would be properly constructed and maintained, and radios would be used to communicate the location and travel direction of project vehicles to prevent collisions on the internal site roads. Merging lines would be painted on highway turnoffs from Provincial Road 391 to the project site access roads, in consultation with Manitoba Transportation and Infrastructure. • Project security personnel would conduct internal speed checks. • Road safety measures, such as speed limits, traffic signage, seasonal weight restrictions, and requirements for permits for oversized loads, would be implemented. • Access to the PDAs would not be permitted by public vehicles.	
Effects of the Environment on the Project (Chapter 8.2)	
General Mitigation, Monitoring, and Follow-up • Project components and infrastructure would be designed and constructed to meet applicable engineering codes, standards, and best management practices for normal and extreme weather conditions, climate change projections, and geologic hazards that can reasonably be expected to occur over the life of the Project. The potential effects of extreme weather, including storms, precipitation, flooding or ice jams, and drought would be considered in project design and operation, including the selection of materials and equipment. • Observable effects of the environment on the Project would be monitored following environmental events, such as snow melt, heavy rainstorms, windstorms, and seismic events, and the Proponent would maintain, repair, and upgrade infrastructure and equipment as necessary to mitigate any damage or adverse effects on the Project. *Extreme Weather and Climate Change* • The Tailings Management Facility would be equipped with an emergency spillway to allow for safe routing of increased flows during an extreme precipitation event that may result in overtopping of the dams. The spillway would discharge into the Keewatin River and would include a stilling basin to promote energy dissipation and reduce erosion and scouring due to high flow velocities. • To prevent damage, regular maintenance and safety inspections would be conducted on all project infrastructure and equipment. • Personnel offices would be located close together to limit walking distance during extremely cold weather. • Weather forecasts would be utilized to alter the project schedule, if forecasted extreme temperatures, precipitation events, and severe storm events may result in unsafe conditions. An allowance for delays that could reasonably be expected to occur due to poor weather would be included in the construction schedule. *Beaver Activity* • A Beaver Dam and Beaver Activity Management Plan would be developed and implemented for the Project, which would include measures to manage beaver dam construction activities. Dam safety inspections of the Tailings Management Facility embankments would include visual inspections for signs of beaver activity.	

Mitigation Measures	Follow-up and Monitoring Measures

Geologic Hazards

- The Project would be designed and constructed to meet applicable engineering codes, standards, and best management practices. These include applicable building safety, industry codes, and standards for geologic hazards, including the *National Building Code of Canada*, which provides standards of safety to account for seismic activity, and would form the basis of design and construction of the Project.
- The Tailings Management Facility and dams would be founded on bedrock to increase their stability.
- Containment structures for the Tailings Management Facility would be designed to meet the requirements for a high earthquake classification, as defined by the *Canadian Dam Association Dam Safety Guidelines*, including the ability to withstand a 1:2,475 year seismic event during operation and between a 1:2,475 year and 1:10,000 year event for decommissioning/closure.
- The Proponent would monitor observed effects of the environment on the Project, and would act as required to maintain, repair, and upgrade infrastructure and equipment, as required.
- Following site preparation and construction, if permafrost soils remain on the Gordon and MacLellan site PDAs, an investigation of the type, degree, and extent of residual permafrost would be conducted and considered in final infrastructure design, and mitigation measures to reduce the effects of permafrost degradation would be implemented.

Forest Fires

- The Proponent would adhere to the *National Fire Code of Canada* and the Manitoba *Fires Prevention and Emergency Response Act*. Burning permits would be acquired for open burns conducted at the project sites, as applicable.
- A buffer cleared of vegetation would be maintained around critical mine infrastructure to protect the facilities from wildfires.
- On-site fire prevention and response equipment would be provided and maintained, and project personnel would be trained in safe fire response and fuel handling procedures.
- First response firefighting activities would be conducted by the mine rescue team using on-site water trucks and emergency medical services equipment.
- Work procedures and project schedules would be adjusted in the event of a severe fire, including mine shut down and evacuation.

Cumulative Effects (Chapter 8.3)

Migratory Birds and Species at Risk

The mitigation, follow-up, and monitoring measures described in Chapter 7.2 (Migratory Birds) and Chapter 7.3 (Species at Risk) of this EA Report would limit the Project's contribution to potential cumulative effects to migratory birds and species at risk.

Mitigation Measures	Follow-up and Monitoring Measures
Cumulative Effects on the Current Use of Lands and Resources for Traditional Purposes and Physical and Cultural Heritage The mitigation, follow-up, and monitoring measures described in Chapter 7.4 (Indigenous Peoples – Current Use of Lands for Traditional Purposes, Physical and Cultural Heritage, and Sites of Significance) of this EA Report would limit the Project's contribution to potential cumulative effects to the current use of lands and resources for traditional purposes by Indigenous Peoples and physical and cultural heritage. *Cumulative Effects on Indigenous Health and Socio-economic Conditions* The mitigation, follow-up, and monitoring measures described in Chapter 7.5 (Indigenous Peoples – Health and Socio-economic Conditions) of this EA Report would limit the Project's contribution to potential cumulative effects to Indigenous health and socio-economic conditions.	
Impacts to Rights (Chapter 9)	
Right of Access and Governance Rights • The Proponent would invite Indigenous nations to participate on an Indigenous Environmental Advisory Committee for the Project, which would facilitate ongoing information sharing related to the Project, allow Indigenous nations to provide input and feedback, establish communication and reporting protocols, provide a forum for discussions regarding access management, and provide an opportunity for Indigenous nations to share additional information about the exercise of their section 35 rights in relation to the Project. This ongoing engagement may result in the development of alternative access routes to resource harvesting areas outside of the PDAs for safety reasons. The Indigenous Environmental Advisory Committee would also provide Indigenous nations with the opportunity to provide feedback on mitigation and monitoring measures meant to minimize project effects to section 35 rights. • The Proponent would engage with Indigenous nations to identify alternative access routes and develop access management plans to allow access to harvesting sites in the LAAs that would be made inaccessible by the Project. • The Proponent would continue to engage with Indigenous nations regarding the development and promotion of cultural sensitivity training. • The Proponent would regularly communicate the schedule of project activities with Indigenous nations throughout all project phases. • Ongoing engagement with potentially affected Indigenous nations would be conducted to address potential conflicts between project activities and scheduling of traditional practices and the exercise of rights, and potential impacts to harvesting areas and resources of importance for the exercise of rights. *Hunting, Fishing, Trapping, and Plant Harvesting Rights* The Proponent indicated that the mitigation, monitoring, and follow-up measures proposed by the Proponent to mitigate project effects to the terrestrial landscape; fish and fish habitat; migratory birds; species at risk; the current use of lands for traditional purposes by Indigenous Peoples; physical and cultural heritage; and sites of significance would also apply to mitigating impacts to hunting, fishing, trapping, and plant harvesting rights. No additional mitigation, follow-up, or monitoring measures specific to mitigating impacts to hunting, fishing, trapping, and plant harvesting rights were proposed. Participation of Indigenous nations in the Indigenous Environmental Advisory Committee would also aid in addressing potential impacts to	

Mitigation Measures	Follow-up and Monitoring Measures
hunting, trapping, fishing, and plant harvesting rights, as it would provide a forum for Indigenous nations to bring their concerns forward and to work with the Proponent to develop strategies to address concerns and potential impacts.	

Appendix E Summary of Key Comments Received on the Draft Environmental Assessment Report

Key comments received on the draft Environmental Assessment Report (EA Report) are summarized in the table below. Editorial-related comments and comments that identify basic errors in the draft EA Report were considered and addressed in the final EA Report where applicable, and are not included in this table. Comments on the potential environmental assessment conditions that resulted in changes to key mitigation measures and follow-up requirements are addressed in the final EA Report and/or in revisions to the potential environmental assessment conditions, and most are not included in this table.

Participant	Comment	Agency Response
Fish and fish habitat [subparagraph 5(1)(*a*)(i) of the *Canadian Environmental Assessment Act, 2012* (CEAA 2012)]		
Marcel Colomb First Nation, O-Pipon-Na-Piwin Cree Nation	Concerns regarding contamination of surface waterbodies near and downstream of the Project Development Areas (PDAs) as a result of project activities and associated effects to Indigenous Peoples' health, cultural practices, and belief systems, and impacts to Aboriginal and treaty rights protected under section 35 of the *Constitution Act, 1982* (section 35 rights). O-Pipon-Na-Piwin Cree Nation noted specific concerns regarding effects to the Barrington River system during post-closure.	Section 6.3.2 of the EA Report was revised to reflect these concerns. Potential condition 3.12 requires the Proponent to conduct monitoring and implement mitigation measures to protect surface water quality in waterbodies upstream and downstream of the PDAs for various contaminants and comply with federal surface water quality guidelines for the protection of aquatic life.
Marcel Colomb First Nation, Manitoba Metis Federation	Concerns regarding the potential for acid rock drainage and metal leaching from ore, overburden, and mine rock, effects to surface water quality, and metal accumulation in the surrounding environment. The Manitoba Metis Federation noted concerns that blending of potentially and non-potentially acid generating materials may not sufficiently mitigate effects to surface water quality and highlighted the importance of a monitoring program, particularly during the post-closure phase, to ensure that measures to mitigate acid rock drainage and metal leaching are effective. Marcel Colomb First Nation recommended that tailings in the Tailings Management Facility be secured to prevent adverse effects to their community.	Section 6.3.2 of the EA Report was revised to reflect these concerns. Potential condition 3.10 requires the Proponent to characterize, conduct geochemical testing, and manage acid generating and potentially acid generating waste during all phases of the Project. The Proponent would also be required to cover tailings and waste, including the mine rock storage areas and Tailings Management Facility, with an oxygen-limiting barrier as part of reclaiming the PDAs. Potential condition 3.15 requires the Proponent to develop a follow-up program to verify the accuracy of the environmental assessment and the effectiveness of mitigation measures as they pertain to acid rock drainage and metal leaching into the receiving environment from the PDAs.

