April 30, 2026

Minister of Environment, Conservation and Climate Change
PO Box 8700
St. John's NL
A1B 4J6

Attention: Director of Environmental Assessment

Subject: Environmental Assessment Registration – South Ridge

On behalf of Canada Fluorspar (NL) Inc. please find attached the Environmental Assessment Registration document for the proposed South Ridge Project, located on the Burin Peninsula.

This submission is provided in accordance with the requirements of the *Environmental Protection Act* and the Environmental Assessment Regulations for the Province of Newfoundland and Labrador. The registration document describes the proposed undertaking, including the purpose and need for the project, the proposed site and design, potential environmental effects, and proposed mitigation measures.

Should you require additional information during the review of this registration, please contact the undersigned.

Canada Fluorspar (NL) Inc.
1 Clarke's Pond Road
P.O. Box 337
St. Lawrence, NL
A0E 2V0

Principal Contact for Environmental Assessment:

Gillian Kearney, HSE Manager
gkearney@canadafluorspar.com
709-702-5960

We appreciate your consideration of this submission and look forward to working with the Department throughout the environmental assessment process.

Sincerely,

Gillian Kearney

Gillian Kearney, HSE Manager
Canada Fluorspar (NL) Inc.

Canada Fluorspar Inc.
P.O. Box 337
Clarke's Pond Road
St. Lawrence, NL
A0E 2V0

Tel: (709) 702-5960

South Ridge Project

Environmental Assessment Self-Referral Request

Prepared for:

Government of Newfoundland & Labrador
Department of Environment and Climate Change
Environmental Assessment Division
P.O. Box 8700
St. John's, NL
A1B 4J6

Prepared by:

Canada Fluorspar Inc.
P.O. Box 337
St. Lawrence, NL
A0E 2V0

April 30, 2026

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Appendix 2-6: Canada Fluorspar Inc. (CFI) Environmental Protection Plan

Appendix 2-7: Canada Fluorspar Inc. (CFI) Environmental Protection Plan Addendum.

Appendix 2-8: Waste Management Plan

Appendix 2-9: Spill Response Plan

Appendix 2-10: Mineral Resource Report

Appendix 3-1: Regulatory Feedback Received on Draft EARD

Appendix 4-1: Public Notice Public information session on the Proposed South Ridge Project October 3

Appendix 4-2: Canada Fluorspar South Ridge Brochure October 3

Appendix 4-3: Canada Fluorspar South Ridge Presentation October 3

Appendix 4-4: What We Heard from CFI Town Hall Meeting Q&A Session October 3

Appendix 4-5: Canada Fluorspar South Ridge Development brochure March 9

Appendix 4-6: Canada Fluorspar South Ridge Development Presentation March 9

Appendix 4-7: Public Notice Public Information Session on the Proposed South Ridge Project March 9

Appendix 4-8: Public Engagement Session poster for March 9

Appendix 4-9: Exit Survey Public Information Session March 9

Appendix 4-10: CFI Public Information Session for South Ridge Project Report

Appendix 4-11: CFI South Ridge Support Letter

Appendix 6.2-1: South Ridge Project Air Emissions Assessment Report

Appendix 6.2-2: South Ridge Project Final Calpuff Air Dispersion Modelling

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Appendix 6.3-1: Curriculum Vitae

Appendix 6.3-2: Modelled Sound Power Levels

Appendix 6.3-3: Blasting – Vibration and Overpressure Calculations

Appendix 6.4-1: Technical Note – Hydrogeological Conceptualization and Numerical Groundwater Modelling

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Appendix 6.5-1: Surface Water Hydrology Baseline and Effects Assessment Report – South Ridge Project

Appendix 6.5-2: Surface Water Quality – Existing Conditions and Assessment

Appendix 6.5-3: Water Quality Predictions and Assessment: South Ridge Project

Appendix 6.5-4: MLARD Phase 1 Report Geochemistry Testing Program Summary Memo

Appendix 6.5-5: Technical Memo Preliminary ML/ARD Assessment of Kinetic Tests

Appendix 6.6-1: South Ridge Project Fish and Fish Habitat Report

Appendix 6.6-2: Fisheries Act Authorization and Agreement

Appendix 6.7-1: ACCDC Data

Appendix 6.13-1: Historic Resources Impact Assessment (HRIA)

Executive Summary

Canada Fluorspar (NL) Inc. (CFI) currently operates a fluorspar mining and milling operation in Newfoundland and Labrador (NL) known as the St. Lawrence Fluorspar Project which is comprised of the Arthur Gordon Stollery Mine (AGS Mine) and Blue Beach Marine Terminal (BBMT) on the Burin Peninsula approximately 2 kilometers Southwest of the Town of St. Lawrence. The AGS Mine received conditional release by the Minister of Environment and Conservation on November 5, 2015. In 2017, CFI started construction of the open pit fluorspar mine operation, milling facility, and tailings management facility.

CFI is proposing to develop the South Ridge Project (South Ridge, or "the Project") as a satellite pit extension of the existing AGS Mine. Following a technical review of the existing and approved mine, CFI determined that the total life of mine remaining was eight years based on the current Mineral Reserve and mill throughput rate. With the inclusion of South Ridge, the Mine Operations of the St. Lawrence Fluorspar Project extends to 10 years.

The Project is driven by growing global demand for fluorspar, a federally recognized critical mineral essential to clean technologies, including aluminum production, refrigerants, batteries, electronics, and other fluorine-based applications. As investment in clean energy and electric vehicles accelerates, securing a stable North American source of acid-grade fluorspar has become strategically important. Developing the Project in Newfoundland and Labrador (NL) strengthens Canada's critical mineral supply chains, reduces reliance on imports, and supports both provincial and federal critical mineral strategies as the sole producer of fluorspar in Canada. The Project is expected to generate meaningful socioeconomic benefits for the region and province.

Existing mitigation measures and contingency plans identified in the EPP, as well as several management plans and policies, will continue to be in place for the Project and will serve to avoid or reduce potential residual effects on the VCs. The effects assessment predicts that routine Project activities will not cause significant adverse environmental effects on the VCs.

CFI is committed to advancing the Project responsibly and in alignment with the local community. Existing AGS monitoring programs for water, air, and noise will be extended to the Project site. Planned road upgrades will maintain safe access to coastal areas such as Chambers Cove, Salt Cove, and Shoal Cove. CFI will work with the Town of St. Lawrence to preserve heritage trails and cultural areas, and to ensure any community access improvements are co-developed. The Project will also employ modern electronic blasting technology to minimize vibration and air blast effects.

The Project comprises expansion of a new open pit, which makes use of existing processing mill, tailings facility, haul roads, and export terminal at BBMT. Ore will be transported to the existing AGS mill for processing with a peak operations production rate of 65,286 tons per month or 122.7 t/hr. Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export. The South Ridge Pit will supply ore in place of lower-grade AGS feed on a tonne-for-tonne basis to produce acid-

grade fluorspar with a purity of 97.5% CaF_2. Consequently, no increase in milling throughput is required, and the Project introduces no additional process-water demand, thereby improving the Project economics, and reducing environmental impacts and promoting sustainability. Best practicable technology (best available control technologies) and methods will be used to mitigate effects.

Comprehensive geochemical characterization has been conducted to assess Metal Leaching and Acid Rock Drainage (ML/ARD) potential. Overall, the findings indicate low ARD and ML risks. Metal leaching will be managed through targeted mitigation measures. The program has been developed in accordance with the Code and best practices to ensure environmental protection.

The Project is subject to provincial environmental assessment (EA) requirements under the NL *Environmental Protection Act* (NL EPA) and associated Environmental Assessment Regulations. This document is a Registration for the Project and has been prepared in accordance with the NL Department of Environment, Conservation and Climate Change's Environmental Assessment – A Guide to the Process.

Engagement

CFI's public consultation and engagement program is founded on transparency, responsibility, collaboration, stewardship, and accountability. CFI is committed to building relationships, understanding issues and concerns, and maintaining open, transparent dialogue with communities and stakeholders in the St. Lawrence region. CFI has and continues to engage with the public, agencies, community stakeholders, and special interest groups to identify and address concerns, issues, and interests to strengthen the validity and robustness of this Environmental Assessment Registration Document (EARD) and to support responsible Project development.

Feedback received during engagement has helped inform the scope of EARD, including protection and mitigation measures during the Construction, Operation, and Closure phases of the Project. CFI is committed to involving people who are potentially affected by or interested in the Project, gathering meaningful input, and conducting targeted outreach to address concerns and strengthen the accuracy of EA predictions and follow-up measures.

Environmental Setting

The Project is located on the southeastern end of the Burin Peninsula, which is surrounded by a rugged coastal landscape characterized by low-relief, rocky topography typical of the St. Lawrence Lowlands.

The Peninsula has a long history of mineral exploration and extraction dating back to the late 19th century. Approximately 20–30% of the area has been affected by past mining activities. Some rural and agricultural activities, such as grazing and fishing along Route 220, account for approximately 10% of the land use. The closest town is St. Lawrence with an approximate population of 1,100 accessible by road networks and provides access to power infrastructure.

The Peninsula supports small commercial and local businesses, with a focus on mining, fishing, recreation, and tourism, reflecting a mix of industrial and community use.

Assessment Scope and Methods

The scope of the assessment includes the South Ridge pit and activities associated with construction and operation of the pit while utilizing shared existing infrastructure for processing, storage, and exporting currently employed by the existing AGS Mine site.

The assessment focuses on Valued Components (VCs) which are components of the environment (i.e., physical environment, biological environment, socio-economic environment, archaeological and heritage resources, human health) identified as important or sensitive to change and likely to interact with the Project or Project activities.

Selection of VCs for this assessment were informed by technical knowledge of the Project and local environment, preliminary regulatory engagement, public and stakeholder engagement, and understanding of the area and key issues identified in the AGS mine EA and through lessons learned during the operation of the existing project. The following VCs were assessed:

- Air Quality
- Noise and Vibration
- Groundwater Quality and Quantity
- Surface Water Quality and Quantity
- Fish and Fish Habitat
- Wetlands and Vegetation
- Avifauna
- Bats
- Other Wildlife
- Economy
- Social, Community Health and Wellbeing
- Historic Resources

The environmental effects assessment considers the degree and nature of change that Project activities may have on the existing environment for each VC. The identified VCs have each conducted information or data collection to establish existing conditions of the VC prior to the Project. These existing conditions form the basis for which Project related effects are established. Potential Project-related effects on VCs will be determined by comparing baseline conditions to those expected to result from the Project. Potential interactions between the Project and VCs have been identified, and residual effects that are expected to remain after all feasible mitigation measures have been applied. For each VC, mitigation measures are proposed to reduce or eliminate potential adverse effects that may result from the Project. Potential effects of the Project will be managed through existing Project mitigation and management programs and Project design measures.

The significance of adverse residual environmental effects is then determined using criteria developed for each VC. Where data limitations may introduce uncertainty to the assessment additional follow up programs are identified to ensure effects predictions are validated.

Summary of Residual Effects

The environmental assessment predicts that Project activities will not cause significant adverse environmental effects on the VCs. The general results of the assessment for Project activities are summarized below.

Air Quality

Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could adversely affect Air Quality through air contaminants, dust, and greenhouse gas (GHG) emissions. Exceedances of provincial or federal air quality objectives, guidelines or standards are not expected as a result of project-related air emissions combined with existing background concentrations in consideration of the planned mitigation. Based on application of mitigation measures, residual environmental effects on the Air Quality are predicted to be not significant. This prediction was validated through the completion of air contaminant dispersion modelling and GHG emissions inventory.

Noise and Vibration

Noise and vibration are critical environmental factors that can influence the well-being of human populations, wildlife, and the overall acoustic environment. Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could have adverse effects due to Noise and Vibration. The management of noise effects during both Construction and Operational phases can be achieved through a combination of project design features, established mitigation practices, and additional targeted measures such as limiting nighttime construction where feasible, unless mitigations such as non-tonal backup alarms are in place. non-tonal backup beepers. Based on application of mitigation measures, residual environmental effects on the Noise and Vibration are predicted to be not significant. This prediction was validated through the completion of acoustic modelling.

Groundwater Quality and Quantity

Groundwater quality and quantity are critical environmental factors that can influence the health of human populations, wildlife, aquatic life, and the overall environment. Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could have adverse effects on Groundwater Quality and Quantity through changes to volume and rate of groundwater recharge, changes in groundwater chemistry, changes to hydraulic head and groundwater flow gradients, and changes in groundwater flow direction. Results of a recent groundwater field investigation, desktop assessment and revised water management plan are incorporated into the Groundwater Quality and Quantity assessment. The management of effects to Groundwater Quality and Quantity can be achieved through minimizing the rate and duration of dewatering that is necessary for safe mining, diverting run-on water to minimize volume of mine affected water and collection and controlled discharge of contact water using lined ditches and sediment ponds. The duration of groundwater quantity effects is primarily limited to the Construction and Operations phases, with effects diminishing following Closure as groundwater levels

recover toward baseline conditions. No residual effect on groundwater quantity was identified for the Closure phase. Potential residual effects on Groundwater quality were identified only during closure. Changes to groundwater quality have been conservatively identified as a potential residual effect with an estimated moderate magnitude, local extent, and unknown duration, infrequent, and unlikely to occur. There is low confidence in the characterization of potential residual effects prediction for groundwater quality. Confidence in the characterization will improve with future groundwater quality modelling and assessment.

Surface Water Quality and Quantity

Project-related effects on surface water quantity are primarily driven by pit dewatering and associated water management during operations. Mitigation measures—including erosion and sediment control, infrastructure designed to convey storm flows, and the splitting of dewatering discharge between receiving ponds—are expected to limit impacts; however, moderate, localized residual increases in flow remain, particularly at Hares Ears Pond. These effects are short-term during operations and largely reversible following closure, although long-term, moderate changes to the hydrologic regime will persist due to pit infilling and overflow. Overall, surface water quantity effects are confined to the local study area. Confidence in predictions is moderate to low due to conservative modelling assumptions and limited baseline data, which will be addressed through follow-up monitoring and adaptive management as relevant.

For surface water quality, mitigation measures such as water management infrastructure, sedimentation ponds, separation of contact and non-contact water, and adaptive discharge management are expected to ensure compliance with regulatory discharge limits. Nonetheless, localized, low-to-moderate residual effects remain for certain constituents (e.g., nitrate/nitrite, metals), particularly at Hares Ears Pond, driven by mine water discharge, stockpile leaching, and pit lake processes. These effects are generally within guideline thresholds for aquatic life, though some exceedances of conservative screening criteria are predicted. Residual effects are expected to be spatially limited, with some persisting into post-closure. Confidence in predictions is moderate to low due to conservative modelling assumptions and limited baseline data, which will be addressed through follow-up monitoring and adaptive management, as required.

Fish and Fish Habitat

Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could adversely affect Fish and Fish Habitat through change in fish habitat quantity due to habitat loss from new disturbance, change in fish habitat quality (water flow/levels) due to changes in land type, change in fish habitat quality due to fugitive dust and increases in potential erosion and sedimentation due to disturbances, change in fish health and mortality risk (pH, contaminants) due to surface water run-off and effluent discharge, and change in fish health and mortality risk from blasting overpressure.. Results of a recent groundwater field investigation, desktop assessment and revised water management plan are incorporated into the Fish and Fish Habitat assessment. The management of effects to Fish and Fish Habitat can be achieved through minimizing overlap with identified fish

habitat, implementation of a Water Management Plan, follow DFO's guidance on measures to avoid causing serious harm to fish and fish habitat, and regular monitoring of discharge to confirm regulatory discharge criteria are achieved. Based on application of mitigation measures, residual environmental effects on Fish and Fish Habitat are predicted to be not significant.

Wetlands and Vegetation

Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could adversely affect Wetlands and Vegetation through loss of vegetation, changes in species and community diversity and loss of wetland habitats and changes in wetland function. Results of a recent groundwater field investigation, desktop assessment and revised water management plan are incorporated into the Wetlands and Vegetation Assessment. The management of effects to Wetlands and Vegetation can be achieved through maintaining buffers around waterbodies, sediment and erosion control measures, and protective clearing and grubbing practices. Based on application of mitigation measures, residual environmental effects on Wetlands and Vegetation are predicted to be not significant.

Avifauna

Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could adversely affect Avifauna through habitat loss or alteration, behavioural disturbance, and changes in health and mortality risk. The management of effects to Avifauna can be achieved through a combination of project design features, established mitigation practices, and additional targeted measures such as nighttime noise restrictions, covering dust generating materials, implementation of buffers, and bird nest sweeps prior to clearing. Based on application of mitigation measures, residual environmental effects on Avifauna are predicted to be not significant.

Bats

Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could adversely affect Bats through habitat loss or alteration, behavioural disturbance, and changes in health and mortality risk. The management of effects to bats can be achieved through a combination of project design features, established mitigation practices, and additional targeted measures such as limiting nighttime lighting, covering dust generating materials, nighttime blasting restrictions, and minimizing noise. Based on application of mitigation measures, residual environmental effects on Bats are predicted to be not significant.

Other Wildlife

Activities associated with the Construction, Operation, Closure of the Project have the potential to interact with the environment in such a way that could adversely affect Other Wildlife through habitat loss, alteration, or fragmentation, behavioural disturbances, and changes in health and mortality risk. The management of effects to Other Wildlife can be achieved through a combination of project design features, established mitigation practices, and additional targeted measures such as following waste management

procedures, limiting blasting if caribou are observed on-site, dust suppression, implementing wildlife awareness training and prohibiting hunting, trapping, and fishing within the local study area. Based on application of mitigation measures, residual environmental effects on Other Wildlife are predicted to be not significant.

Economy

The economy of the Town of St. Lawrence and nearby communities may be affected by changes arising from Construction, Operations, Closure and increased workforce activity. The Project is expected to contribute to the local economy through spending and taxation on labour, services, and supplies, along with CFI's direct contributions to the Town of St. Lawrence through taxation agreements. There were no Project related adverse residual effects related to Economy identified.

Social, Community Health, and Wellbeing

Community services and infrastructure may be affected by changes arising from increased Construction, Operations, and workforce activity. Increased pressure on community services and infrastructure could have adverse effects on health and well-being but can also bring opportunities for increased involvement and improvements in programs and supports in select areas. Potential effects to Social, Community Health and Wellbeing include changes in community wellbeing, increased workforce, and improved roads and trail experiences. There were no Project related adverse residual effects related to Social, Community Health and Wellbeing identified.

Historic Resources

Historic resources may include cultural/spiritual, paleontological, architectural, and/or archaeological resources. The Project includes ground disturbance that could affect potential historic resources. The Project is largely located on a brownfield site. The Historic Resources Impact Assessment for this Project, indicates there is low archaeological potential within the local study area. It is determined that the Project has no interaction with known historic or archaeological resources and low likelihood of interaction with unknown resources.

Mitigation measures will be incorporated to address the unexpected discovery of historic resources that could occur during the construction phase, especially during stripping, excavation, and blasting, and construction activities. In the event of discovery of such resources, construction activities in the affected area will cease immediately and the discovery will be reported to the Provincial Archaeology Office. A mitigation strategy will be developed in collaboration with the Newfoundland and Labrador Government.

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AGS	AGS Mine
BACT	Best Available Control Technologies
BBMT	Blue Beach Marine Terminal
CCME	Canadian Council of Ministers of the Environment
CDA	Canadian Dam Association
CDC	Conservation Data Centre
CFI	Canada Fluorspar Inc.
COPC	Constituents of Potential Concern
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DMS	Dense Media Separation
DOC	Dissolved Organic Carbon
EA	Environmental Assessment
EARD	EA Registration Document
ECCC	Environment and Climate Change Canada
ECWSR	Environmental Control Water and Sewage Regulations
EEMP	Environmental Effects Monitoring Plan
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPM	Equivalent Porous Medium
EPP	Environmental Protection Plan
EPRP	Emergency Preparedness and Response Plan
ERP	Emergency Response Plan
ESA	Endangered Species Act
FDMP	Fugitive Dust Best Management Practices
FEQG	Federal Environmental Quality Guidelines
GDP	Gross Domestic Product
GEDI	Gender Equity, Diversity, and Inclusion
GEDIP	Gender Equity, Diversity, and Inclusion Plan
GHG	Greenhouse gas
HDPE	high-density polyethylene
HG	High Grade
HRIA	Historic Resources Impact Assessment

Acronym/Abbreviation	Definition
HSE	Health, Safety, and Environment
IEC	International Electrotechnical Commission
ISEE	International Society of Explosives Engineers
JWEL	Jacques Whitford Environment Limited
LG	Low Grade
LOM	Life of Mine
LSA	Local Study Area
MBCA	Migratory Birds Convention Act
MDP	Mine Development Plan
MEND	Mine Environment Neutral Drainage
MG	Medium Grade
ML/ARD	Metal Leaching/Acid Rock Drainage
MOU	Memorandum of Understanding
MSEP	Mill Site Event Pond
NAG	Net Acid Generation
NL	Newfoundland and Labrador
NL RFFA	Newfoundland Regional Flood Frequency Analysis
NLDFAL	Newfoundland and Labrador Department of Forestry, Agriculture, and Lands
NLECCC	Government of Newfoundland and Labrador, Department of Environment, Conservation and Climate Change
NLR	Newfoundland and Labrador Regulation
NLWRM	Newfoundland and Labrador Water Resources Management Division
NOC	National Occupational Classification
NPAG	Non-Potentially Acid Generating
NPR	Neutralization Potential Ratio
NPRI	National Pollutant Release Inventory
OB	Overburden
PAG	Potentially Acid Generating
PDF	Portable Document Format
PET	Potential Evapotranspiration
PFS	Pre-Feasibility Study
PPV	Peak Particle Velocity
RCMP	Royal Canadian Mounted Police
RCP	Rehabilitation and Closure Plan

Acronym/Abbreviation	Definition
ROM	run-of-mine
RSA	Regional Study Area
SAR	Species at Risk
SARA	Species at Risk Act
SFE	Shake Flask Extraction
SOCC	Species of Conservation Concern
SPRP	Spill Prevention and Response Plan
SSAC	Species Status Advisory Committee
TBD	To be determined
TMF	Tailings Management Facility
tpd	tonnes per day
TPM	Fugitive particulate matter
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
UAV	Unmanned Aerial Vehicle
UTM	Universal Transverse Mercator
VC	Valued Component
WAD	Weak Acid Dissociable
WHMIS	Workplace Hazardous Materials Information System
WHO	World Health Organization
WMP	Waste Management Plan
WMT	Wet Metric Tonnes
WNS	White-nose syndrome
WRF	Waste Rock Facility
WRF-NMM	Weather Research and Forecasting Non-Hydrostatic Mesoscale Model
WRMD	Water Resources Management Division
XML	Excel file format

1 Introduction

Canada Fluorspar (NL) Inc. (CFI) currently operates a fluorspar mining and milling operation in Newfoundland and Labrador (NL) known as the St. Lawrence Fluorspar Project which is comprised of the Arthur Gordon Stollery Mine (AGS Mine) and Blue Beach Marine Terminal (BBMT) on the Burin Peninsula. CFI is proposing to develop the South Ridge Project (South Ridge, or "the Project") as a satellite pit extension of the existing AGS Mine.

CFI submitted a Project Referral Request to the Environmental Assessment Division of the Department of Environment, Conservation and Climate Change (NLECCC) on August 8, 2025. The Project as defined in the Referral document was reviewed by NLECCC staff with a final determination provided on August 22, 2025, stating that, pursuant to Section 33. (2) of the Newfoundland Environmental Assessment Regulations, 2003, the Project is defined as an undertaking requiring registration for environmental assessment (EA).

1.1 Project Overview

The Project is a proposed satellite pit located East of the AGS Mine site, and approximately 2 kilometers Southwest of the Town of St. Lawrence. The Project would operate as a hub-and-spoke extension of the existing AGS Mine and no new processing or tailings facilities are proposed. The Project will make use of the existing haul roads, the AGS processing plant, and the Blue Beach Marine Terminal for key ore transportation, processing, and haulage functions. The Project falls within an area zoned municipally, by the Town of St. Lawrence, for mining activities.

The Project is intended to provide high-grade ore feedstock to the existing AGS Mine mill to provide operational continuity, prevent potential layoffs of AGS Mine staff, and provide the cash flow CFI requires to expand production, create approximately 35-45 direct new jobs, and continue exploration and development of areas adjacent to both AGS Mine and South Ridge. The Project aligns with Newfoundland and Labrador's Critical Minerals Strategy and rural economic development priorities. The Project also contributes to Canada's critical minerals and energy transition sovereignty and supply chains as the sole Canadian producer of the extraction and processing of fluorspar, which is identified as a critical mineral by the federal government.

The Project is expected to construct and operate an open pit mine over a period of 6 months (for construction) and 18 months (for operations). The closure duration is expected to be 24 months with the final timeline to be determined through development of the reclamation and closure plan.

1.2 Proponent Description

CFI's corporate office is based in St. Lawrence, NL and the company is wholly owned by Renova Capital. CFI is a registered corporation in NL. CFI is actively operating the AGS Mine on the Burin Peninsula which has been operational since 2017. Proponent information is provided in Table 1.2-1 shown below.

Table 1.2-1: Proponent Name and Contact Information

Proponent Name and Address	
Canada Fluorspar (NL) Inc.	Head Office: Canada Fluorspar (NL) Inc. 1 Clarke's Pond Road St. Lawrence, NL Canada A0E 2V0 Canada Fluorspar Inc. 709-702-5960
General Manager:	Javad Azanchi 1 Clarke's Pond Road P.O. Box 337 St. Lawrence, NL, Canada A0E 2V0
Mine Manager:	Isaac Sam, Mine Manager isam@canadafluorspar.com 1 Clarke's Pond Road P.O. Box 337 St. Lawrence, NL Canada A0E 2V0
Project Primary Contact:	Gillian Kearney, HSE Manager gkearney@canadafluorspar.com 1 Clarke's Pond Road P.O. Box 337 St. Lawrence, NL, Canada A0E 2V0

1.3 Project Rationale and Benefits

The Project is driven by growing global demand for fluorspar, a federally recognized critical mineral essential to clean technologies, including aluminum production, refrigerants, batteries, electronics, and other fluorine-based applications. As investment in clean energy and electric vehicles accelerates, securing a stable North American source of acid-grade fluorspar has become strategically important. Developing the Project in Newfoundland and Labrador (NL) strengthens Canada's critical mineral supply chains, reduces reliance on imports, and supports both provincial and federal critical mineral strategies as the sole producer of fluorspar in Canada.

The St. Lawrence region hosts well-defined fluorspar deposits and existing mining infrastructure, including the AGS mill and Blue Beach Marine Terminal, creating an efficient and cost-effective location for continued production. CFI proposes to develop the Project as a hub-and-spoke extension of the AGS Mine, supplying feedstock to the existing mill to maintain operational continuity, prevent potential layoffs, and support

ongoing exploration and development in adjacent areas. The South Ridge Pit represents a technically viable source that can extend regional mining activity while aligning directly with NL's rural economic development priorities.

The Project is expected to generate meaningful socioeconomic benefits for the region and province. Construction and operations would create approximately 35–45 direct new jobs, with CFI prioritizing the hiring of qualified local candidates. Additional indirect economic activity will be generated through local procurement in construction, transportation, and maintenance, contributing to business growth and regional revenue. The Project also provides a reliable Canadian source of acid-grade fluorspar to support national clean-technology industries.

CFI is committed to advancing the Project responsibly and in alignment with the local community. Existing AGS monitoring programs for water, air, and noise will be extended to the Project site. Planned road upgrades will maintain safe access to coastal areas such as Chambers Cove, Salt Cove, and Shoal Cove. CFI will work with the Town of St. Lawrence to preserve heritage trails and cultural areas, and to ensure any community access improvements are co-developed. The Project will also employ modern electronic blasting technology to minimize vibration and air blast effects.

Operations are expected to continue for approximately 18 months. During this period, CFI will continue evaluating the potential for future underground development connected to historic workings. Overall, the Project supports the province's sustainable resource development goals, contributes to Canada's critical minerals strategy and clean-energy transition, and provides continued economic benefits to the St. Lawrence region.

1.4 Approval of the Undertaking

This Environmental Registration has been prepared in accordance with the Environmental Assessment – A Guide to the Process (NL Department of Environment, Conservation and Climate Change [NLECCC] 2023) and the Environmental Assessment Regulations, 2003. Table 1.4-1 is a table of concordance with Appendix 1 of the Guide.