Participant	Comment	Agency Response
Marcel Colomb First Nation, Manitoba Metis Federation	Concerns regarding potential project-related increases in mercury concentrations in the surrounding environment, the potential for mercury bioaccumulation, and associated effects to the environment and Indigenous Peoples, including Indigenous health. Request that the Proponent be required to implement a mercury monitoring program for the Project, in collaboration with Indigenous nations, including monitoring of fish tissue, surface water, and sediment samples. The Manitoba Metis Federation requested that the follow-up program for mercury include specific predictions, targets, mitigation measures, and adaptive management measures for surface water, sediment, fish, and human health end points. Concerns regarding project-related changes in surface water quality and the bioavailability of metals in sediment, and associated effects to Indigenous Peoples.	Sections 6.3.2 and 6.3.3 of the EA Report were revised to reflect these concerns. Potential condition 6.3.2 requires the Proponent to develop a follow-up program to monitor, during all phases of the Project, mercury and methylmercury in surface water and fish tissue samples; monitoring locations are to be determined in consultation with Indigenous nations. If exceedances of federal surface water quality guidelines are detected, the Proponent would be required to implement additional mitigation measures.
Marcel Colomb First Nation	Request that the Proponent identify selenium sources and sinks within the Local Assessment Areas (LAAs) and the Regional Assessment Area (RAA),and implement mitigation measures to prevent project-related increases in selenium concentrations in nearby waterbodies, including effluent treatment prior to release to the surrounding environment.	Sections 6.3.2 and 6.3.3 of the EA Report were revised to reflect this concern. Potential condition 3.7 requires the Proponent to collect and treat contact water and seepage from the PDAs, and to comply with applicable federal surface water quality guidelines before discharge to the receiving environment. Potential condition 3.12.2 was modified to require the Proponent to monitor and mitigate project-related increases in selenium as part of a follow-up program.

Participant	Comment	Agency Response
Marcel Colomb First Nation	Concerns regarding the potential disappearance of lake whitefish and other fish species of importance to Indigenous nations due to project-related contamination of the surrounding environment.	Section 7.1.2 of the EA Report was revised to reflect this concern. Potential condition 3.14 requires the Proponent to develop a follow-up program, in consultation with Indigenous nations, to monitor project-related effects to fish. The Proponent is required to engage with Indigenous nations regarding the fish species to be monitored as part of this follow-up program. At a minimum, the Proponent is required to monitor project-related effects to lake whitefish.
Marcel Colomb First Nation	Request that the Proponent provide Marcel Colomb First Nation with ongoing opportunities to provide input into aquatic, benthic, and invertebrate monitoring plans and mitigation measures for waterbodies of interest to Marcel Colomb First Nation.	Section 7.1.2 of the EA Report was revised to reflect this concern. Potential conditions 3.12, 3.14, and 6.3.2 require the Proponent to develop a follow-up program, in consultation with Indigenous nations, to monitor potential changes to surface water quality, f concentrations of contaminants in fish species consumed as country foods, and fish habitat metrics downstream of the PDAs, and implement additional mitigation measures, if needed.
Marcel Colomb First Nation	Concerns regarding the presence of a historically reported buried stream channel between Farley Lake and the existing East pit lake, which may act as a groundwater conduit between these waterbodies, facilitating the transport of contaminants to Farley Lake.	Section 6.2.2 of the EA Report was revised to reflect this concern. The Agency understands that the Wendy and East pit lakes would be dewatered as part of project construction to allow development of the open pit at the Gordon site. Potential condition 3.7 requires the Proponent to collect and treat groundwater that flows into the open pits before release to the surrounding environment during all project phases. Potential condition 3.12 requires the Proponent to develop a follow-up program to verify the results of the environmental assessment and the effectiveness of mitigation measures for surface water in Gordon Lake and Farley Lake, and groundwater near Gordon Lake, Farley Lake, and the open pits. Additional mitigation measures would be required if exceedances of federal surface water

Participant	Comment	Agency Response
		quality guidelines are detected.
Marcel Colomb First Nation	Concern that the baseline study program conducted by the Proponent did not include sampling locations used for fishing by Marcel Colomb First Nation.	Section 7.1.2 of the EA Report was revised to reflect this concern. Potential condition 3.14 requires the Proponent to develop a follow-up program for fish and fish habitat, in consultation with Indigenous nations and other parties, to verify the results of the environmental assessment and the effectiveness of mitigation measures. The Proponent is also required to consult with relevant parties regarding fish species to be monitored and monitoring locations. The Agency understands that other federal authorizations or permits may also be required for the Project. As relevant federal authorities will consult with Indigenous nations prior to making decisions related to federal authorizations or permits, Indigenous nations will have the opportunity to provide input as part of those processes.

Participant	Comment	Agency Response
Natural Resources Canada, Manitoba Metis Federation	Concerns regarding the effectiveness of the interceptor well system at mitigating project-related changes to lake levels in Gordon and Farley Lakes as a result of groundwater drawdown. Natural Resources Canada noted that additional mitigation measures, such as deepening the interceptor well system, may be required to further offset project-related lake level drawdown in Gordon and Farley Lakes if existing mitigation measures are not effective. Natural Resources Canada provided clarification regarding advice about pumping water during operation from the open pit at the Gordon site into Gordon and Farley Lakes to offset project-related lake level drawdown.	Sections 6.2.2 and 6.2.3 of the EA Report were revised to reflect these concerns. Potential condition 3.13 requires the Proponent to develop, prior to construction and in consultation with Indigenous nations and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment and the effectiveness of mitigation measures as they pertain to surface water quantity. Monitoring locations must include, at a minimum, Gordon Lake, Farley Lake, and Farley Creek. Potential condition 3.4 requires the Proponent to develop, prior to construction, and implement and maintain during all project phases, measures to mitigate any potential effects to water levels in Gordon and Farley Lakes due to groundwater drawdown as a result of project activities.
Proponent, Environment and Climate Change Canada	Recommendation that seepage water and contact water quality meet the guidelines set out in the *Canadian Water Quality Guidelines - Freshwater Aquatic Life* (CWQG-FAL) prior to discharge to protect surface water receptors.	Sections 6.2.2 and 6.2.3 of the EA Report were revised to reflect this recommendation. Potential condition 3.7 requires the Proponent to collect contact water and seepage from the PDAs, and treat it, as necessary, before release to the receiving environment. The Proponent is required to take the CWQG-FAL into account when treating contact water before its release to the receiving environment.
Manitoba Metis Federation	Concerns that the Proponent failed to consider the potential interaction between liquid tailings in the Tailings Management Facility and groundwater resources below the Facility, and the fact that mitigation measures proposed to prevent tailings seepage from entering groundwater may be inadequate.	This concern is reflected in Section 6.2.2 of the EA Report. Potential condition 3.7 requires that the Proponent collect and treat project-related contact water and seepage, including from the Tailings Management Facility, mine rock storage areas, and ore and overburden stockpiles, during all project phases, taking into account provincial and federal water quality guidelines for the protection of aquatic life. Potential condition 3.12 requires the Proponent to develop, prior to construction and in consultation with Indigenous nations and relevant authorities, a follow-up program to

Participant	Comment	Agency Response
		verify the accuracy of the environmental assessment and the effectiveness of mitigation measures as they pertain to adverse environmental effects of the Project on water quality, taking into account Environment and Climate Change Canada's *Metal Mine Technical Guidance for Environmental Effects Monitoring*.
Proponent	Clarified that the effect of dilution along the groundwater flow path was not evaluated in the EIS.	Section 6.2.2 of the EA report was revised to reflect this clarification.
Proponent	Concerns regarding the use of the *Guidelines for Canadian Drinking Water Quality* and the *Manitoba Water Quality Standards, Objectives, and Guidelines* as treatment standards for contact water, effluent, and seepage rather than the *Metal and Diamond Mining Effluent Regulations*.	Section 6.2.3 of the EA Report and potential condition 3.7 were revised to reflect this concern.
Environment and Climate Change Canada	Clarification that removal of seepage collection systems would not cause adverse effects on fish and fish habitat as they would be in place during decommissioning/closure until surface water quality meets applicable regulatory discharge requirements for a sufficient duration.	Sections 6.2.2 and 6.2.3 of the EA Report were revised to reflect this clarification.
Proponent	Concerns regarding the absence of walleye in the list of focal fish species used in the Proponent's environmental assessment in the EA Report. Recommendation to acknowledge that an assessment of effects to lake sturgeon and burbot was conducted during the EIS technical review.	Section 7.1.1 of the EA Report was revised to reflect this concern and recommendation.
Proponent	Provided an update on the area of fish-bearing wetlands that may be affected by the Project at both the Gordon and MacLellan sites based on additional information collected since the submission of responses to the second round of Information Requests.	Sections 7.1.1 and 7.1.3 of the EA Report were revised to reflect this updated data. The requirement in potential condition 3.12 for the Proponent to identify the area of fish-bearing wetlands that may be affected by the Project was removed.

Participant	Comment	Agency Response
Proponent	Request to modify the Agency's key mitigation measures to allow the use of potentially acid generating construction materials within the PDAs where water and oxygen ingress are precluded to limit additional landscape disturbance, should additional non-potentially acid generating rock be required for construction.	Sections 6.3.2 and 6.3.3 of the EA Report and potential condition 3.10.2 were revised to reflect this request.
Proponent	Concern that the monitoring locations and parameters for surface water quality and quantity identified by the Agency would prevent the inclusion of additional locations or parameters identified in consultation with Indigenous nations, and relevant federal and provincial authorities.	The monitoring locations and surface water parameters identified by the Agency in section 6.3.3 of the EA Report are considered the minimum required and do not preclude the inclusion of additional locations or parameters identified in consultation with Indigenous nations, and relevant federal and provincial authorities.
Proponent	Request that requirements for methyl-mercury and selenium monitoring in surface water and fish tissue samples be consistent with the requirements of the *Metal and Diamond Mine Effluent Regulations*.	Section 6.3.3 of the EA Report was revised for clarification.
Marcel Colomb First Nation	Concerns regarding the lack of modeling conducted by the Proponent to characterize water chemistry within the pit lakes during post-closure and that seepage from the Tailings Management Facility and mine rock storage areas during post-closure could result in elevated contaminant inputs into the Keewatin River.	Section 6.3.2 of the EA Report was revised to reflect these concerns. Potential condition 3.7 requires that the Proponent collect and treat project-related contact water and seepage, including from the Tailings Management Facility, mine rock storage areas, and ore and overburden stockpiles during all phases of the Project, taking into account provincial and federal water quality guidelines for the protection of aquatic life. Potential condition 3.12 requires the Proponent to develop, prior to construction and in consultation with Indigenous nations and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment and the effectiveness of mitigation measures as they pertain to adverse environmental effects of the Project on water quality, taking into account Environment and Climate Change Canada's *Metal Mine Technical Guidance for Environmental Effects Monitoring*.

Participant	Comment	Agency Response
Proponent	Concerns regarding the timing specified in the Agency's key mitigation measures for sharing the fish habitat offsetting plan with the Indigenous Environmental Advisory Committee (IEAC) before formal submission to Fisheries and Oceans Canada. Request that the Agency's key mitigation measures be modified to align with the timelines proposed for submission of the fish habitat offsetting plan and establishment of the IEAC.	Section 7.1.3 of the EA Report and potential condition 3.1 were revised to reflect this concern and request.
Proponent	Request that the requirement to collect baseline surface water quality data for fish-bearing wetlands be removed based on the data provided by the Proponent in response to the Agency's second round of Information Requests.	Sections 7.1.2 and 7.1.3 of the EA Report were revised to reflect this request. The Agency acknowledges that baseline surface water quality data for fish-bearing wetlands has been collected by the Proponent.
Proponent	Concerns regarding the feasibility of the requirement that blasting be conducted outside of fish spawning periods, as spawning periods for fish species present within the PDAs and LAAs occur throughout the year. Concerns regarding the Proponent's ability to comply with the 50 kilopascal and 100 kilopascal blasting thresholds identified by Fisheries and Oceans Canada, given the distance of the open pits from fish-bearing waterbodies.	Section 7.1.3 of the EA Report and potential condition 3.8.2 were revised in consideration of these concerns. 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.
Proponent	Clarification regarding Proponent commitments to aerate groundwater intercepted by interceptor wells at the Gordon site prior to release.	Section 7.1.3 of the EA Report was revised to reflect this clarification.
Proponent	Concerns that inclusion of specific alternative means of intercepting groundwater at the Gordon site prior to entering the open pit, should the use of interceptor wells be ineffective, in the Agency's key mitigation measures may limit the Proponent's ability to implement more appropriate contingency options.	Section 6.2.3 of the EA Report and potential condition 3.4 were revised to reflect this concern.

Participant	Comment	Agency Response
Proponent	Concerns regarding the requirement to monitor periphyton and plankton community structures as indictors of project-related changes to the aquatic environment. Request that the Agency's key mitigation measure be modified to require monitoring of chlorophyll a concentrations in periphyton communities in streams and in plankton communities in lakes as a more feasible metric.	Section 7.1.3 of the EA Report and potential condition 3.14.2 were revised to reflect this concern.
Proponent	Concerns regarding the feasibility of follow-up and monitoring activities for lake sturgeon and burbot, given the low population density of these species in the PDAs, LAAs, and RAA and the potential for currently accepted monitoring methods to increase mortality risk for the species. Proposed that fish habitat offsetting will adequately address potential effects to lake sturgeon and burbot.	Section 7.1.3 of the EA Report and potential condition 3.14.3 were revised to reflect this concern.
Proponent	Concerns regarding the requirement to monitor fish habitat quantity, quality, and utilization in Farley Creek due to safety concerns and the likelihood that existing equipment would be ineffective at collecting this data. Request that the Agency's key mitigation measures be revised to require monitoring of water flow and fish habitat metrics in Farley Creek.	Section 7.1.3 of the EA Report and potential condition 3.14.4 were revised to reflect this concern.
Manitoba Metis Federation	Highlighted the need for co-development of surface water monitoring plans, follow-up programs, mitigation measures, and adaptive management strategies prior to construction.	Section 6.3.2 of the EA Report was revised to reflect this concern. Potential condition 2.9 requires the Proponent to develop a follow-up program, including monitoring and the identification of contingency measures and thresholds that would trigger their implementation, in consultation with Indigenous nations and prior to project construction. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC.

Participant	Comment	Agency Response
Environment and Climate Change Canada	Recommendation that groundwater quality be monitored near Pump Lake, as it is located down gradient of the PDAs and closer in proximity to the PDAs than Susan Lake.	Section 6.2.3 of the EA Report and potential condition 3.12.3 were revised to include Pump Lake as a groundwater monitoring location.
Manitoba Metis Federation, Marcel Colomb First Nation, O-Pipon-Na-Piwin Cree Nation	Concerns that the Project may increase the concentrations of contaminants whose concentrations are in excess of federal and provincial water quality guidelines under baseline conditions in the surrounding environment. Recommendation that conservative effluent quality targets be set for those contaminants in excess of federal and provincial water quality guidelines under baseline conditions to ensure that existing exceedances are not exacerbated by the Project. Concerns regarding contributions of the Project to cumulative residual effects to surface water quality in combination with current mining projects and projects and activities led by Manitoba Hydro.	Section 6.3.2 of the EA Report was revised to reflect this concern. Potential condition 3.7 requires the Proponent to collect and treat contact water and seepage to comply with CWQG-FAL limits prior to release to the receiving environment. The Proponent is also required to comply with the *Metal and Diamond Mining Effluents Regulations* and the pollution prevention provisions of the *Fisheries Act*. Potential condition 3.12 requires the Proponent to develop and implement, in consultation with Indigenous nations and relevant authorities, a follow-up program for surface water to verify the results of the environmental assessment and the effectiveness of mitigation measures.
Manitoba Metis Federation	Recommendation that flow regimes and water level factors be treated as essential considerations in the Project's *Fisheries Act* authorizations, and that impacts to fishing rights be appropriately considered and mitigated or accommodated. Recommendation to use data gathered in the comprehensive flow monitoring program for the Project to inform the *Fisheries Act* authorization for the Project.	The Agency understands that a *Fisheries Act* authorization may be required for the Project. Should a *Fisheries Act* authorization be required, Fisheries and Oceans Canada will consult with Indigenous nations as part of this process.