Table 1.4-1: Concordance with Requirements for an Environmental Registration

Registration Requirement	Reference Location
Name of the Undertaking	Section 1.1
Proponent Information	Section 1.2
Purpose/Rationale/Need for the Undertaking	Section 1.3
Description of the Undertaking (Project Description), including:	Section 2
Geographic location	Section 2.1
Physical and biological environment	Section 2, Section 6
Construction phase activities, including waste streams and potential resource conflicts; describe public and Indigenous consultation that was conducted to address construction concerns	Section 2.5, 2.6, 2.10 Section 4

Registration Requirement	Reference Location
Operation/maintenance phase activities, including waste streams and potential resource conflicts; describe public and Indigenous consultation that was conducted to address operations concerns	Section 2.5, 2.6, 2.10 Section 4
Occupations for construction and operation phases; identify how employment equity will be addressed relative to age and gender.	Section 2.8
Project related documents	Appendices
Approval of the Undertaking (i.e., required permits, approvals that the Project may require)	Section 2.11
Schedule	Section 2.5
Capital Cost and Funding	Section 2.9

Gillian Kearney

Gillian Kearney
HSE Manager
Canada Fluorspar (NL) Inc.

2 Project Overview

CFI is proposing the South Ridge Project (the Project) which is an expansion of the existing, approved AGS Mine. The following section provides a description of the existing operations and the proposed Project, including the following:

- The Project location;
- Overview of mineralization and the resource reserve;
- History of the area relevant to the proposed Project;
- Current operations near the Project and existing mine structures;
- Description of the undertaking:
  - Project schedule;
  - Project components and activities;
  - Employment;
  - Project capital costs and funding;
  - Emissions, discharges, and wastes;
- Environmental management plans; and
- Emergency response and planning.

2.1 Location

The Project is located approximately 2 km south-southwest of the Town of St. Lawrence, within the municipal boundaries, on the southern tip of the Burin Peninsula, in the Province of Newfoundland and Labrador. South Ridge is located between the existing AGS Mine and the Blue Beach Marine Terminal (BBMT). The Project area is accessible by existing mining roads from the Town of St. Lawrence, which is situated along Provincial Highway 220. There are no designated Indigenous lands in the St. Lawrence region and Project activities are not likely to affect Indigenous or First Nations groups in the province. The location of the Project, with access to an ice-free, deep-water harbour close to major North Atlantic shipping routes provides a strategic advantage. Figure 2.1-1 shows the location of the proposed Project.

2.1.1 Zoning

The Project Area is zoned as Mineral Working under the current St. Lawrence Municipal Plan. This zoning specifically permits mining and all associated activities.

CFI
CANADA FLUORSPAR INC.

SOUTH RIDGE MINE
FIGURE 2.1-1
PROJECT LOCATION

★ Project Location

Existing AGS Mine Infrastructure

Proposed Project Infrastructure

Shared AGS Mine Infrastructure

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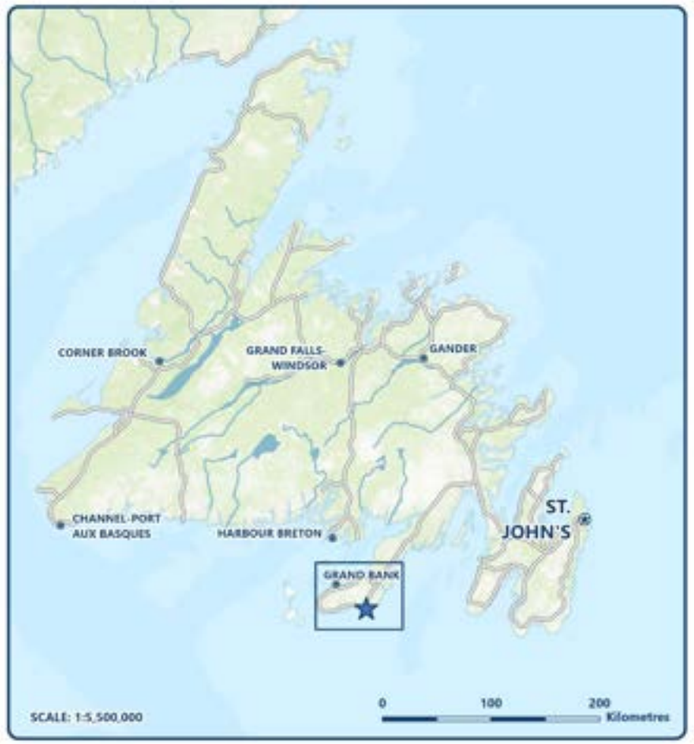
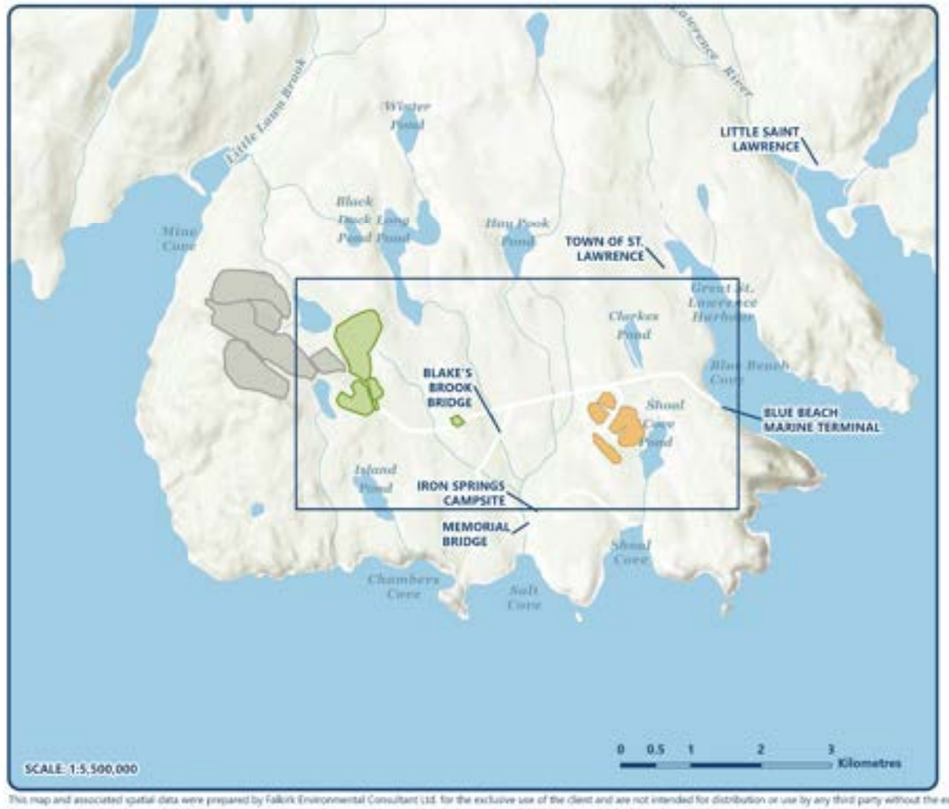
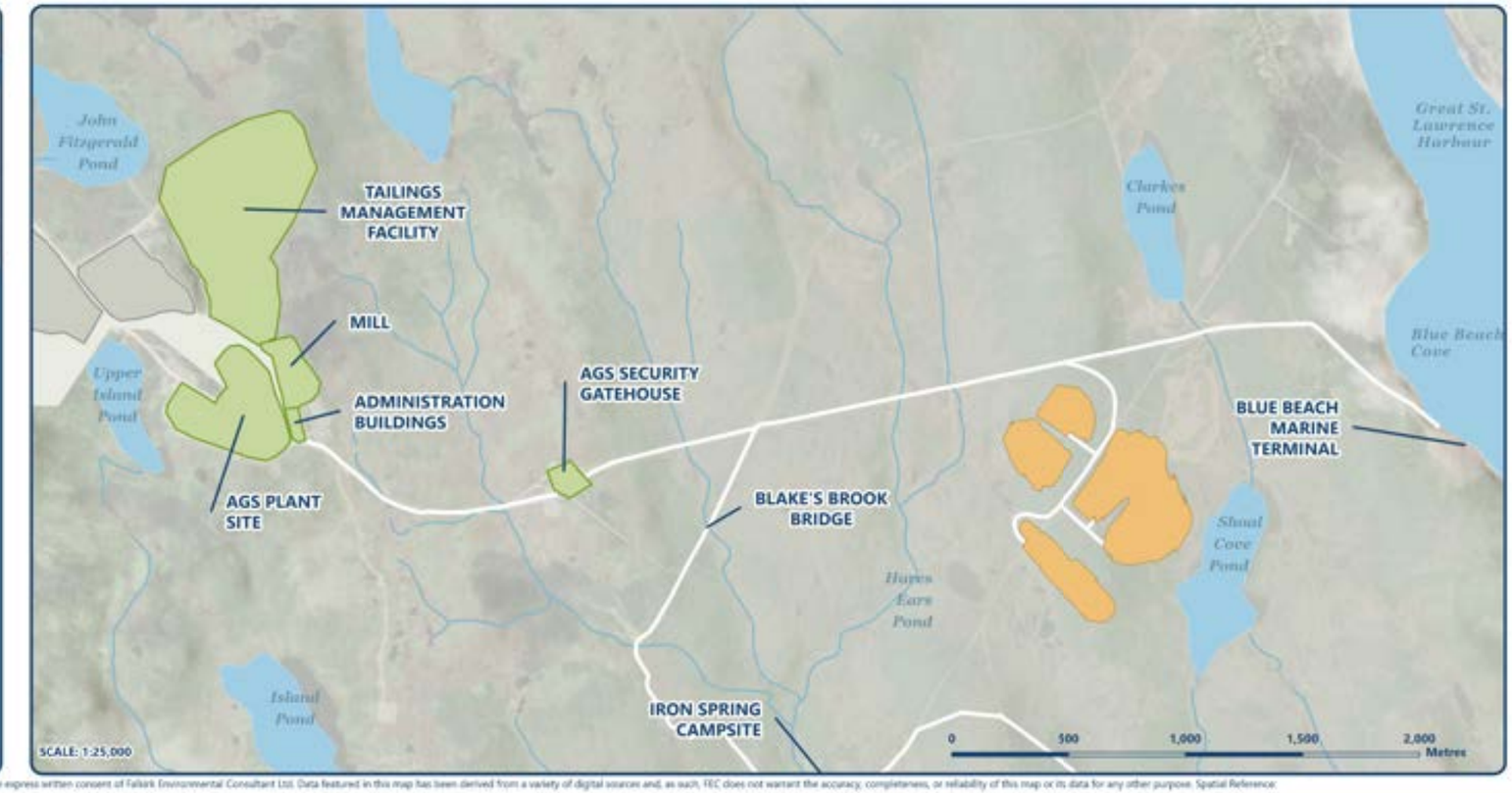


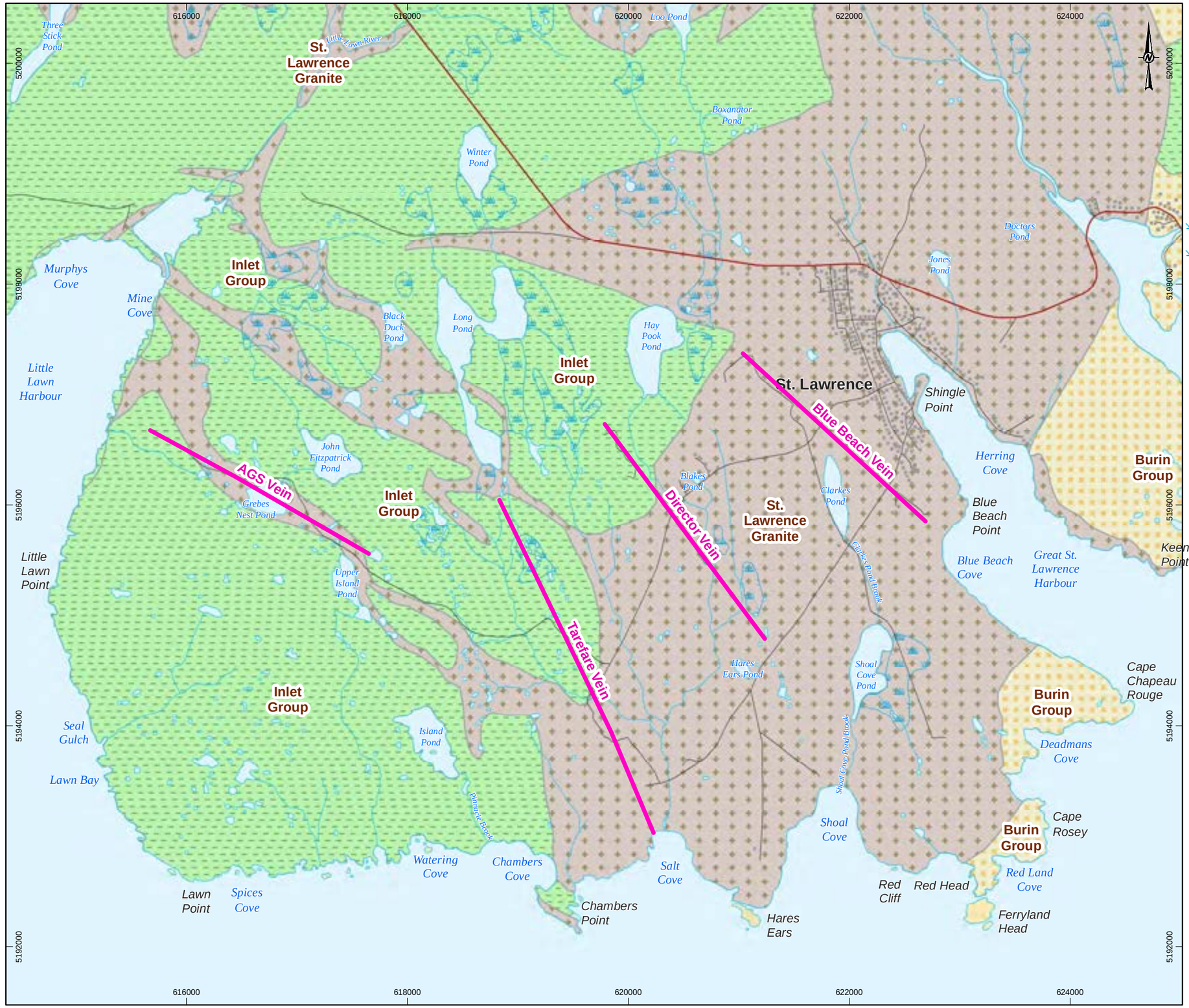




This map and associated spatial data were prepared by Falkirk Environmental Consultant Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Falkirk Environmental Consultant Ltd. Data featured in this map has been derived from a variety of digital sources and, as such, FEC does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Spatial Reference: Datum: North American Datum of 1983 (CSRS) version 2Projection: Transverse MercatorFile: CFI_P(_Location_20260220.aprx, published to pdf on: 2026-02-04 9:08 PM by: AndreBrazeau

2.2 Overview of Mineral Resource

The fluorspar deposits of St. Lawrence are well known as accessible, high-grade ore. The St. Lawrence area of Newfoundland hosts over 40 fluorspar veins, predominantly within granitic rocks of Late Devonian age. The host rock is a porphyritic peralkaline granite pluton that has intruded Late Precambrian and Cambrian volcanic and sedimentary rocks. The grain size is characteristic of intrusive rocks and exhibits a decrease in grain size toward the contact with the older rocks. Only a few of these contain significant Mineral Resources these include the North/South Ridge, Blue Beach North, Tarefare, Iron Springs, and Black Duck veins. The North/South Ridge vein (previously known as Director vein) is the proposed site of the Project, specifically the southern extent which allows for open pit mining. The North Ridge portion of the deposit is at depth and would be associated with underground mining.



LEGEND

DETAILED BEDROCK GEOLOGY

- Plutonic felsic
- Siliciclastic marine shale
- Volcanic mafic marine
- Fluorspar Vein

HYDROGRAPHY

- Watercourse
- Waterbody
- Wetland

0 1 2

Kilometres
1:35,000

REFERENCE

SOURCE(S): DEVELOPMENT REGULATIONS 2011 LAND USE ZONING MAP 1, JAN. 19, 2013, TOWN OF ST. LAWRENCE; GEOSCIENCE ATLAS, GOVERNMENT OF NEWFOUNDLAND AND LABRADOR; CANVEC & CANVEC+, 1: 50 000 SCALE, NRCAN.

DATUM: NAD 83. PROJECTION: UTM ZONE 21.

CLIENT

CANADA FLUORSPAR INC.

PROJECT

AGS MINE PROJECT, ST. LAWRENCE NL
EA REGISTRATION

TITLE

BEDROCK GEOLOGY

CONSULTANT

Golder Associates

YYYY-MM-DD	2015-05-14
DESIGN	CG
GIS	ED
REVIEW	EL
APPROVED	DJ

PROJECT No. 14-07707

Rev. 0

FIGURE **2.2-1**

© THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm 0

Path: H:\Projets\Canada Fluorspar\St-Lawrence_NL_Mines\PROJECTS\14-07707_EA_AGS_Mine_St-Lawrence\MXD\Rev0\14-07707_Figure_6-2_Bedrock_Geology_20150514.mxd

2.2.1 Mineralization

The Proponent has assessed the South Ridge deposit. The North/South Ridge deposit is a northwest-trending, fluorite-bearing structure that extends about 2.2 km in length and has been traced from surface to depths up to 450 m through trenching, drilling, and historic underground workings. Fluorite occurs mainly as pink to brick-red, medium- to coarse-grained massive to fragmental material, with minor purple fluorite veinlets.

The deposit is generally a single continuous vein, varying in thickness from less than 1 m to approximately 11 m, though recent drilling in the northern portion of the deposit suggests the possibility of two subparallel veins. Historical mining focused on the northern two-thirds, while drilling in 2019–2020 validated that the vein continues into the southern extent.

The 2023 Mineral Resource Estimate Technical Report finds that fine grained quartz and fluorite are commonly present, and they occur as fine grained to microcrystalline intergrowths (Wheeler and Owen, 2023).

Within the classification of fluorite vein types in the area, the North/South Ridge vein falls into moderate- to low-grade, exhibiting grades of 35% to 70% calcium fluoride (CaF_2) and vein thicknesses commonly between 5 m and 7 m. This vein generally follows north–south structural trends, consistent with the orientation of the North/South Ridge system.

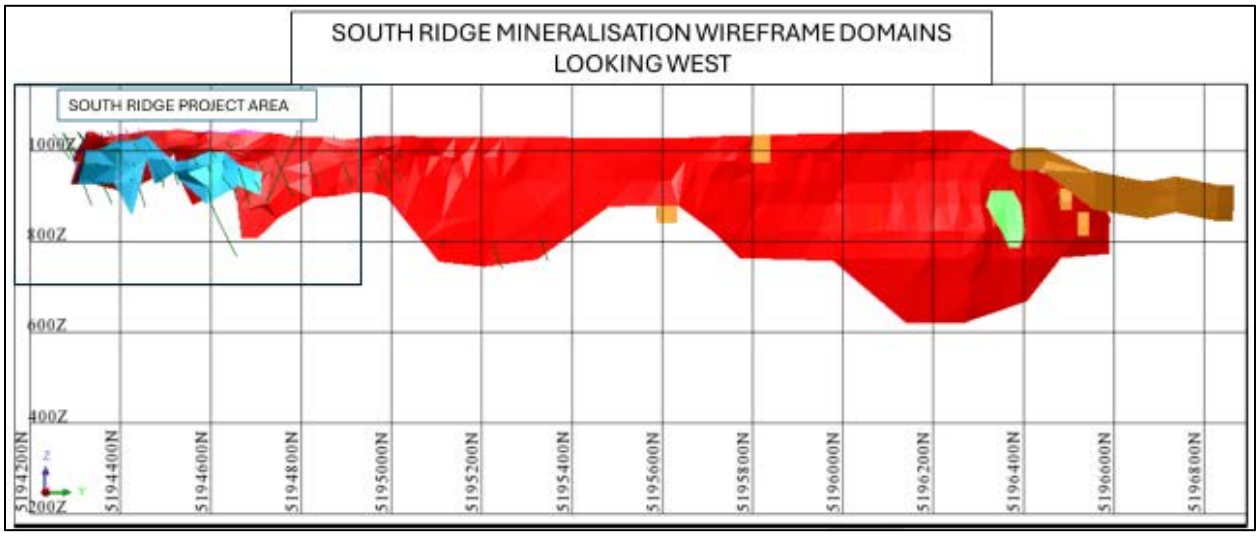


Figure 2.2-2: South Ridge 3D Mineralisation Domains - Looking West

2.2.2 Mineral Resource and Reserve

In 2019, a 2,444 m infill and expansion drilling program was completed at the Project site from August 15 to September 22, 2019. The program focused on further vein definition of the North/South vein by drilling 24-holes on 50 m spaced sections from the 100 m spaced section drilling completed in 2013. Results from the 2019 drilling program indicate intersections averaging 5 m to 20 m in width. Fluorspar intersections returned predominately moderate grades, ranging from 10% CaF_2 to 40% CaF_2. Hole DS-2019-

147 assayed 22.2% CaF_2 over 10.27 m. Hole DS-2019-155 assayed 27.5% CaF_2 over 20.5 m, including a 5.8 m interval grading 49.1% CaF_2.

The Mineral Resource classification resulting from the 2019 program complies with NI 43-101 guidelines increasing Inferred and Indicated resource: Inferred Mineral Resource refers to quantity, grade, or quality estimated on the basis of limited geological evidence and sampling, Indicated Mineral Resource is defined with enough geological information and sampling to give reasonable confidence in size, shape, and grade. The results of the 2019 program show Indicated Resources of 1.0Mt at 30.5% CaF_2 and Inferred Resources of 0.07Mt at 15.5% CaF_2 reflecting increasing levels of geological confidence and estimation reliability detailed in Table 2.2-1. Independent validation confirms that the resulting classifications are reasonable and consistent with the Qualified Professional interpretation of the deposit Figure 2.2-3. Independent validation of Mineral Resource Estimation conducted by Adam Wheeler of Adam Wheeler Mining Consultant Limited, with additional contributions by Mark Owen, an independent mining geologist. Adam Wheeler is a professional Fellow of the Institute of Materials and Minerals Mining (FIMMM) in good standing of the Institute of Materials, Minerals and Mining, with over 40 years international experience in the field of resource and reserve estimation.

In 2020, a 2,553 m expansion, and minor infill drilling program was completed at South Ridge from October 25 to December 2, 2020. The 20-hole program focused on expanding fluorspar Mineral Resources along strike to the south, minor infill drilling, and definition of Mineral Resources near the southern limit of historic underground mining. The 2020 drilling program was designed to increase the Fluorspar Mineral Resources, add to the Indicated Resources and thus allow further economic analysis of the North/South Ridge Deposit.

The North/South Ridge Deposit remains open at depth and was extended toward the south. Fluorspar intersections were observed in all drill holes and assay data indicated strong results, with weaker results farther south. Two holes drilled at the southern limit of historic underground mining returned broad intersections (>50m core length) low to moderate grade fluorspar veining and stockwork. Results were positive from the 2020 drilling program, with intersections averaging 1.0m to 75m in width. Fluorspar intersections returned predominately moderate and low grades, ranging from 5% CaF2 to 40% CaF2. Hole DS-2020-160 assayed 7.1% CaF2 over 57.7m including a 10.2m interval grading 15.1% CaF2. Hole DS-2020-169 assayed 26.3% CaF2 over 6.0m. Hole DS-2020-177 assayed 13.7% CaF2 over 47.95m, including a 6.0m interval grading 35% CaF2.

Table 2.2-1: South Ridge Mineral Resource Estimation

	Indicated			Inferred		
Vein System	**Tonnes Kt**	**CaF_2 %**	**$CaCO_3$ %**	**Tonnes Kt**	**CaF_2 %**	**$CaCO_3$ %**
North/South Ridge	1,579	23.5	1.7	988	20.0	1.5

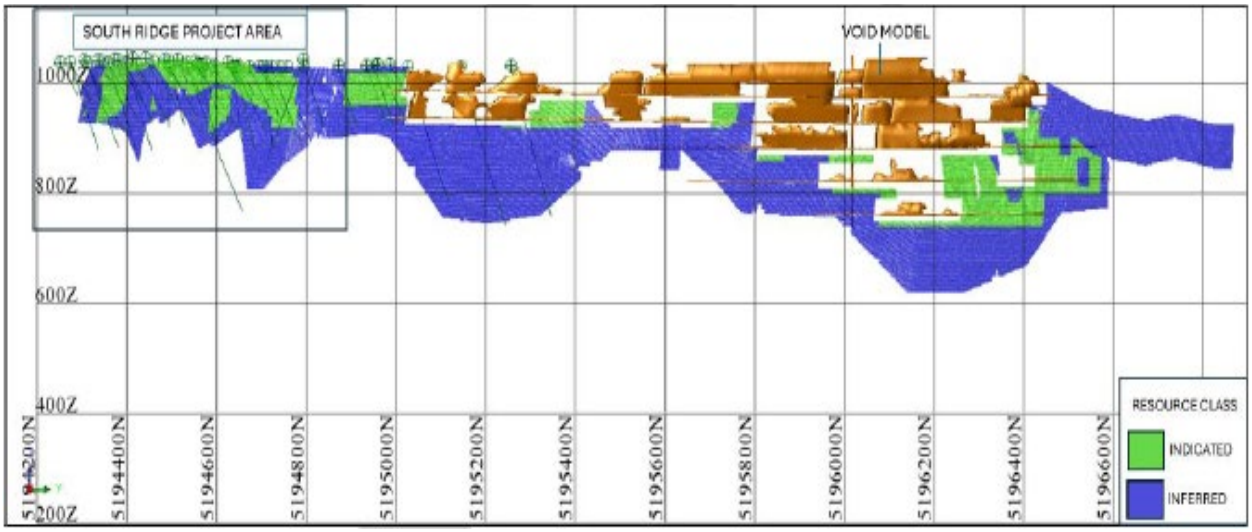


Figure 2.2-3: South Ridge 2023 Mineral Resource Classification-Looking West

2.2.3 Resource Cut-off Parameters

Cut-off grade has been determined by the grade distribution of the North/South vein, mining method, and economic assumptions. The Mineral Resource Estimate uses a 5% CaF_2 cut-off grade for the planned open-pit mining. The cut-off grade is supported by a net smelter return value of US$550 per tonne of CaF_2 concentrate, which supports the economic basis for the Project.

2.3 Site History and Ownership

The following section provides a description of the history of the Project location and existing St. Lawrence Fluorspar operations, including site ownership and development, historic mine works and exploration activities, and summary of surveys in the region.

2.3.1 History of Site Ownership

The history of ownership and site acquisitions are summarized in Table 2.3-1.

Table 2.3-1: History of Ownership

Year	Owner
1933 - 1941	St. Lawrence Corp. of Nfld.
1936 - 1942	Newfluor
1942 - 1978	Alcan
1986 - 1991	Minworth-UK
1995 - 2009	Burin Minerals Ltd.
1997 - 1998	BML
2009 - Current	Canada Fluorspar Inc.

2.3.2 Mineral Claims and Leases

CFI maintains extensive mineral claims across the Burin Peninsula as part of the St. Lawrence Fluorspar Project. CFI has 8 mineral licences containing 257 mineral claims across approximately 6,425 hectares, five mining leases covering 583 hectares, and 20 surface leases totalling 1,253 hectares. A summary is shown in Table 2.3-2 through Table 2.3-4 and illustrated in Figure 2.3-1.