Participant	Comment	Agency Response
Manitoba Metis Federation	Request that the Proponent be required to collaborate with the Manitoba Metis Federation and its members regarding the development of the Fish Habitat Offsetting Plan and monitoring plans for the Project. This must include the collection, interpretation, and reporting of baseline monitoring information to help the Manitoba Metis Federation advise on offsetting decisions. Concerns regarding the lack of information provided by the Proponent regarding anticipated habitat losses in Farley Creek and Gordon Lake, and the lack of acknowledgement that white sucker nursery habitat exists in Gordon Lake. Concerns regarding project-related destruction of brook stickleback and northern pike habitat, particularly as a result of effects to aquatic vegetation, and associated impacts to section 35 rights.	Section 7.1.2 of the EA Report was revised to reflect these concerns. Potential conditions 3.1 and 3.2 require the Proponent to develop and implement, in consultation with Indigenous nations, fish habitat offsetting measures to mitigate project-related effects to fish and fish habitat. Potential condition 3.14 requires the Proponent to develop, prior to construction and in consultation with Indigenous nations and relevant authorities, a follow-up program to determine the effectiveness of the mitigation measures and verify the accuracy of the environmental assessment predictions as they pertain to project effects on fish and fish habitat. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC. The Agency understands that a *Fisheries Act* authorization may be required for the Project. Should a *Fisheries Act* authorization be required, Fisheries and Oceans Canada will consult with Indigenous nations as part of this process.
Proponent, Fisheries and Oceans Canada	Clarification that water from the Wendy and East pit lakes during construction and groundwater from the interceptor wells during operation will not be discharged to Farley Creek. Request that the Agency revise its key mitigation measures and associated conditions to reflect this. Fisheries and Oceans Canada noted concerns regarding the technical feasibility of adjusting the rate of discharge to Gordon and Farley Lakes to match the background flow rates of Farley Creek.	Section 6.3.3 of the EA Report and potential condition 3.6 were revised to reflect these concerns and clarification.

Participant	Comment	Agency Response
Proponent	Request that the requirement to install fish screens at the end of effluent discharge pipes be removed, as this is not required by Fisheries and Oceans Canada's *Freshwater Intake End-of-Pipe Fish Screen Guidelines* or the *Fisheries Act*.	Section 7.1.3 of the EA Report and potential condition 3.3 were revised to reflect this request.
Proponent	Concerns regarding the requirement that all water discharged to the receiving environment from the Gordon site be heated or cooled to within 2°C of background water temperatures and that this water only be discharged outside of burbot spawning periods, as this would be duplicative. Request that the Agency's key mitigation measures be modified to require that the overall water temperatures in Gordon and Farley Lakes be maintained within 2°C of background temperatures.	Section 7.1.3 of the EA Report and potential condition 3.5.2 were revised in consideration of the Proponent's concern regarding the temperature of water discharged to the receiving environment, and water discharges during burbot spawning periods.
Proponent	Request that the requirement to monitor calcium and magnesium as part of the follow-up program for surface water be removed as it is unclear why this was included as a key contaminant of concern.	Section 7.1.3 of the EA Report and potential condition 3.14.4 were revised to reflect this concern.
Proponent	Request that the Hughes River be removed from the list of locations requiring follow-up and monitoring, as project-related, measurable changes in water quality, water quantity, or fish habitat in the Hughes River were not predicted. Request that the requirement to monitor water temperatures in the Hughes River and Keewatin River be removed, as potential changes in water temperature from project activities is expected to be low.	The Agency is of the view that, if discharge of water to the Hughes River is required during any phase of the Project, monitoring of surface water quality and biological communities in the Hughes River must be conducted to verify the results of the environmental assessment and the effectiveness of mitigation measures. Section 7.1.3 of the EA Report and potential condition 3.14.4 were revised in consideration of this concern. The Agency is of the view that monitoring of water temperatures in the Hughes River and the Keewatin River is required to verify the results of the environmental assessment and the effectiveness of mitigation measures.
Proponent	Concerns regarding the inclusion of monitoring food web dynamics as part of a follow-up program as this requirement is not aligned with those of other mining projects and would not be technically feasible.	Section 7.1.3 of the EA Report and potential condition 3.14.2 were revised to reflect this concern.

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Chemawawin First Nation	Concerns that Indigenous nations may not be provided control of or opportunities to provide input regarding management decisions related to surface water resources near the PDAs.	Section 6.3.2 of the EA Report was revised to reflect this concern. Potential conditions 3.12 and 3.13 require the Proponent to develop a follow-up program for surface water, in consultation with Indigenous nations, to verify the results of the environmental assessment and the effectiveness of mitigation measures. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC.
Migratory birds [subparagraph 5(1)(*a*)(iii) of CEAA 2012]		
Environment and Climate Change Canada	Recommendation that mitigation measures related to site lighting require that the minimum intensity and duration for navigation be used to avoid effects to migratory birds.	Section 7.2.3 of the EA Report and potential condition 4.3 were revised to reflect this recommendation.
Marcel Colomb First Nation, Manitoba Metis Federation	Concerns regarding project effects to migratory birds as a result of sensory disturbance and the lack of information provided by the Proponent regarding potential indirect effects to migratory birds and their habitat outside of the PDAs, including habitat avoidance and changes in movement patterns. Request that the Proponent avoid bird nesting periods when scheduling project activities that may result in sensory disturbance.	Section 7.2.2 of the EA Report was revised to reflect these concerns. Potential condition 4.1 requires the Proponent to carry out project activities, including vegetation clearing, in accordance with Environment and Climate Change Canada's *Guidelines to avoid harm to migratory birds* and the *Migratory Birds Regulations* (2022). Potential condition 4.3 requires the Proponent to control site lighting during all phases of the Project, including aiming lighting downwards at nighttime, to avoid adverse effects on migratory birds, while meeting health and safety requirements for project employees and contractors.
Environment and Climate Change Canada	Clarification regarding Environment and Climate Change Canada's role in the development and implementation of a follow-up program for migratory birds.	Section 7.2.3 of the EA Report and potential condition 4.5 were revised to reflect this clarification.

Participant	Comment	Agency Response
Environment and Climate Change Canada	Recommendation that key mitigation measures and associated conditions regarding vegetation clearing activities be removed, as these activities are included under the *Migratory Birds Regulations* (2022).	Section 7.2.3 and potential condition 4.1 were revised to reflect this recommendation.
Manitoba Metis Federation	Concerns regarding potential project effects to migratory birds as a result of effects to riparian and wetland habitat due to changes in surface water and groundwater levels and flows.	Section 7.2.2 of the EA Report was revised to reflect this concern. The Agency understands that changes in surface water and groundwater quantity may result in indirect effects to wetland and riparian habitat areas but that these effects may be reversible following decommissioning/closure of the Project as groundwater levels recover to near baseline conditions. The Agency is of the view that predicted changes to wetland and riparian habitat from project activities are not likely to cause significant adverse effects to migratory birds. Potential condition 3.13 requires the Proponent to develop and implement a follow-up program to verify the results of the environmental assessment and the effectiveness of mitigation measures as they pertain to effects on surface water and groundwater quantity, and to develop and implement additional mitigation measures if results of monitoring demonstrate unanticipated effects on water quantity. Potential condition 3.8.3 requires the Proponent to maintain a 30 metre buffer around wetlands within and adjacent to the PDAs for which removal is not required for construction of the Project. The buffer will be established prior to work in these areas to limit project effects to wetlands that provide habitat for migratory birds, and that support current use and the exercise of section 35 rights by Indigenous Peoples, unless not technically or economically feasible. If work within 30 metres of wetlands is required, the

Participant	Comment	Agency Response
		Proponent is required to use weight-distributing materials under machinery to limit soil compaction and use existing access routes, if available.
Manitoba Metis Federation	Concerns regarding the lack of baseline information provided by the Proponent regarding habitat availability for barn swallow within the PDAs, LAAs, and RAA. Concerns regarding effects to rusty blackbird, common nighthawk, and olive-sided flycatcher as a result of direct habitat losses resulting from the Project.	Section 7.2.2 of the EA Report was revised to reflect these concerns. Potential condition 4.1 requires the Proponent to adhere to the requirements of the *Migratory Birds Regulations* (2022), including requirements related to vegetation clearing. This potential condition applies to barn swallow, common nighthawk, and olive-sided flycatcher as they are migratory birds as defined by the *Migratory Birds Convention Act, 1994*. Potential condition 4.5 requires the Proponent to develop, prior to construction and in consultation with Indigenous nations and relevant authorities, a follow-up program for migratory birds to verify the results of the environmental assessment and the effectiveness of mitigation measures. Barn swallow, common nighthawk, and olive-sided flycatcher are included in the list of species requiring monitoring. Potential conditions pertaining to migratory birds (i.e. potential conditions 4.1 to 4.5) apply to those bird species at risk that are also considered migratory birds defined by the *Migratory Birds Convention Act, 1994*. The Agency is of the view that these conditions would also mitigate project effects to non-migratory bird species at risk and that the project would not threaten the long-term persistence or viability of these species in the PDAs, LAAs, or RAA. The Agency understands that the species at risk listed in Table 15 are also managed by the Province of Manitoba and that Manitoba Environment, Climate, and Parks will be putting in place measures to mitigate project effects to species at risk as part of the provincial environmental assessment process. The Agency is satisfied that these measures will avoid or lessen project-related effects to