Table 2.3-2: CFI Mineral Claims

Mineral Licence No.	Location	Claims	Hectares	Issuance Date	Renewal Date
018023M	Black Duck	8	200	21-Oct-10	21-Oct-30
021055M	AGS North	27	675	19-Feb-07	19-Feb-27
021479M	St. Lawrence North	19	475	11-Jan-10	11-Jan-30
022121M	Little St. Lawrence	11	275	22-Feb-07	22-Feb-27
022721M	Clam Pond	27	675	19-Feb-17	19-Feb-27
023139M	Director/Blue Beach	81	2025	18-May-95	18-May-26
023140M	AGS/Tarefare	37	925	18-May-95	18-May-26
024837M	AGS South	47	1175	09-Dec-10	09-Dec-30

Table 2.3-3: CFI Mining Leases

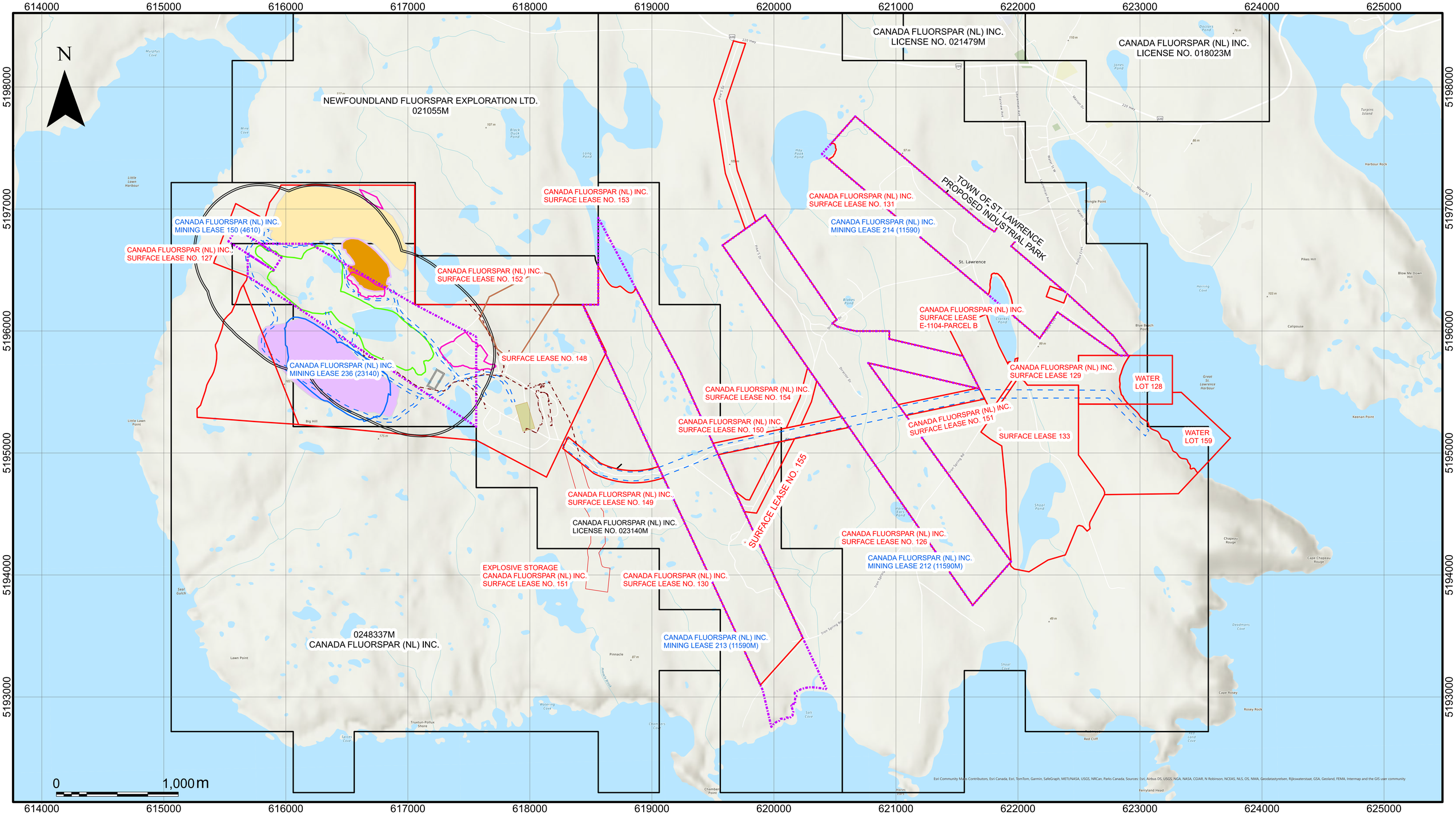
Mine Lease ID	Location	Hectares	Issuance Date	Expiry Date
150	Grebes Nest	5.4866	01-Aug-97	01-Aug-27
212	Director	177.9326	05-May-12	05-May-37
213	Tarefare	185.5081	27-May-12	27-May-37
214	Blue Beach	106.2397	27-May-12	27-May-37
236	AGS	107.9555	01-Apr-16	01-Apr-26

Table 2.3-4: CFI Surface Leases

Surface Lease ID	Location	Mine Lease	Area (ha.)	Issuance Date	Expiry Date
126	Director	212	167.8562	05-Mar-12	05-Mar-37
176	Grebes Nest	150	5.4875	01-Mar-12	01-Sep-27
128	BB Wharf WL 1	212	16.24	05-Mar-12	05-Mar-37
129	BB Wharf OS 1	212	18.28	05-Mar-12	05-Mar-37
130	Tarefare	213	153.2161	27-Mar-12	27-Mar-37
131	Blue Beach	214	95.9658	27-Mar-12	27-Mar-37

Surface Lease ID	Location	Mine Lease	Area (ha.)	Issuance Date	Expiry Date
133	TMF (SCP)	212	97.0978	05-Mar-12	05-Mar-37
148	AGS	236	433.1408	01-Apr-16	01-Apr-26
149	Haul Road 1	236	8.7218	01-Apr-16	01-Apr-26
150	Haul Road 2	236	10.8579	01-Apr-16	01-Apr-26
151	Haul Road 3	236	6.6705	01-Apr-16	01-Apr-26
152	John Fitzpatrick Pond	236	59.8491	01-Apr-16	01-Apr-26
153	By-Pass Road 1	236	15.6186	01-Apr-16	01-Apr-26
154	By-Pass Road 2	236	4.5647	01-Apr-16	01-Apr-26
155	By-Pass Road 3	236	7.2391	01-Apr-16	01-Apr-26
158	BB Wharf OS 2	236	50.4357	01-Apr-19	01-Apr-26
159	BB Wharf WL 2	236	24.7639	01-Apr-19	01-Apr-26
161	AGS Explosives Magazine	236	13.0917	01-Apr-19	01-Apr-26
E-110124 Parcel B	Mill Site		20.0074	13-Aug-97	13-Aug-47
178	AGS South WRF Expansion	236	44.1537	01-Jun-24	01-Apr-27
188	South Ridge Stockpiles	TBD	58.1429	TBD	TBD
189	Shoal Cove Beach Road Bypass	TBD	4.0000	TBD	TBD

Eleven Surface Lease Renewal requests were submitted to Mineral Rights on December 23, 2025. Two additional Surface Leases have been requested and are pending for South Ridge to be included in Surface Lease ID178, awaiting receipt from Mineral Lands Division.



Notes:
Topographic base map sourced from ArcGIS online

Base map water features are shown as light blue

Legend

- Truck Park Area
- Existing Topsoil
- Overburden Stockpile
- Proposed North WRF Design
- Powerlines
- Proposed Haul Road
- ROM
- 2016 South WRF Design
- Proposed South WRF
- Map Staked Claims
- AGS Final Pit
- Surface Lease
- Blast Exclusion Zone
- Mining Lease
- TSF

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PIRAN MINING

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Drawing updated by: POD

TITLE

Figure 2.3-1
CANADA FLUORSPAR INC.
LAND TENURE

Date: 13-02-2025

Rev 1

DWGNO.CFI_MDP_035_0_101024

2.3.3 Historic Mine Works and Exploration Activities

Fluorspar exploration on the Burin Peninsula, began in the early 1910s, with evidence of mining dating back to the 17th century. Since the mid-1990s three Environmental Assessments (EAs) have been completed to support fluorspar mining in the St. Lawrence area. In 2010, CFI (formerly Burin Minerals Ltd.) was released from a harmonized provincial and federal EA for the proposed reactivation of two underground mines (Tarefare and Blue Beach North mines), known as the Newspar project. This approval included the reactivation of the fluorspar mines, an upgrade to the existing mill, development of a Tailings Management Facility (TMF) centred on Shoal Cove Pond, and construction of a marine terminal at Blue Beach. In 2012, CFI continued to develop exploration within its mineral license area. This program resulted in the discovery of a large fluorspar deposit, the AGS vein. The AGS Mine operations began in 2017 and currently remain in operations with eight years remaining based on the current Mineral Reserve and mill throughput rate. With the inclusion of South Ridge Mine Operations, AGS extends to 10 years.

Historical mine workings in the vicinity of the Project are included in Table 2.3-5.

Table 2.3-5: History of Exploration and Mining in the Burin Peninsula

Year	Company	Drilling (m)	No. of Holes	Comments
1933 - 1941	St. Lawrence Corp. of Nfld.	-	-	Mining Black Duck Vein
1936 - 1942	Newfluor	-	-	Mining parts of the Director and TF veins
1942 - 1978	Alcan	11,192	42	Mining upper part of Director Vein
1986 - 1991	Minworth-UK	866	15	Mining upper part of Director Vein
1995	Davy	-	-	Pre-feasibility study (PFS) on the TF No. 2 Vein
1996	BML	-	-	Application to use Shoal Cove Pond as a tailings facility
1996	RPA	-	-	Review of data and preliminary resource estimate of Blue Beach North (BBN) and Tarefare (TF) veins
1997 - 1998	BML	-	-	Negotiations with the provincial government regarding a new wharf at St. Lawrence.
1998	BLM Bharti	-	-	PFS on the BBN and TF veins
1999	BML	14,090	43	In-fill drilling on the BBN and TF veins
1999	Glanville	-	-	Market study on the Project
2000	RPA	-	-	Update of Mineral Resources of BBN and TF veins
2000	BML	-	-	Update of Mineral Resources of BBN, TF, and Director veins

Year	Company	Drilling (m)	No. of Holes	Comments
2000	B.J. Price	-	-	Review of the Project
2008	CFI	18,368	60	In-fill drilling on the BBN and TF veins
2011	RPA	-	-	NI 43-101 Technical Report and PFS on Project
2013	RPA	-	-	NI 43-101 Technical Report and updated PFS on the Project
2013	CFI	1,005	7	Exploration drilling Hares Ears
2013	CFI	15,165	80	Director Vein extensions and western part of AGS grid and seven holes at Hares Ears
2014	CFI	23,404	112	In-fill drilling and eastern part of the AGS Vein structure
2015	CFI	22,265	84	In-fill drilling and testing eastern part of the AGS Vein structure, testing the northern extension of the Director Vein, and geomechanical and condemnation holes.
Total		**106,355**	**443**	

2.3.3.1 Geophysical Surveys

Various ground and airborne surveys have been conducted from 2012 to 2019. Geotech Ltd. carried out airborne geophysical surveys (magnetometer and VTEMplus) from May 29 to June 9, 2015, over the entire Property on behalf of CFI. Based on the successful results of the 2012 ground geophysical surveys (in detecting magnetic lows associated with areas of fluorite mineralization), the purpose of this survey was to detect targets similar to those detected over the South Ridge, Tarefare, and Grebes Nest Pond deposits. The South Ridge vein is situated along the eastern margin of the magnetic high domain. The results of the 2015 airborne geophysics outlined several priority targets for follow-up testing.

Ground magnetics and HLEM geophysical surveys were completed on the 2015 extended grids February of 2016. An additional compilation and merging of data from the AGS and North/South Ridge grids were completed within the scope of the 2016 program.

To maintain continuity between the 2012, 2014, and 2016 surveys, similar equipment and survey procedures were followed in all surveys. Data from the three surveys has been merged to allow for the compilation maps of the surveyed areas.

CFI completed a regional exploration assessment during 2018 to 2019 to focus on areas of high potential for additional resource definition and new discoveries.

Drone supported (UAV) geophysical surveying was completed in 2019 using AeroVision UAV-MAG. Two survey blocks were completed on the Property, totalling 397.5-line km from May 16 to May 25, 2019.

2.3.3.2 Drilling

From the 1940s to 1990, exploration was done by Alcan and Newfluor Drilling, representing 29% (22 holes – 7,173 m) of the drilling done on the Tarefare Deposit (TF). In 1999, the TF drilling was done by the then-owners, Burin Minerals Ltd., for 23% (16 holes – 5,769 m) of the TF drilling. In 2008, drilling was done by CFI, for 48% (39 holes – 12,177 m) of the TF drilling.

During the exploration programs, CFI completed drilling as follows (Table 2.3-6):

- **2013**: 15,165 m of drilling in 80 diamond drill holes on; North/South Ridge vein extensions and western part of AGS grid and seven holes at Hares Ears;
- **2014**: 23,400 m of drilling in 112 diamond drill holes on In-fill drilling and eastern part of the AGS vein structure;
- **2015**: 22,580 m of drilling in 89 diamond drill holes, including 57 exploration holes (18,678 m), nine geomechanical holes (total: 1,278 m), and fourteen condemnation holes (2,335 m). 58 of the exploration holes (16,457 m) were completed on the AGS grid and nine holes (2,036 m) were completed on the North/South Ridge North grid;
- **2016**: Iron Springs, 418 m of drilling in 4 holes failed to intersect significant mineralization. 1,237 m within 15 drillholes at AGS for ore variability (metallurgical) testing and analysis. 1,296 m condemnation drilling program at AGS.
- **2017**: 2,928 m infill and delineation drilling at AGS across 24 drillholes. 1,187 m in 18 drillholes at AGS for aggregate test work.
- **2019**: 4,220 m infill and resource expansion at AGS in 43 drillholes. South Ridge 2,444 m of infill and resource expansion drilling in 24 holes, 50 m spaced, upgraded resources from Inferred to Indicated;
- **2020**: for South Ridge 2,552 m of drilling in 20 holes, extended vein to Section 21+50 S; Intersected broad stockwork zones; and
- **2020–2021**: 5,312 m infill and expansion drilling within 34 drillholes at AGS associated with Center Pit northern and western extents.
- **2023–2024**: 1,465 m of geotechnical drilling within 15 drillholes at AGS for pit wall and slope design parameters.
- **2024**: 769 m of geotechnical drilling within 10 drillholes at South Ridge for pit wall and slope design parameters. 1,017 m of condemnation drilling within 5 drillholes at AGS for the south waste rock facility western expansion.
- **2024–2025**: 15,481 m infill, expansion, and geotechnical drilling within 51 drillholes at North Ridge.
- **2025**: 2,951 m of infill and grade control drilling at AGS.
- **2025–2026**: 327 m of hydrogeology drilling and well construction at South Ridge. 2,573 m of condemnation drilling within 12 drillholes at South Ridge currently in progress to support potential stockpile locations.

- **2025–2026**: 327 m of hydrogeology drilling and well construction at South Ridge. 2,573 m of condemnation drilling within 12 drillholes at South Ridge currently in progress to support potential stockpile locations.

Table 2.3-6: Summary of Recent Exploration Activities (2013 – 2024)

Year	Drilling (m	No. of Holes	Type	Comments
2013	1,005	7	Exploration	Exploration drilling Hares Ears.
2013	5,029	25	Exploration	Testing North Ridge and South Ridge Director Vein extensions.
2013	9,131	48	Exploration	Testing western part of AGS vein structure.
2014	23,404	112	Infill	Infill drilling at eastern part of the AGS Vein structure.
2015	16,457.10	58	Infill and Exploration	Infill drilling and testing eastern part of the AGS Vein structure.
2015	1,278	9	Geomechanical	Geomechanical drilling of AGS vein structure.
2015	2,036.26	9	Infill and Exploration	Infill and exploration drilling testing North/South Ridge Vein.
2015	2,335	15	Condemnation	Condemnation drilling at AGS.
2016	2013-2016 drill core archive	-	Core Relogging and Resampling	3,365 additional core samples assayed.
2016	418	4	Exploration	Iron Springs exploration drilling.
2016	1,237	15	Metallurgical (Ore Variability)	Testing various vein domains and collecting metallurgical samples from the AGS Deposit.
2016	1,296	6	Condemnation	Condemnation drilling at AGS.
2017	2,928.41	24	Infill and Delineation	Mainly Drilling under Grebes Nest Pond (Pond Pit area). Updated Resource Estimate.
2017	1,187	18	Aggregate	Sample collection for aggregate test work and geological definition at AGS.
2019	4,220	43	Infill and Expansion	Mainly Center Pit Phase 2 and Grebes Nest Phase 2. Updated Resource Estimate.
2019	3,156	27	Exploration	Drill-testing geophysical anomalies; discovery of two fluorspar veins at AGS North.
2019	2,444	24	Infill and Expansion	Infill drilling of South Ridge deposit.