Participant	Comment	Agency Response
		affected species at risk.
Manitoba Metis Federation	Concerns regarding the effectiveness of the measures proposed by the Proponent to mitigate project effects to the mortality risk and health of migratory birds and bird species at risk.	Section 7.2.2 of the EA Report was revised to reflect this concern. Potential condition 4.5 requires the Proponent to develop, in consultation with Indigenous nations and relevant authorities, a follow-up program for migratory birds to verify the results of the environmental assessment and the effectiveness of mitigation measures. Should monitoring indicate that mitigation measures are not effective, the Proponent is required to implement contingency measures. This potential condition applies to any bird species at risk that are also considered migratory birds as defined by the *Migratory Birds Convention Act, 1994*.
Manitoba Metis Federation	Request that the Agency include potential conditions requiring that all bird species be afforded similar protections as migratory birds.	Section 7.2.2 of the EA Report was revised to reflect this concern. Potential conditions pertaining to migratory birds (i.e., potential conditions 4.1 to 4.5) apply to those bird species at risk that are also considered migratory birds defined by the *Migratory Birds Convention Act, 1994*. The Agency is of the view that these conditions would also mitigate project effects to non-migratory bird species at risk and that the

Participant	Comment	Agency Response
		project would not threaten the long-term persistence or viability of these species in the PDAs, LAAs, or RAA. The Agency understands that the species at risk listed in Table 15 are also managed by the Province of Manitoba and that Manitoba Environment, Climate, and Parks will be putting in place measures to mitigate project effects to species at risk as part of the provincial environmental assessment process. The Agency is satisfied that these measures will avoid or lessen project-related effects to affected species at risk.
Manitoba Metis Federation	Request that the Proponent provide information regarding how high-risk locations for avian distribution line strikes will be identified prior to construction, mitigation measures that will be implemented in these locations, and how the effectiveness of mitigation measures will be monitored and adaptively managed.	Section 7.2.2 of the EA Report was revised to reflect this concern. Potential condition 4.2 requires the Proponent to consult with a qualified individual to identify high-risk locations for avian distribution line strikes prior to construction and to route the distribution line away from high-risk locations identified. The Proponent is also required to implement mitigation measures to increase distribution line visibility to migratory birds. Potential condition 4.5 requires the Proponent to develop, in consultation with Indigenous nations and relevant authorities, a follow-up program for migratory birds to verify the results of the environmental assessment and the effectiveness of mitigation measures. Should monitoring indicate that mitigation measures are not effective, the Proponent is required to implement contingency measures.
Indigenous Peoples - health and socio-economic conditions [subparagraph 5(1)(*c*)(i) of CEAA 2012]		
Marcel Colomb First Nation, O-Pipon-Na-Piwin Cree Nation	Concerns regarding potential effects to subsistence harvesting and loss of revenue for local harvesters due to the loss, alteration, or loss of access to areas of importance for subsistence harvesting or for the operation of Indigenous-owned commercial trapping, guiding, and outfitting operations.	Section 7.5.2.2 of the EA Report was revised to reflect this concern. Potential condition 5.1 requires the Proponent to provide access for Indigenous nations to the LAAs, during all project phases, for harvesting and cultural purposes, or for exercising section 35 rights, to the extent that such access and exercise of rights are safe.

Participant	Comment	Agency Response
		Potential condition 6.4 requires the Proponent to develop, in consultation with Indigenous nations, a follow-up program regarding the current use of lands and resources, and Indigenous Peoples' socio-economic conditions. This includes monitoring of the quantity and quality of resources obtained through harvesting, fishing, hunting or trapping activities, and the socio-economic impacts of those changes, to verify the accuracy of the environmental assessment and the effectiveness of mitigation measures.
Marcel Colomb First Nation, Manitoba Metis Federation	Concerns regarding the lack of consideration by the Proponent of Indigenous interests and values in its assessment of effects to Indigenous Peoples' socio-economic conditions, particularly with respect to the selection of factors considered in the socio-economic effects assessment and conclusions regarding potential effects to Indigenous nations. Marcel Colomb noted concerns regarding the lack of information included in the EA Report regarding cumulative effects to Indigenous Peoples' socio-economic conditions, particularly effects of historical mining projects, and project-related effects to the socio-economic conditions of Marcel Colomb First Nation's citizens. The Manitoba Metis Federation expressed specific concerns regarding the lack of engagement by the Proponent regarding potential effects to the socio-economic conditions of Métis Peoples. Recommendation that the Proponent be required to provide, in collaboration with the Manitoba Metis Federation, equitable economic opportunities, such as employment and training, for Métis Peoples in Manitoba using a distinctions-based approach, and that a condition of approval be included requiring the Proponent to provide economic opportunities for Marcel Colomb First Nation.	Section 7.5.2.2 of the EA Report was revised to reflect these concerns. The Agency understands that the Proponent committed to informing Indigenous nations of job and procurement opportunities associated with the Project prior to construction and to working with Indigenous nations to enhance participation of Indigenous Peoples and Indigenous-owned businesses in the Project. The Agency recognizes that equal access to economic and employment opportunities associated with the Project is important to Indigenous nations. The Agency encourages the Proponent to work with Indigenous nations to provide opportunities for Indigenous Peoples and Indigenous-owned businesses to benefit from employment and contract opportunities associated with the Project. Potential condition 6.4 requires the Proponent to develop, in consultation with Indigenous nations, a follow-up program related to project effects to the current use of lands and resources for traditional purpose, and Indigenous Peoples' socio-economic conditions. This includes monitoring of the quantity and quality of resources obtained through harvesting, fishing, hunting or trapping activities and the socio-economic effects of those changes,

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		to verify the accuracy of the environmental assessment and the effectiveness of the mitigation measures.
Marcel Colomb First Nation, O-Pipon-Na-Piwin Cree Nation, Manitoba Metis Federation	Concerns regarding project-related contamination of country foods and subsequent effects to Indigenous Peoples' health from consumption of contaminated food resources. The Manitoba Metis Federation noted specific concerns regarding existing exceedances of federal and provincial guidelines for certain contaminants and how the Project may act cumulatively with past and present projects and activities to exacerbate existing contamination of country foods. O-Pipon-Na-Piwin Cree Nation noted concerns regarding effects to socio-economic conditions as a result of increased contaminant concentrations in their traditional territory. The Manitoba Metis Federation requested that the Proponent be required to consider existing contaminant levels in the environment and country when establishing thresholds and benchmarks used to inform the need for follow-up and adaptive management. It was also recommended that the Proponent be required to monitor contaminant concentrations in country foods harvested within the PDAs, LAAs, and RAA, and that Métis citizens be provided employment opportunities to complete this monitoring.	Sections 7.5.1 and 8.3.2 of the EA Report were revised to reflect these concerns. Potential condition 3.7 requires the Proponent to collect and treat contact water and seepage from the PDAs to meet federal water quality guidelines before releasing this water to the receiving environment during all phases of the Project. Potential condition 6.3 requires the Proponent to develop, in consultation with Indigenous nations, a follow-up program to verify the results of the environmental assessment as it pertains to the effect of changes to the quality of air and country foods on the health of Indigenous Peoples, taking into account available traditional knowledge provided by Indigenous nations related to the current use of lands and resources for traditional purposes. The Agency understands that the Proponent committed to informing Indigenous nations of job and procurement opportunities associated with the Project prior to construction and to working with Indigenous nations to enhance participation of Indigenous Peoples and Indigenous-owned businesses in the Project.
Chemawawin Cree Nation	Concerns regarding the Agency's conclusions with respect to project-related changes to Indigenous Peoples' health and the need for a more robust assessment of effects, including consideration of cumulative effects.	Section 7.5.1.2 of the EA Report was revised to reflect this concern. The Agency considered potential residual adverse effects of the Project to Indigenous Peoples' health and socio-economic conditions in its assessment of cumulative environmental effects. Additional details regarding the Agency's cumulative environmental effects assessment, including the information considered in the assessment and the Agency's conclusions, are available in Chapter 8.3 of the EA Report. Several potential conditions were put forward by the

Participant	Comment	Agency Response
		Agency which require the Proponent to mitigate project-related effects to air quality, surface water and groundwater quality and quantity, noise and vibration levels, vegetation and wetlands, fish and fish habitat, country foods, and lands and resources of importance to Indigenous Peoples. The Agency is of the view that these measures would also mitigate potential project effects to Indigenous Peoples' health and project contributions to cumulative effects to Indigenous Peoples' health. Potential condition 6.3 requires the Proponent to develop, in consultation with Indigenous nations, a follow-up program to verify the results of the environmental assessment as it pertains to the effect of changes to the quality of air and country foods on the health of Indigenous Peoples, taking into account available traditional knowledge provided by Indigenous nations related to the current use of lands and resources for traditional purposes. Potential condition 8.1 requires the Proponent to establish, prior to construction and in consultation with Indigenous nations, an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs, and mitigation measures. All Indigenous nations will be invited to participate on the IEAC.
Manitoba Metis Federation, Marcel Colomb First Nation	Concerns regarding the anticipated influx of non-local project personnel and the lack of mitigation measures proposed to protect the safety and well-being of First Nations and Métis Peoples. Request that the Proponent be required to identify mitigation measures and a follow-up program to address this issue, including consideration of potential project effects to community safety and the well-being of women, children, and other vulnerable populations.	Section 7.5.2.2 of the EA Report was revised to reflect these concerns. The Agency acknowledges that the Project may result in disproportionate or inequitable effects on vulnerable populations, including youth, women, and Indigenous Peoples. The Agency understands that the Proponent committed to requiring project personnel and contractors to complete sensitivity training.

Participant	Comment	Agency Response
		Potential condition 6.4 requires the Proponent to develop, in consultation with Indigenous nations, a follow-up program related to potential project effects on the current use of lands and resources and socio-economic conditions of Indigenous Peoples to verify the results of the environmental assessment and the effectiveness of the mitigation measures.
Proponent	Concerns regarding the Agency's key mitigation measures requiring that blasting not be conducted on statutory holidays or days of cultural importance as this would not be technically or economically feasible and days of cultural importance are not defined.	Section 7.4.3 of the EA Report and potential condition 5.5 were revised to reflect this concern.
Health Canada	Recommendation that monitoring of ambient air quality occur on Marcel Colomb First Nation's Black Sturgeon Reserve, and upwind and downwind of the PDAs.	Potential condition 6.3 requires the Proponent to monitor ambient air concentrations for total suspended solids, particulate matter, nitrogen dioxide, and dustfall for areas upwind and downwind of the PDAs and any other locations identified in consultation with Indigenous nations.
Proponent	Request that the Agency's key mitigation measure requiring monitoring of noise levels at permanent or seasonal residences be modified to require monitoring of noise levels at key locations where human health may be affected, as there are no permanent or seasonal residences within the PDAs.	Section 6.1.3 of the EA Report was revised to reflect this request.
Indigenous Peoples – Current use of lands and resources, physical and cultural heritage, and any structure, site or things of historical, archeological, paleontological or architectural significance [subparagraph 5(1)(*c*)(ii), (iii), and (iv) of CEAA 2012]		
Marcel Colomb First Nation	Concerns regarding disturbance of potential unmarked graves within the PDAs and LAAs as a result of vegetation clearing. Concerns regarding the potential loss of heritage resources or sites of significance for the exercise of ceremonial, spiritual, or current use activities and associated effects to Indigenous culture.	Section 7.4.2.2 of the EA Report was revised to reflect this concern. Potential condition 5.1 requires the Proponent to provide access for Indigenous nations to the LAAs, during all project phases, for harvesting and cultural purposes, or for exercising section 35 rights, to the extent that such access and exercise of rights are safe. Potential condition 5.2 requires the Proponent to avoid disturbing sites of traditional or cultural importance within or near the PDAs. In doing so, the Proponent is required to identify, in consultation with Indigenous nations, the

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		location of sites of traditional or cultural importance within or near the PDAs and provide opportunities for Indigenous nations to harvest and transplant plant species of traditional importance from areas that will be cleared of vegetation and to conduct ceremonies for any sites of significance that will be disturbed by any project activities. Potential condition 7.1 requires the Proponent to stop work when sites or things of historical, archaeological, paleontological, or architectural significance to Indigenous Peoples are discovered, inform Indigenous nations of the discovery, allow for monitoring of the discovery and the participation of Indigenous nations, and to consult with Indigenous nations regarding protocols that will be implemented in the event of a chance find, to ensure that the discovery is respected, recorded, transferred, and to ensure the safekeeping of sites or things of importance.
Marcel Colomb First Nation	Request that the Proponent provide advance notification of construction work that has the potential to increase local noise to help manage awareness and acceptance by Indigenous Peoples.	Section 7.4.2.2 of the EA Report was revised to reflect this concern. Potential condition 13.2 requires that the Proponent submit a schedule to Indigenous nations outlining all activities required to carry out all phases of the Project, no later than 60 days prior to the start of construction.
Marcel Colomb First Nation, Chemawawin Cree Nation, Manitoba Metis Federation, O-Pipon-Na-Piwin Cree Nation	Concerns regarding potential effects to the quality of experience of Indigenous harvesters and lands and resources of importance to Indigenous Peoples, as a result of project-related increases in noise, vibration, and light levels, and fugitive dust emissions, including short-term and long-term effects to hunting, fishing, medicine gathering, camping, and family gatherings. Concerns that the Proponent's proposed threshold for management and monitoring of project-related increases in noise and vibration levels will not adequately protect fish, migratory birds, and other wildlife species of traditional and	Section 7.4.1.2 of the EA Report was revised to reflect these concerns. Potential conditions 3.8.2 and 4.1 require the Proponent to conduct blasting in a manner that protects fish and migratory birds. Potential condition 6.1 requires the Proponent to develop, in consultation with Indigenous nations and relevant authorities, measures to mitigate emissions of dust and fugitive particulates within the PDAs, taking into account the standards and criteria set out in the Canadian Council

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	cultural importance.	of Ministers of the Environment's *Canadian Ambient Air Quality Standards and Manitoba's Ambient Air Quality Criteria*. Potential condition 6.2 requires the Proponent to implement measures, during all phases of the Project, to ensure that thresholds for noise, including hearing loss, speech comprehension, and sleep disturbance, identified in Health Canada's *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise* are not exceeded at sensitive receptor locations. The Proponent is also required to develop a protocol for receiving and responding to noise-related complaints as part of this condition. Potential condition 6.5 requires the Proponent to develop, in consultation with Indigenous nations and relevant authorities, a follow-up program to verify the results of the environmental assessment and to determine the effectiveness of mitigation measures relating to noise and vibration on the health of Indigenous peoples. Potential condition 13.2 requires the Proponent provide to Indigenous nations a schedule outlining all activities required to carry out all phases of the Project no later than 60 days prior to the start of construction.
Marcel Colomb First Nation	Concerns regarding the lack of information provided by the Proponent regarding project effects to intangible values of Indigenous Peoples, including their beliefs, perceptions, and qualitative experiences and the Proponent's rationale that these values are difficult to assess due to their subjective nature.	Section 7.4.1.2 of the EA Report was revised and potential condition 7.2 was added to reflect these concerns. The Agency recognizes that the Project may result in residual adverse effects to the quality of experience of Indigenous Peoples on the landscape and may disrupt cultural connections with lands and resources. Potential condition 7.2 was revised to require the Proponent to develop and implement, in consultation with Indigenous nations, measures to address project effects on cultural heritage, including tangible and intangible cultural losses, and to consider the development or contribution towards Indigenous-led programs to preserve and enhance cultural heritage. Potential condition 8.1 requires the Proponent to establish

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		an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC.
Chemawawin Cree Nation, Sayisi Dene First Nation, Manitoba Metis Federation, Peter Ballantyne Cree Nation	Concerns that the Agency's conclusions regarding the significance of adverse environmental effects to current use were based on an analysis of the Proponent's assessment of effects. As the Proponent did not adequately engage with Indigenous nations, the Proponent's assessment may not accurately reflect potential effects to Indigenous nations.	Section 7.4.1.2 of the EA Report was revised to reflect these concerns Potential condition 6.4 requires the Proponent to develop, in consultation with Indigenous nations, a follow-up program related to project effects on the current use of lands and resources, including the quantity and quality of resources obtained through harvesting, fishing, hunting or trapping activities, to verify the results of the environmental assessment and the effectiveness of the mitigation measures. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC.
Peter Ballantyne Cree Nation	Concerns that reclamation of the PDAs will take several generations before being suitable for the exercise of traditional and cultural practices. Therefore, the effects of the Project to lands and resources of importance cannot be considered reversible.	Section 6.4.2 of the EA Report was revised to reflect this concern. Potential condition 5.7 requires the Proponent to undertake, in consultation with Indigenous nations and relevant authorities, progressive reclamation of areas disturbed by the Project. In doing so, the Proponent must identify, in consultation with Indigenous nations, plant species native to the LAAs and species of cultural importance to use for revegetation; establish performance

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		standards for reclaimed areas, including that the areas be self-sustaining, reduce establishment of weed species, restore native species assemblages, and reduce erosion of exposed soils; and monitor reclaimed areas for a minimum of five years during post-closure or until performance standards are met. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC.
Marcel Colomb First Nation	Concerns regarding the Agency's key mitigation measures that require the Proponent to provide opportunities, prior to construction, for Indigenous nations to conduct ceremonies for sites of importance within the PDAs and to harvest plant species of traditional and cultural importance within the PDAs that cannot be avoided. These key mitigation measures are insensitive and do not consider the proximity of the Project to Marcel Colomb First Nation's traditional territory and reserve lands, or the historical use of the area by Marcel Colomb First Nation's members. The entire area within the PDAs and LAAs that will be disturbed by project activities is of traditional and cultural importance to Marcel Colomb First Nation.	The Agency acknowledges that Marcel Colomb First Nation and its members consider the entire area within the PDAs and LAAs that would be disturbed by project activities to be of traditional and cultural importance. The Agency understands that lands and resources of traditional and cultural importance to Indigenous nations exist within the PDAs and LAAs and that the complete avoidance of lands and resources that overlap with project infrastructure may not be possible. Potential condition 5.2.2 was revised to reflect these concerns. Potential conditions 5.2 and 5.2.1 require the Proponent to avoid disturbing sites of traditional or cultural importance within or near the PDAs, except for the construction of project components. In doing so, the Proponent is required to identify, in consultation with Indigenous nations the location of sites of traditional or cultural importance within or near the PDAs. The Agency is of the view that potential condition 5.2.2 is important to mitigate adverse environmental effects of the Project to intangible values held by Indigenous nations. The Agency considered input from all potentially affected Indigenous nations in developing its key mitigation