Year	Drilling (m	No. of Holes	Type	Comments
2020	2,552	20	Infill and Expansion	Mainly expansion drilling of South Ridge deposit toward south.
2020-2021	5,311.60	34	Infill and Expansion	Mainly Center Pit north, west, and deeper holes.
2021	4,090.50	30	Infill and Expansion	Phase 1 infill, resource expansion, and definition drilling at AGS North.
2021-2022	7,762.89	61	Infill and Expansion	Phase 2 infill, resource expansion, and definition drilling at AGS North.
2023-2024	1,465	15	Geotechnical	Geotechnical drilling for pit wall and slope design at AGS.
2024	768.50	10	Geotechnical	Geotechnical drilling for pit wall and slope design at South Ridge.
Total	**99,512**	**614**		

2.3.4 Mining Legacies in the Project Vicinity

Mining legacies in the area include abandoned shafts and tailings from the former Director Mine located east of AGS Mine and northwest of the Project along Director Drive towards the Town of St. Lawrence. Mine infrastructure at the historic Director Mine included a permanent headframe at No. 2 Shaft, small open pits, crushing plant, hoist house, powerhouse, and service shops that were operational in the 1930s–1940s. CFI will have an assessment completed by qualified engineer to assess potential impacts on historical workings including blasting impacts on adjacent underground workings.

Shoal Cove Pond contains historic tailings produced by previous mine owners illustrated as Existing Minworth Tailings in Figure 2.3-2; however, they were not remediated prior to 2016 to the extent that potential environmental effects would be completely mitigated. As such, CFI has carried out some remediation to alleviate environmental concerns. Responsibility and/or liability for the former tailings is not being assumed or considered, and no further remediation is planned for the Shoal Cove Pond area. To mitigate potential impacts blasting may have on stability of Minworth tailings and tailings dam, CFI hired a qualified engineer to complete an assessment on the Minworth tailings and the Minworth tailings dam this work will complete in May 2026.

622000 622500 623000

5195500 5195000 5194500 5194000

N

Clarkes Pond Brook

BLUE BEACH ROAD

Iron Spring Road

EXISTING
MINWORTH TAILINGS
('89-90')

Shoal Cove Pond

Shoal Cove Pond Brook

60 40 50 30 10 20 30 40 40 50 20 30 60

0 400m

622000 622500 623000

Coordinate System:
NAD 83 / UTM Zone 21 N
Scale: 1:1,800

Legend

- Wetland
- Waterbody
- Tailings
- Wooded Area/Vegetation
- Water Course
- Road Network
- Contour

CFI
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Prepared by: POD		TITLE	CANADA FLUORSPAR INC **Figure 2.3-2: Historical Mining Legacies in the Project area**
Date: 23-04-2026	Rev 02	CFI_SURVEY_2026_04_23	

2.4 Current Operations and Existing Mine Infrastructure

The AGS Mine EA received conditional release by the Minister of Environment and Conservation on November 5, 2015. In 2017, CFI started construction of the open pit fluorspar mine operation, milling facility, and tailings management facility. Initial pre-production followed by full-scale production mining and mill commissioning occurred from 2018 to 2020. CFI completed construction at the BBMT located in St. Lawrence during the summer of 2021.

The AGS Mill, TMF, and BBMT were previously approved infrastructure developed as part of the AGS Mine EA in 2015 and continued operations of the existing St. Lawrence Fluorspar Project will provide processing and shipping for the ore extracted from the proposed Project. At the end of 2025, CFI had 102 employees and 99 contractors working at AGS.

Activities at AGS include open pit mining, pit dewatering, stockpiling, ore crushing, processing plant, tailings management, and extensive infrastructure to support existing operations.

Figure 2.4-1 indicates the current workings and layout at the AGS Mine site in relation to the proposed Project. Section 2.6 describes the Project activities that will utilize existing infrastructure from the currently operating AGS Mine.

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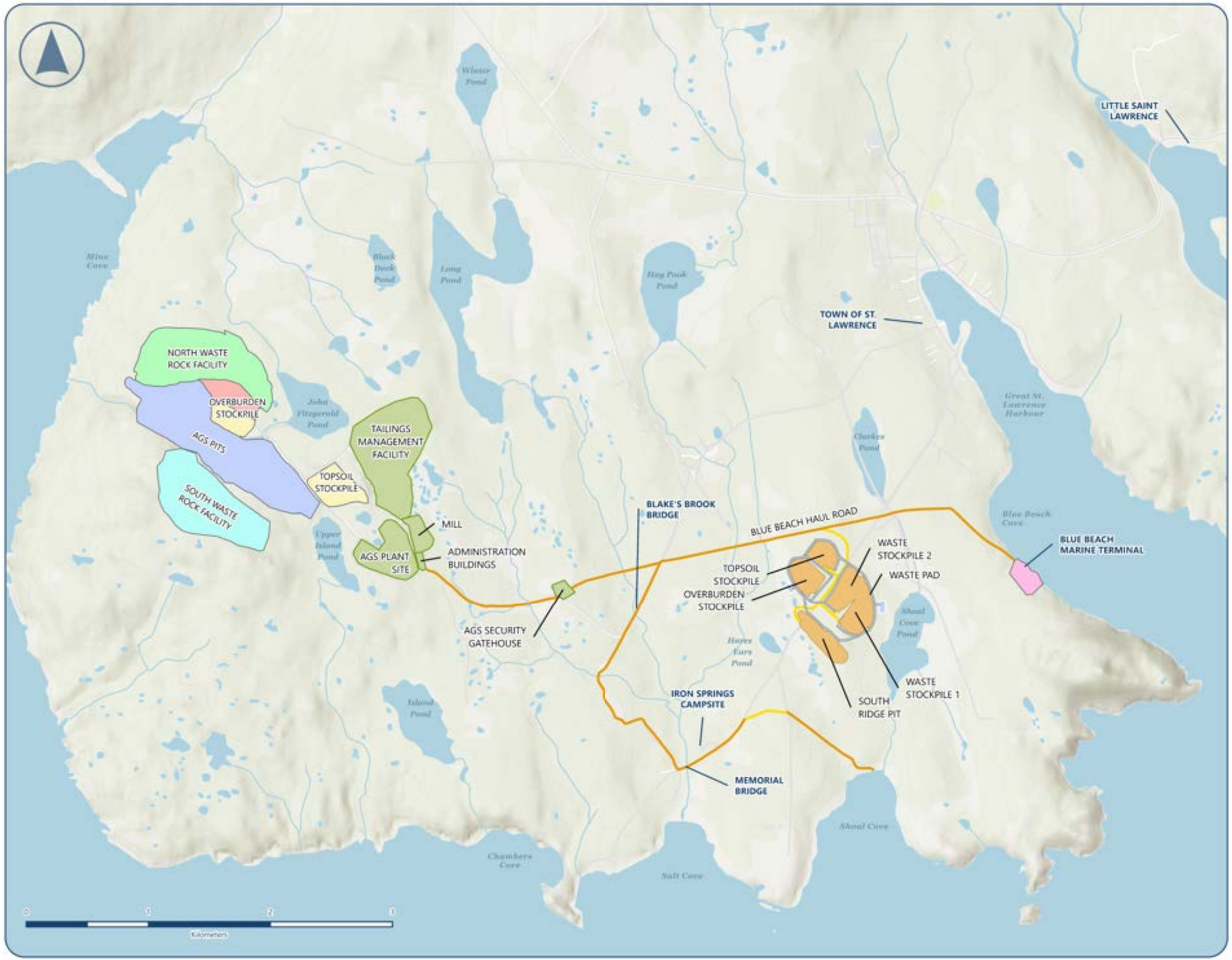
SOUTH RIDGE MINE

FIGURE 2.4-1
EXISTING CONDITIONS AND PROPOSED PROJECT

MARCH, 2026



PROJECT FOOTPRINT

- Surface Drainage Ditch
- Proposed New Road
- Existing Road Upgrades
- Proposed Project Infrastructure
- Proposed Sedimentation Pond
- Blue Beach Marine Terminal

EXISTING MINE COMPONENTS

- Shared AGS Mine Infrastructure
- AGS Pits
- North Waste Rock Facility
- Overburden Stockpile
- South Waste Rock Facility
- Topsoil Stockpile

Scale: 1:30,000
when printed on 11 by 17 inch paper

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2.4.1 Existing Infrastructure

Existing infrastructure includes the AGS Mine and BBMT. The AGS Mine and mill site is comprised of the following major components (Figure 2.4-2):

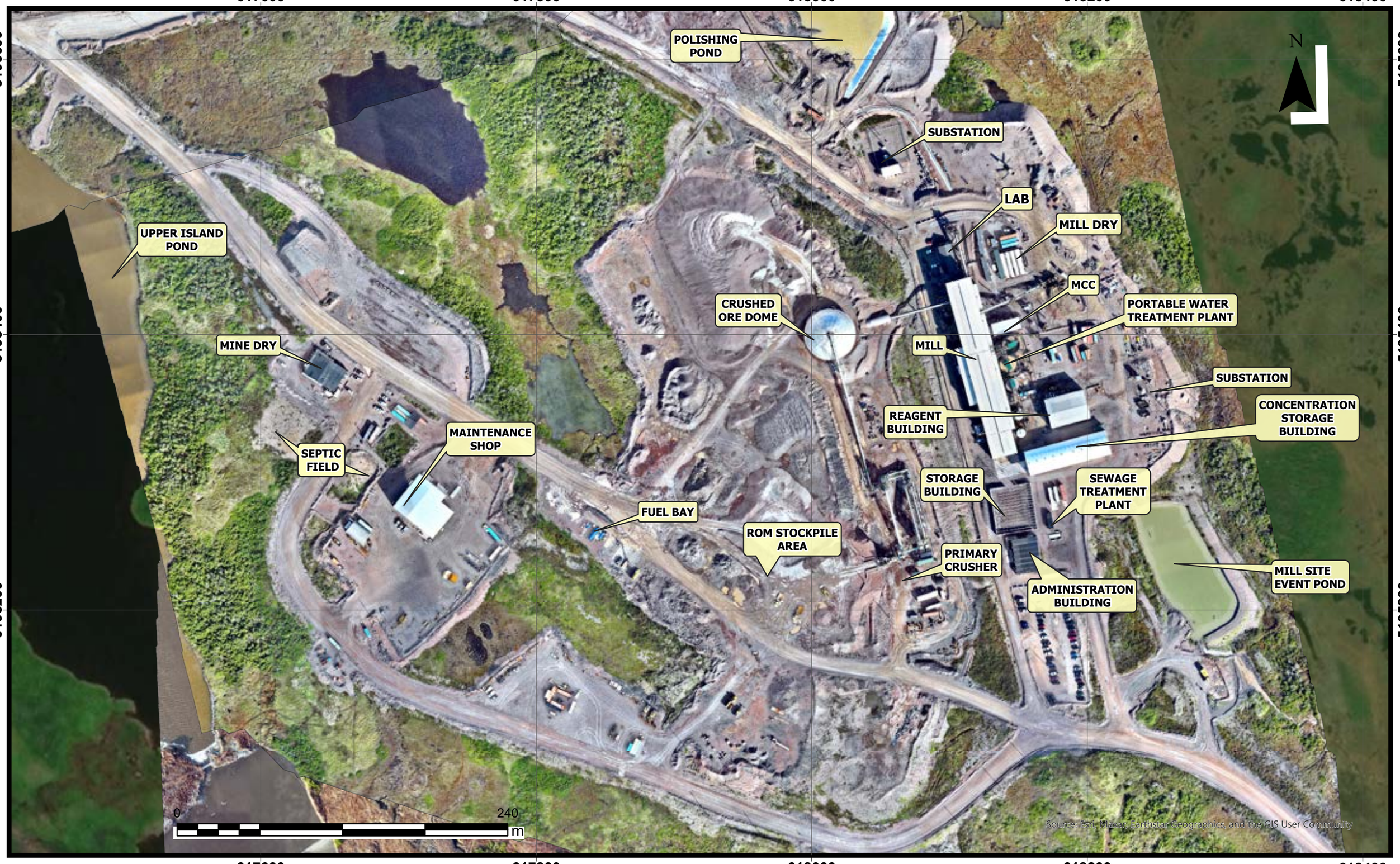
- The AGS Open Pit consisting of four phased open pits which eventually connect to form a single open pit, previously referred to as Grebes Nest Pit, Centre Pit, Open Cut Pit, and Pond Pit. Note that Grebes Nest Pit and Centre Pit will connect via Pond Pit. Open Cut Pit is the western extension of the AGS Open Pit.
- AGS Mill – For processing the fluorspar ore into an acid-grade fluorspar concentrate as well as Dense Media Separation (DMS) Rejects/Floats used in the production of construction aggregate.
- South and North Waste Rock Facilities (WRF) – Excess waste rock produced during open pit mining is placed within the South WRF followed by the North WRF in year 3 (2026). Some of the waste rock produced during mining has been used in the construction of haul roads, berms, ramps, and other infrastructure.
- AGS East TMF (Figure 2.4-4) – Flotation Tailings are generated as a result of the process and are pumped to the AGS East TMF. The facility has been constructed in two phases and provides tailings storage until 2029 based on current filling projections. The filling projections are currently under review to develop an updated filling schedule to align with the Life of Mine plan.
- Water Management Infrastructure – This includes the Event Pond at the AGS Mill Site, sediment basins, in-pit sumps and associated dewatering equipment, collection and diversion ditches, effluent discharge pipelines and outfalls, and freshwater intake structures and real time water monitoring station.
- Overburden and topsoil stockpiles.
- Power supply and distribution system.
- Site buildings – described in Section 2.4.1.1 below.
- Fuel storage facility.
- Explosives storage.
- Haul roads for mining equipment transporting ore, waste rock, aggregate material, and overburden materials.
- Site access roads for non-mining mobile equipment.
- Clarke's Pond geology office.
- Minworth Mill Site.
- South and North Ridge exploration sites.
- AGS North exploration site.
- Tarefare exploration site.
- Real-time Water and Air Quality Monitoring Stations.
- Warehouse and storage yard.