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		measures and potential conditions for the Project.
Marcel Colomb First Nation	Concerns regarding project effects to their members' Registered Trapline areas, some of which directly overlap with the PDAs and LAAs. As these traplines and the surrounding areas are used for the exercise of section 35 rights, traditional practices, including hunting, fishing, gathering and ceremonial practices, and for the transmission of Indigenous knowledge, history and culture, effects to these areas could adversely affect the Nation's ability to exercise traditional and cultural practices, and their section 35 rights.	Section 7.4.1.2 of the EA Report was revised to reflect this concern. Potential condition 6.4 requires the Proponent to, during all project phases, consult with Marcel Colomb First Nation and holders of Registered Traplines within the PDAs and LAAs that will be directly disturbed by the Project regarding potential adverse project effects on trapping activities for traditional purposes, including project effects to access to Registered Traplines. If adverse effects associated with the Project are identified, the Proponent will consult with Marcel Colomb First Nation and Registered Trapline holders to determine whether additional mitigation measures are needed.
Accidents and malfunctions, alternative means, effects of the environment on the Project, cumulative environmental effects [paragraph 19(1) of CEAA 2012]		
Marcel Colomb First Nation	Concerns regarding potential environmental effects associated with spills and contamination from the mine site, and the associated cost of remediation in the event of an accident or malfunction.	Chapter 8.1.2 of the EA Report was revised to reflect these concerns. Potential conditions 12.1 and 12.6 require the Proponent to take all reasonable measures to prevent accidents and malfunctions that may result in adverse environmental effects, including dam breaches, and immediately implement measures appropriate to remedy an accident or malfunction, in the event of an accident or malfunction with the potential to cause adverse environmental effects. Potential condition 12.4 requires the Proponent to develop, prior to construction and in consultation with Indigenous nations and relevant authorities, an accidents and

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		malfunctions response plan in relation to each phase of the Project.
Manitoba Metis Federation	Concerns regarding the risk of periodic flooding and the potential for flooding to result in the release of untreated contact water to the surrounding environment. Of particular concern is the fact that contact water collection ditches are only designed to contain 1:25 year precipitation events. Recommend that contact water collection ditches be designed to contain a 1:100-year precipitation event.	Section 8.2.2 of the EA Report was revised to reflect these concerns. Potential conditions 12.1 and 12.6 require the Proponent to take all reasonable measures to prevent accidents and malfunctions that may result in adverse environmental effects, including dam breaches, and immediately implement measures appropriate to remedy an accident or malfunction, in the event of an accident or malfunction with the potential to cause adverse environmental effects. Potential condition 12.1.2 requires the Proponent to design the Project in consultation with Indigenous nations, and in consideration of projections of climate change-related changes in the frequency and severity of extreme precipitation events and available Indigenous knowledge of historic flooding in the LAAs.
Manitoba Metis Federation	Concerns that the Proponent has not identified all mitigation measures feasible to prevent the controlled or uncontrolled discharge of tailings to the surrounding environment. Recommend that the Proponent be required to establish a communication plan that would be implemented in the event of an emergency discharge of tailings from the Tailings Management Facility during a large storm event, and to involve the Manitoba Metis Federation in the oversight of monitoring and follow-up actions.	Section 8.2.2 of the EA Report was revised to reflect these concerns. Potential conditions 12.1 and 12.6 require the Proponent to take all reasonable measures to prevent accidents and malfunctions that may result in adverse environmental effects, including dam breaches, and immediately implement measures appropriate to remedy an accident or malfunction, in the event of an accident or malfunction with the potential to cause adverse environmental effects. Potential condition 12.7 requires the Proponent to develop a communication plan, in consultation with Indigenous nations, which must include the types of accidents and malfunctions requiring the Proponent to notify Indigenous

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		nations, and the manner by which Indigenous nations will be notified of an accident or malfunction and of any opportunity for Indigenous nations to assist in the response to the accident or malfunction. Potential condition 12.4 requires the Proponent to develop an accidents and malfunctions response plan in consultation with Indigenous nations.
Impacts on Aboriginal and treaty rights as protected under section 35 of the *Constitution Act, 1982*		
Marcel Colomb First Nation, O-Pipon-Na-Piwin Cree Nation	Request that the Proponent undertake additional monitoring and study programs to adequately protect and safeguard the section 35 rights and interests of Indigenous nations.	Section 9.2.1 of the EA Report was revised to reflect these concerns. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC. The Agency is of the view that, taking into account the mitigation, follow-up, and monitoring measures proposed by the Proponent and the key mitigation measures identified by the Agency, potential impacts of the Project on section 35 rights would be appropriately mitigated. The application of mitigation, monitoring, and follow-up measures should allow the continued exercise of section 35 rights in a similar manner to before the Project.
Manitoba Metis Federation	Recommendation that all follow-up and monitoring plans required for the Project adopt a distinctions-based approach to ensure that any unique impacts to Métis Peoples are appropriately mitigated.	Section 9.2.1 of the EA Report was revised to reflect this recommendation. Several potential conditions requiring development of a follow-up program to verify the results of the environmental assessment and the effectiveness of mitigation measures require the Proponent to consult with Indigenous nations

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		regarding the development of said follow-up program. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on IEAC.
Chemawawin Cree Nation, Marcel Colomb First Nation	Concerns that the Proponent's assessment of effects, and therefore any Agency conclusions based on this assessment, may not accurately reflect potential project effects to Chemawawin Cree Nation or Marcel Colomb First Nation, as the Nations were not adequately engaged or provided adequate capacity funding by the Proponent to participate in the environmental assessment. Concerns regarding the lack of opportunities provided to Chemawawin Cree Nation to inform mitigation measures to address impacts to section 35 rights.	Sections 7.4.1.2 and 7.5.2.2 of the EA Report were revised to reflect this concern. The Agency supported participation of Indigenous nations in the environmental assessment process for the Project through its Participant Funding Program. Funds were made available to reimburse eligible expenses of participating Indigenous nations. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC. Potential conditions 2.4 and 2.9 require that, where consultation with Indigenous nations is a requirement of a condition or a follow-up program, the Proponent discuss with each Indigenous nation the manner in which consultation requirements will be satisfied, including the resources to be provided to support consultation activities and capacity funding needs.
Chemawawin Cree Nation, Peter Ballantyne Cree Nation, O-Pipon-Na-Piwin Cree Nation, Manitoba Metis Federation, Sayisi Dene First Nation, Marcel	Concerns regarding the lack of details provided by the Proponent regarding the IEAC, including the Terms of Reference of the IEAC and whether capacity funding will be provided to support the participation of Indigenous nations. Request that Indigenous nations be involved in the development of the Terms of Reference for the IEAC.	Chapter 9.3 of the EA Report was revised to reflect these concerns. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC. The Proponent is also required to consult with

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Colomb First Nations		participating Indigenous nations regarding the development of Terms of Reference for the IEAC and is required to strive to reach consensus on the Terms of Reference with participating Indigenous nations. Potential conditions 2.4 and 2.9 require that, where consultation with Indigenous nations is a requirement of a condition or a follow-up program, the Proponent discuss with each Indigenous nation the manner in which consultation requirements will be satisfied, including the resources to be provided to support consultation activities and capacity funding needs.
Chemawawin Cree Nation, Sayisi Dene First Nation	Concerns that CEAA 2012 only requires consideration of changes to Indigenous Peoples' health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance to Indigenous Peoples, and does not require an assessment of impacts to section 35 rights.	The Agency considered potential impacts to section 35 rights as part of the environmental assessment for the Project. In doing so, the Agency sought information from all potentially impacted Indigenous nations about the nature of their section 35 rights and how the Project may affect the exercise of their rights. Further information regarding the Agency's assessment of potential impacts to section 35 rights, including the information considered by the Agency in its assessment and its conclusions, can be found in Chapter 9 of the EA Report.
Sayisi Dene First Nation, Peter Ballantyne Cree Nation, Marcel Colomb First Nation, Manitoba Metis Federation	Concerns that the EA Report did not present a sufficiently disaggregated assessment of potential impacts to section 35 rights for each Indigenous nation.	Section 9.4 of the EA Report was revised to reflect these concerns. Throughout the environmental assessment process, the Proponent was required to provide baseline information, assess how effects of the Project on the environment may affect Indigenous Peoples, and assess impacts to section 35 rights for each Indigenous nation individually. The Agency used this information to inform the development of the EA Report, in reaching conclusions regarding the anticipated significance of adverse environmental effects of

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		the Project, and in reaching conclusions regarding the severity of impacts to section 35 rights. The EA Report summarized the analysis conducted by the Agency, in accordance with CEAA 2012, and presented the Agency's conclusions regarding whether the Project is likely to cause significant adverse environmental effects on areas of federal jurisdiction after taking into account proposed key mitigation measures.
Manitoba Metis Federation	Concerns that the EA Report does not adequately characterize Red River Métis rights, claims, and interests.	Section 9.1 of the EA Report was revised to reflect this concern.
Species at risk [effects identified under subsection 79(2) of the *Species at Risk Act*]		
Manitoba Metis Federation	Concerns regarding project effects to bat species that may use natural and anthropogenic features potentially directly or indirectly affected by the Project. Concerns regarding adverse project effects to yellow-banded bumble bee.	Section 7.3.2 of the EA Report was revised to reflect this concern. The Agency understands that the Proponent committed to limiting the extent of the project footprint, including site clearing activities, to the extent possible to reduce the effects of fragmentation and changes in wildlife habitat. The Proponent also committed to conducting pre-construction surveys, and construction and post-construction monitoring to detect project interactions with wildlife and their habitat, including species at risk. This monitoring would be used to address any uncertainty in the predictions of the presence of bat hibernacula in the RAA. The Agency understands that the Proponent committed to flagging environmentally sensitive areas, such as roosts and hibernacula, prior to clearing and construction, and the need for additional mitigation measures would be evaluated if environmentally sensitive areas are identified. This would include requirements for project personnel to report the discovery of dwellings of species at risk to the Proponent for appropriate action or follow-up. The Agency understands that the species at risk listed in Table 13 and 15 of the EA Report are also managed by the Province of Manitoba and that Manitoba Environment, Climate, and Parks will be putting in place measures to

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		mitigate project effects to species at risk as part of the provincial environmental assessment process. 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 by the Proponent will mitigate project-related effects to species at risk.
Manitoba Metis Federation	Concerns regarding the population status of woodland caribou, boreal population (*Rangifer tarandus*; boreal caribou) in the RAA and how the species' decline has significantly affected the ecology of the RAA.	Section 7.3.2 of the EA Report was revised to reflect this concern. Potential conditions 10.1 and 10.4 require the Proponent to conduct, in consultation with Indigenous nations and relevant authorities, pre-construction surveys within the PDAs to identify boreal caribou calving and calf-rearing sites, and implement measures to mitigate project-related effects to boreal caribou during all phases of the Project. This must include conducting site clearing activities outside of the boreal caribou calving and calf-rearing period unless otherwise authorized by relevant authorities; giving preference to avoiding the destruction or alteration of habitat over minimizing and offsetting habitat; and, as part of progressive reclamation, removing and reclaiming all linear features, including the distribution line right of way and access roads, when they are no longer required for the Project and no longer being used for other purposes to mitigate project-related increases in boreal caribou mortality risk. Potential condition 10.3 requires the Proponent to participate in regional initiatives related to the management of adverse effects on boreal caribou at the request of the relevant authorities responsible for these initiatives and to consider the results of these initiatives in the development and implementation of project-related mitigation measures.

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		Potential condition 10.5 requires the Proponent to develop, in consultation with Indigenous nations and relevant authorities, a follow-up program to verify the results of the environmental assessment and the effectiveness of the mitigation measures as it pertains to effects on the habitat, health, and survival of boreal caribou.
Other		
Proponent	Request that the Agency's key mitigation measures be revised to require that greenhouse gas emissions only be reported if greater than Environment and Climate Change Canada's Greenhouse Gas Reporting Program reporting threshold.	The Agency is of the view that annual project-related greenhouse gas emissions must be reported to the Agency regardless of whether emissions are greater than the reporting threshold defined by Environment and Climate Change Canada to verify the results of the environmental assessment and the effectiveness of mitigation measures.
Manitoba Metis Nation	Concerns that the Proponent compared the Project's anticipated greenhouse gas emissions to 2017 provincial and federal greenhouse gas emissions. Request that the Proponent be required to provide further details regarding how the Project's greenhouse gas emissions relate to local and regional emissions. Concerns that the Proponent's assessment of project-related greenhouse gas emissions was restricted to the PDAs, given that the effects of greenhouse gas emissions and climate change will affect a much broader area. Request that the Proponent be required to provide further information regarding how project-related greenhouse gas emissions will be avoided or compensated for.	Section 6.1.2 of the EA Report was revised to reflect these concerns. The Agency is of the view that the Proponent provided sufficient information regarding the Project's anticipated greenhouse gas emissions. Potential condition 9.1 requires the Proponent to develop and implement, in consultation with Environment and Climate Change Canada, a greenhouse gas management plan to reduce the Project's greenhouse gas emissions during each phase. The Proponent must also identify the best available technologies and best environmental practices, and determine when and how the greenhouse gas management plan will be implemented throughout the life of the Project. Potential condition 8.1 requires the Proponent to establish an IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC. Potential condition 12.1.2 requires the Proponent to design

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		the Project, in consultation with Indigenous nations and relevant authorities, taking into account projections of climate change-related changes in the frequency and severity of extreme precipitation events, and available Indigenous knowledge of historic flooding in the LAAs.
Sayisi Dene First Nation	Request that Sayisi Dene First Nation be involved in monitoring project-related effects to wetlands in partnership with the Proponent.	Section 6.4.2 of the EA Report was revised to reflect this concern. Potential condition 3.12, 3.13, and 3.14 require the Proponent to develop follow-up programs, in consultation with Indigenous nations, to verify the accuracy of the environmental assessment and the effectiveness of mitigation measures for project-related effects to water quality and quantity, and fish and fish habitat; this includes monitoring of project effects to fish-bearing wetlands within and downstream of the PDA. Potential condition 8.1 requires the Proponent to establish the IEAC related to ongoing project activities, including land use planning, and the development and implementation of follow-up programs and mitigation measures. All Indigenous nations will be invited to participate on the IEAC.
Sayisi Dene First Nation	Concerns that Sayisi Dene First Nation is incorrectly listed as a Treaty 10 signatory in the EA Report rather than a Treaty 5 signatory.	Chapter 9.1 of the EA Report was revised to reflect this concern.
Marcel Colomb First Nation	Request that the Proponent be required to mitigate existing contamination in the PDAs and LAAs associated with historical mining activities to prevent project-related effects from exacerbating existing contamination. Request that monitoring of existing contaminants within Marcel Colomb First Nation's traditional territory occur to ensure that traditional and cultural practices can continue.	The Agency completed an assessment of potential cumulative effects of the Project in combination with past, present, and reasonably foreseeable projects and activities, including historical mining operations in the PDAs and LAAs. Additional details regarding the Agency's cumulative effects assessment, including the information considered in the assessment and the Agency's conclusions, are available in Chapter 8.3 of the EA Report.

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		The Agency considers the key mitigation, monitoring, and follow-up measures discussed in Chapters 7.1 to 7.5 of the EA Report to be appropriate to account for potential cumulative adverse environmental effects associated with the Project on fish and fish habitat; migratory birds; species at risk; the current use of lands and resources for traditional purposes and the physical and cultural heritage of Indigenous Peoples; and the health and socio-economic conditions of Indigenous Peoples.
Marcel Colomb First Nation	Request that the Agency include a potential condition requiring the Proponent to implement all mitigation measures committed to throughout the environmental assessment process.	The key mitigation measures identified by the Agency in the EA Report include the mitigation measures, monitoring, and follow-up programs that the Agency considers necessary to ensure that there are no significant adverse environmental effects to areas within federal jurisdiction. The Agency's 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 nations.
Chemawawin Cree Nation	Concerns that the draft EA Report was not co-developed with Indigenous nations.	The Agency's draft EA Report was prepared in consideration of information, comments, and Indigenous knowledge received from Indigenous nations, federal authorities, the Proponent, and the public. The Agency provided an opportunity for Indigenous nations, the public, federal authorities, and the Proponent to review and provide comments on the draft EA Report and potential conditions. Comments received were considered by the Agency in preparing the final EA Report and potential conditions that were shared with the Minister of Environment and Climate Change to support their decision regarding whether the Project will cause significant adverse environmental effects.
Manitoba Metis Federation	Concerns that the mitigation measures proposed by the Proponent may not be feasible or sufficiently address project effects. Recommend that the Proponent be required to identify appropriate mitigation and adaptive management measures to address project effects.	Potential conditions 2.5 and 2.8 require the Proponent to develop technically and economically feasible mitigation measures, and determine if modified or additional mitigation measures are needed based on the results of a follow-up program.

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Marcel Colomb First Nation	Request that the Agency seek an extension of the legislated time limit for the environmental assessment of the Project to allow the Agency to revise the EA Report to reflect the Nation's concerns and to allow additional time for negotiations with the Proponent to be completed.	When finalizing the EA Report and potential conditions, the Agency considered and incorporated comments on the draft EA Report and potential conditions provided by Indigenous nations, including Marcel Colomb First Nation. The Agency is of the view that sufficient information has been provided to allow the Minister to make an informed decision regarding whether the Project will result in significant adverse environmental effects.