The BBMT was constructed in 2020-2021 and consists of the following components (Figure 2.4-3) no construction or upgrades at BBMT will be included as part of the Project:

- Site buildings – including security building, office/breakroom, control room, washroom facility.
- Concentrate and product stockpiles.
- Power supply and distribution system.

- Water supply (potable).
- Marine infrastructure including a barge, mooring buoys, and fenders.
- Ship loading equipment, including a conveyor system.
- Runoff water management components including diversion ditches.
- Haul road (Port Access Road).

Figure 2.4-4 illustrates the current existing infrastructure at the AGS mine site. The existing infrastructure is planned to continue to be used in support of operations for the Project.



Notes:
Satellite Imagery sourced from ArcGIS online

Legend

WATER

DISTURBED AREA

VEGETATION/TREES

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Drone Flight Date: 17-10-2024

TITLE

Figure 2.4-2: Existing AGS Mine Infrastructure

Prepared by: POD

Rev 0

ROM_SURVEY_M_160225

622900 623000 623100 623200 623300 623400

5195300 5195200 5195100 5195000

N

Bollard

Crib Bollard

VISITORS CAR PARK

Vessel

Movable Barge

Crib 1

Crib 2

Crib 3

Conveyor Systems

Foam Pneumatic

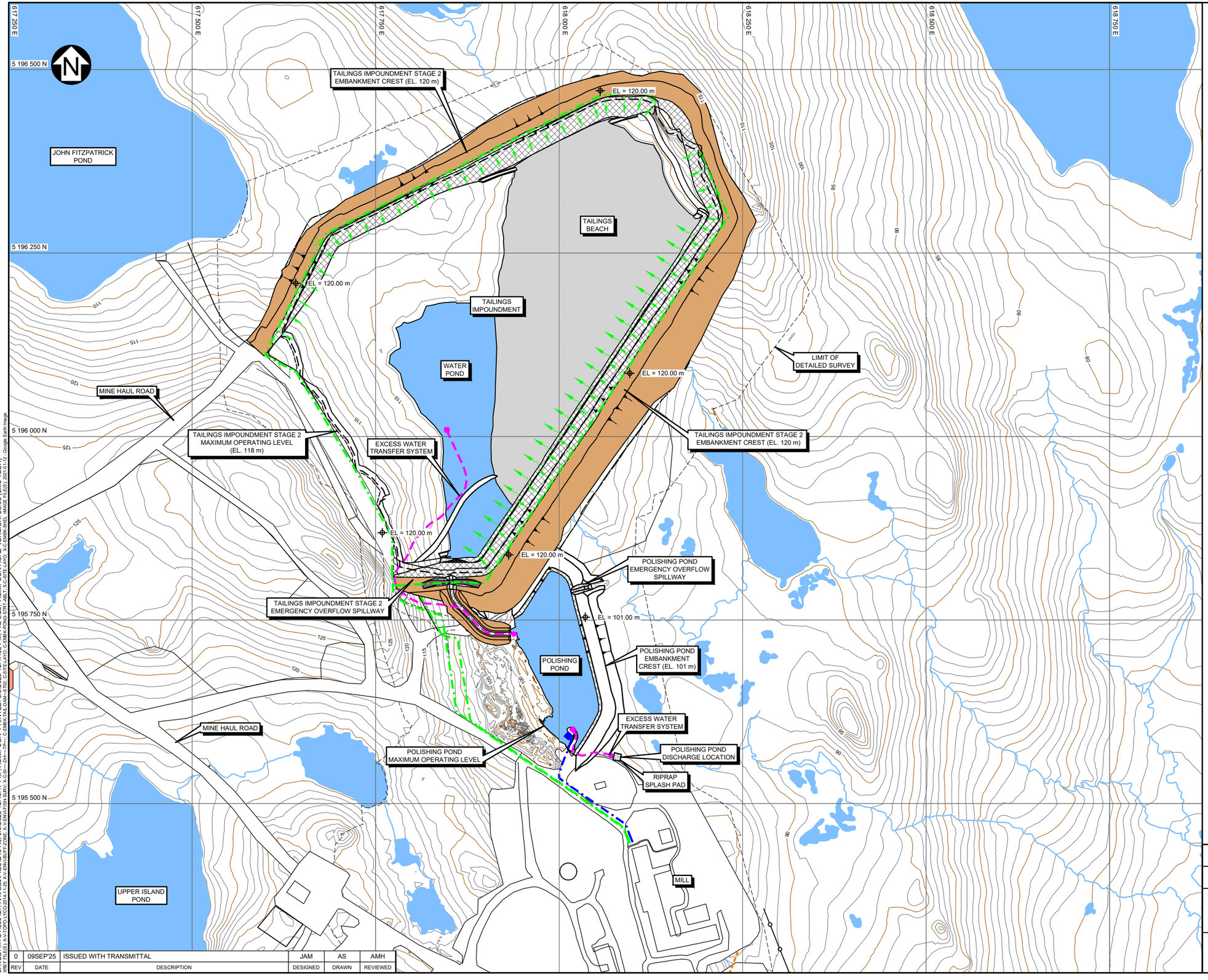
Crib Bollard

Bollard

20 40 80 120 160 Meters

622900 623000 623100 623200 623300 623400

Survey Date Bluebeach: 02 August 2025 **Coordinate System:** **NAD 83 / UTM Zone 21 N** Scale: 1:493	**Legend** Water Vegetation Muster Point Locations	CFI CANADA FLUORSPAR INC.	**Prepared by: POD**		TITLE	**Figure 2.4-3: Existing Infrastructure: Blue Beach Marine Terminal**
			Date: 04-10-2025	Rev 02	CFI_SURVEY_2025_10_04	



LEGEND:

- WATER
- TAILINGS
- EMBANKMENT FILL
- RIVER/STREAM/DRAINAGE
- PROPOSED ACCESS ROAD
- PROPOSED INFRASTRUCTURE
- SAFETY BERM
- TAILINGS DISCHARGE PIPELINE
- EXCESS WATER TRANSFER SYSTEM
- MILL WATER RECLAIM SYSTEM

NOTES:

1. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE TECHNICAL SPECIFICATIONS. THE ENGINEER SHALL BE CONTACTED IMMEDIATELY SHOULD UNCERTAINTIES ARISE WITH THE DRAWINGS AND / OR TECHNICAL SPECIFICATIONS.
2. COORDINATE GRID IS UTM NAD83 ZONE 21.
3. PLAN BASED ON INFORMATION PROVIDED BY CANADA FLUORSPAR INC., OCTOBER 16, 2015. DETAILED SURVEY RECEIVED JANUARY 8, 2016.
4. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1 METRE.
5. DIMENSIONS AND ELEVATIONS ARE IN METRES, UNLESS NOTED OTHERWISE.

SCALE A: 50 25 0 50 100 150 200 250 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	09SEP'25	ISSUED WITH TRANSMITTAL	JAM	AS	AMH

CANADA FLUORSPAR (NL) INC.

ST. LAWRENCE FLUORSPAR PROJECT

Existing AGS Tailings Management Facility

Knight Piésold CONSULTING

P/A NO. NB101-642/41 | REF NO. NB25-00987

FIGURE 2.4-4 | REV 0

SAVED: \\1101006424\1AA\acad\FIGS\B18 R0, 9/9/2025 12:46:17 PM, ASIMPSON, PRINTED: 9/9/2025 12:47:35 PM, FIG 5.28, ASIMPSON,ACAD VERSION: 25.0S (LMS TECH)
XREF FILES) X-V-TOPO-LYCO-2014-11-26; X-V-ENV-I&U-FZONE; X-V-ENV-FISH-SERV; X-CS---DH---TP---; C-EMB\K-TAIL-DAM--ST02; C-SITE-LAYO; C-EMB\K-POND-STRT ABLT; X-C-SITE-LAYO; X-C-EMB\K-SHEL; IMAGE FILE(S) 2021-01-12 - Google Earth Image

2.4.1.1 Buildings and Facilities

Overall site general arrangements for the AGS Mine are displayed on Figure 2.4-2, Figure 2.4-3, and Figure 2.4-4. To the maximum extent practical CFI utilizes portable structures. The use of this style of structure minimizes the scope of works required for foundations, as well as the effort required for closure.

Existing AGS infrastructure that will be used to support the Project operations includes:

Workshop/Warehouse Buildings

- The plant workshop with some warehouse capability is included as a bay at the North end of the Mill building. A welding bay is located on the perimeter of the workshop. Temporary parts and tools storage has been added as sea containers at the mill, as well as a reagents storage building.
- The main operation warehouse is at the former Blue Beach Dry building, which has been renovated to accommodate warehousing activities.

Main Administration Building

- The administration building is located south of the main mill building. This building complex contains offices, meeting/training room, reception area, lunchroom, change room, and washroom facilities. This is a modular building founded on wooden cribbing above precast concrete footings. Allowance for future expansion has been made for the addition of a modular office building.

Mill Dry Building

- The mill dry administration building is located northeast of the mill building. This building contains offices, meeting/training room, lunchroom, change room, and washroom facilities. This is a modular building founded on wooden cribbing above precast concrete footings.

Mine Dry Building

- The mine dry administration building is located west of the Maintenance shop. This modular building complex contains offices, meeting room, reception area, lunchroom, and dry/washroom facilities.

Security Buildings

- The security buildings consist of a staffed gatehouse, and a modular unit located 1.2 km east of the administration building. The modular unit houses an office and a search area.

Laboratories

- An assay laboratory has been constructed at the AGS mill site immediately north of the mill building. The lab includes the metallurgical and analytical laboratories, as well as a preparation laboratory.

Maintenance shop

- A steel building was constructed to the east side of the Mine Dry. It houses heavy vehicle maintenance bays, mobile equipment bay, drill rebuild bay, and repair bays.

Concentrate and Reagent Storage

- Concentrate and Reagent storage buildings are located on the southeast site of the mill building.

Crushed Ore Enclosure

- A steel frame dome ore enclosure approximately 36 m in diameter and 14 m tall is constructed at the outlet end of the main crusher conveyor.

Tailings Management Facility

- The AGS East TMF will receive tailings generated from the Project.

Processing Facility

- AGS Mill for processing the fluorspar ore into an acid-grade fluorspar concentrate as well as DMS Rejects/Floats used in the production of salable aggregate.

Additional infrastructure supporting current operational activities that will be used for the Project including a network of roads, power supply and transmission, fuel storage areas, propane tanks, and other auxiliary systems are in place and detailed below:

- Raw Water Intake/Raw Water Supply
  - The majority of process water is recycled from the AGS East TMF Polishing Pond. Raw water for mineral processing, as well as potable, and gland water is drawn from the Tarefare Shaft (Tarefare Water Intake) or John Fitzpatrick Pond using a Pentair submissible turbine pump with an 8-inch pipeline. Water, both for industrial and office use, is drawn from nearby ponds and Tarefare No 1 Shaft.
- Fuel Storage Facility
  - The fuel storage facility (diesel and gasoline) is located adjacent to the maintenance shop in the mine services area. Delivery trucks are connected via flexible hoses to the unloading pumps. The fuel is transferred to bulk fuel storage tanks within a containment bund. The distribution pumps transfer the fuel to the mine truck refuelling slab. The refuelling station is fitted with containment slabs, kerbs, and bunds. Fire protection is provided by the site's fire protection system.
- Explosive Storage and Supply
  - Explosives magazine and emulsion storage tanks are currently available onsite. Explosives providers to be sourced and explosive supply tendered out.
- Fire Water
  - A firewater tank is located next to the process water tank where the fire pumps withdraw water for the system. There are two pumps, namely: primary diesel

pump and jockey pump. The header system provides firewater solely to the mill. The concentrate storage area of the mill is a dry system, whereby upon triggering the system will flood with water via diesel driven pump. The remainder of the mill is supplied by a wet system continuously charged via jockey pump. When a drop in pressure is noticed, the diesel driven pump provides high pressure/flow water to hose cabinets and outside hose connections.

- Sewage and Septic
  - Sewage and non-process wastewater from the mill and ancillary buildings is collected and transferred to a sewage treatment plant located adjacent to the administration building. An additional septic field was constructed to manage sewage from the Mine Dry/Mine office as well as the Maintenance shop.
- Power Supply
  - Plant incoming 12.5 kV is stepped down to 4.16 kV at the plant outdoor substation via plant main 12.5/4.16 kV transformer. The power is obtained from the existing grid via Newfoundland Power Authority's substation located to the north of the Town of St. Lawrence.
- Access Road
  - Access to the site from St. Lawrence is provided by an existing narrow paved road, Director Drive approximately 3.5 km, followed by a hard-packed gravel road (Figure 2.1-1). AGS mine site access has been upgraded with a 5.6 km gravel Town Bypass Road which connects to Highway 220. Upgrades to the access roads are further detailed in Section 2.6.
- Ship Loading Equipment
  - The loading of bulk carriers at BBMT between 15,000–45,000 WMT is executed using a McCloskey SDX Telescopic Stacker 150 mobile ship loader conveyor. Loading is completed directly from the haul trucks onto the ship loader.

2.5 Project Schedule

The Project will be implemented in three phases: Construction (including Early Works and Site Preparation); Operation; and Closure. The primary activities associated with each of the phases are described in Section 2.5.1, 2.5.2, and 2.5.3.

A summary of the Project schedule for each phase is as follows:

- Construction, including early works and site preparation, is estimated to be completed over six months. The work schedule will likely vary during this period, but work will progress (7-day-per-week cycle with 24 hours per day/21 productive hours per day).
- The Operations phase is estimated to occur over approximately 18 months, initiating after 2 months of construction, with an approximate 4-month overlap with the Construction phase (7-day-per-week cycle with 24 hours per day/21 productive hours per day).
- Project Closure will occur over 24 months.

The first proposed date of physical construction on-site is anticipated in June 2026.

2.5.1 Construction

The Construction phase is expected to occur over a period of approximately 6 months and includes early works, site preparation, and initial blasting. Detailed project components and activities associated with the Construction phase are provided in Section 2.6.1.

The preliminary construction schedule is presented in Figure 2.5-1. This construction sequence schedule will be further detailed and updated during the implementation phase of the Project.

2.5.1.1 Early Works

The Early Works scope includes initial road upgrades and regrading, gatehouse bypass, site clearing, and powerline raising. Early Works activities are anticipated to occur over a period of approximately 2 months.

2.5.1.2 Site Preparation

The proposed site preparation work includes approximately four months of construction activities, with first blast planned to occur within approximately 10 weeks of starting construction. Site Preparation activities include road realignment, initial pit development, waste-rock placement, construction of water management infrastructure, dewatering, and development of facilities.

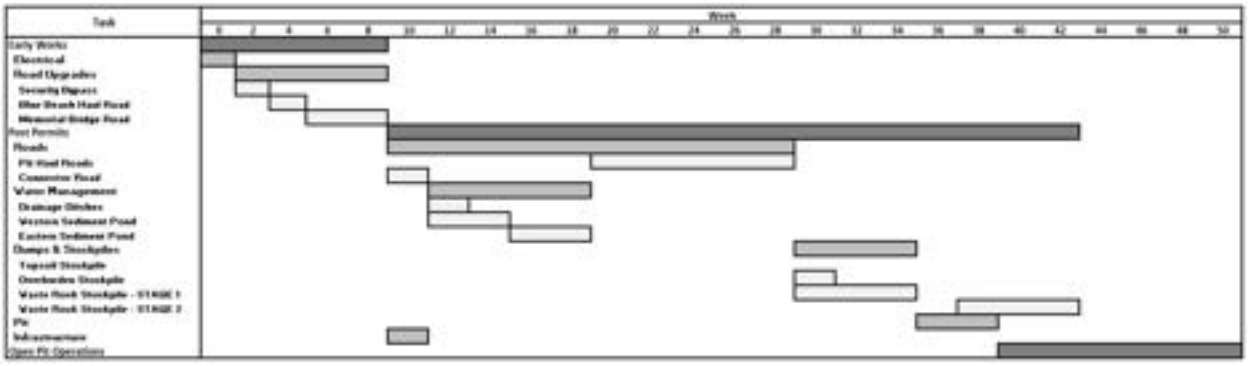


Figure 2.5-1: South Ridge Preliminary Construction Schedule

2.5.2 Operations

Operations of the Project are expected to last for 18 months and will overlap with a portion of the Construction phase (approximately four months). Operational activities include blasting, ore extraction and processing, water management, and tailings management. Details are provided in Section 2.6.2.

2.5.3 Closure

The Closure phase consists of the complete removal of aggregate material and decommissioning and rehabilitation of infrastructure that is no longer in use. The complete

removal of aggregate material, following the Operations phase, is expected to take approximately 24 months. Once the Project has been registered and released from the EA process, it will be included in an amendment to the Rehabilitation and Closure Plan (RCP). Further details of the timeline for decommissioning and rehabilitation will be provided in the amended plan. Monitoring will be conducted following rehabilitation to evaluate rehabilitation success and implement follow-up measures, maintenance, and repairs as required.

2.6 Project Components and Activities

The Project presented in this section is as defined in the current design. The final detailed design of the Project will continue to be refined as input is received from regulators, the public, and stakeholders throughout the EA and permitting process. Project activities are summarized by phase in Table 2.6-1 and described in Sections 2.6.1, 2.6.2, 2.6.3.

The general site layout consists of three types of components and activities as summarized in Table 2.6-1 and illustrated in Figure 2.6-1 and Figure 2.6-2:

- Shared infrastructure;
- Shared infrastructure to be modified; and
- New infrastructure and Project-related activities.

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SOUTH RIDGE MINE

FIGURE 2.6-1
AREA OVERVIEW

MARCH, 2026

PROJECT FOOTPRINT

- Surface Drainage Ditch
- Proposed Sedimentation Pond
- Blue Beach Marine Terminal
- Proposed New Road
- Existing Road Upgrades
- Proposed Project Infrastructure

EXISTING MINE COMPONENTS

- Shared AGS Mine Infrastructure
- Existing AGS Mine Infrastructure

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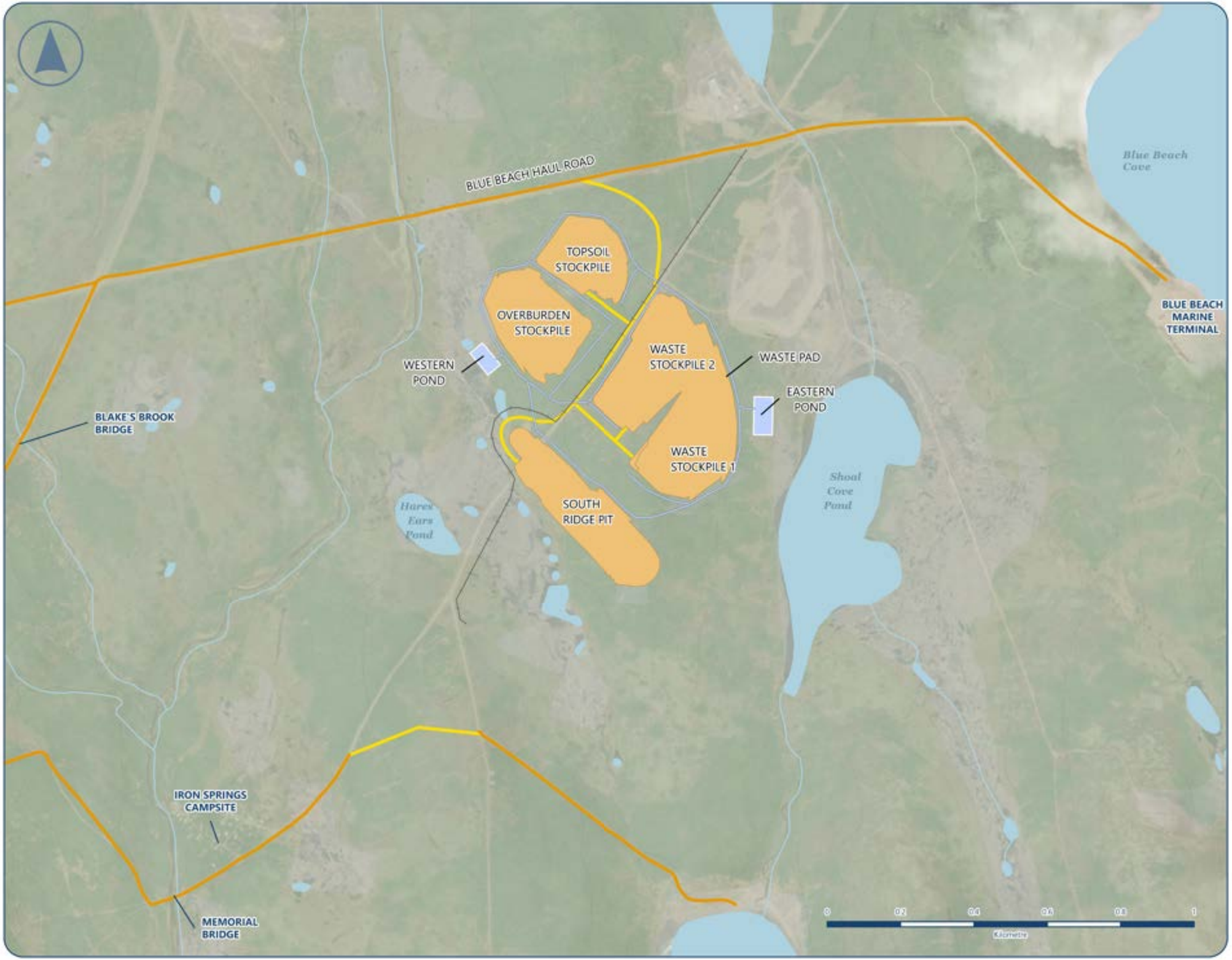
SOUTH RIDGE MINE

FIGURE 2.6-2
PROJECT OVERVIEW

MARCH, 2026



- Proposed New Road
- Existing Road Upgrades
- Proposed Surface Drainage Ditch
- Proposed Powerline Reroute
- Proposed Sedimentation Pond
- Proposed Project Infrastructure

Scale: 1:10,000
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Table 2.6-1: Summary of Physical Project Components and Associated Activities

Physical Activities	Infrastructure Type	Description of Activity
Construction		
Community Access Roads	Shared infrastructure to be modified and new infrastructure (connector road section)	• Strip, clear, fill, gravel, and grade to accommodate vehicle traffic. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use. • Upgrades to Memorial Bridge and Blake's Brook Bridge.
Main Haul Road	Shared infrastructure to be modified	• Widening of existing haul road to accommodate new Project-related haul trucks. • Sections of Blue Beach Haul Road will be regraded, and berms will be built up to support larger equipment traffic. • Strip, clear, fill.
Pit Haul Roads	New infrastructure	• Strip, fill, gravel, and grade.
Power Infrastructure Upgrades	Shared infrastructure to be modified	• Transmission line re-routing and raising along the Blue Beach Haul Road to allow Cat 777s to travel to the project area. • Powerline that follows Iron Springs Road will be re-routed around the pit and extended to provide power to dewatering pumps.
	Shared infrastructure to be modified	• The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.
Pit Dewatering	Project-related activity	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.
Pit Stripping	New infrastructure	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.
Upper Bench Access	New infrastructure	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.

Physical Activities	Infrastructure Type	Description of Activity
Stockpile Area Development	New infrastructure	• Stripping, clearing, and preparing stockpile areas for topsoil, overburden, and waste rock.
Water Management Infrastructure	New infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.
Operations		
Water Management	Project-related activity	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored.
Open Pit Mining	Project related activity	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.
Hauling	Project related activity	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.
Stockpiling	Project related activity	• As mining progresses waste rock will be deposited in the waste stockpiles.
Aggregate Crushing	Project related activity	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.

Physical Activities	Infrastructure Type	Description of Activity
Closure		
Roads	Shared infrastructure	• Haul roads will be decommissioned by covering them with overburden and topsoil, and re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure and post-closure.
Waste Rock Stockpiles	New infrastructure	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.
Overburden and Topsoil Stockpiles	New infrastructure	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.
South Ridge Pit	New infrastructure	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).
Monitoring and Maintenance	Shared infrastructure	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required. • Access roads will be maintained to facilitate post-closure monitoring

2.6.1 Construction

Project construction will occur over two phases: Early Works and Site Preparation. Early Works activities include powerline raising, security gatehouse bypass, and initial road upgrades and regrading as detailed in Section 2.6.1.1. Site preparation activities include road realignment, initial pit development, waste-rock placement, construction of water management infrastructure, dewatering, and development of facilities as detailed in Section 2.6.1.2.

2.6.1.1 Early Works

2.6.1.1.1 Power Line Raising

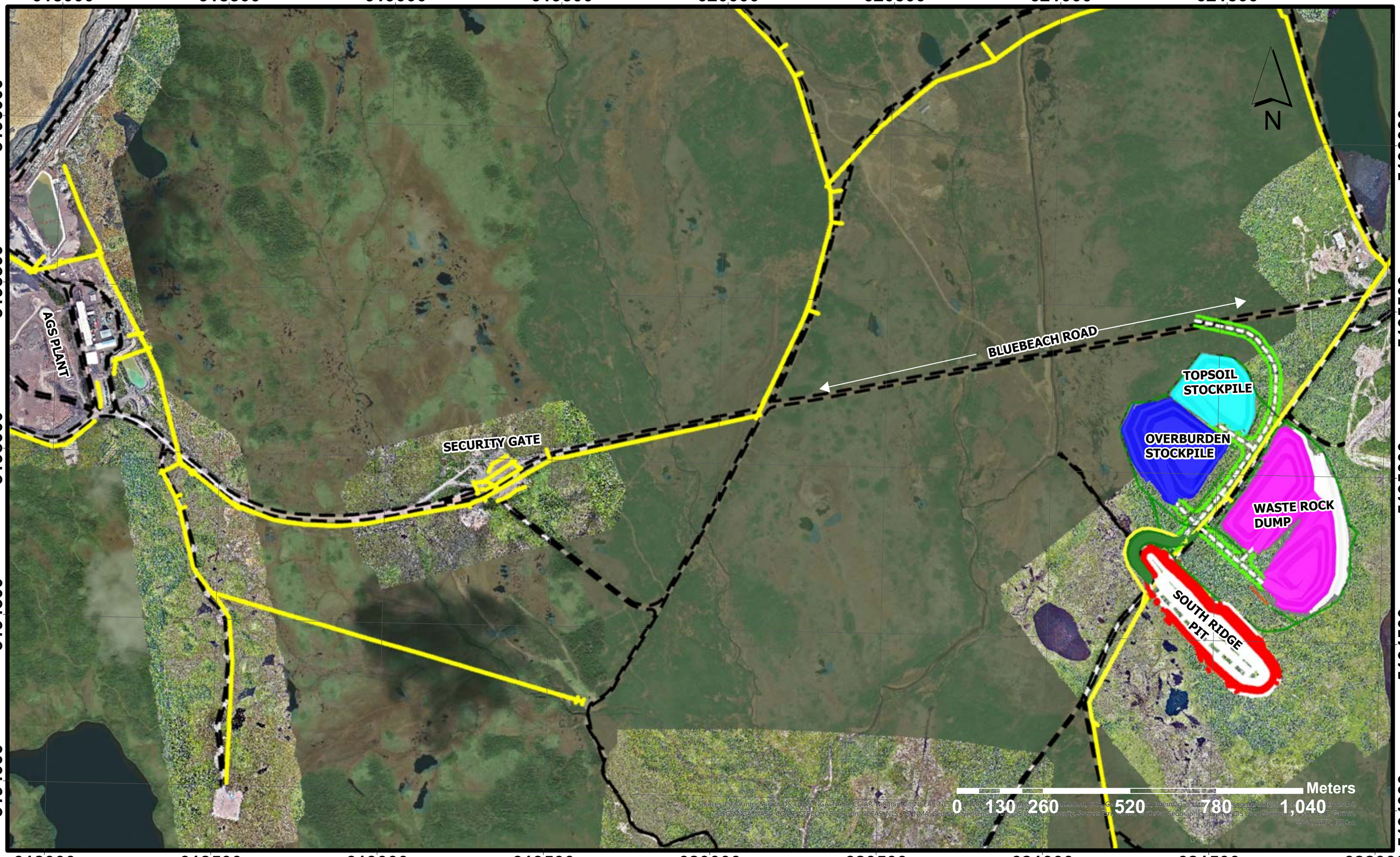
No additional power capacity is required for the South Ridge open pit, as its ore will offset AGS production. The 25 kV power line supplying the Project site needs to be raised at three crossings along the Blue Beach Haul Road to accommodate Caterpillar 777 haul trucks travelling between the South Ridge Open Pit and AGS processing infrastructure. These crossings are:

- Plant area (CFI owned) which can be raised at any time,
- Director Drive Crossing (Newfoundland Power owned), and
- AGS Security Gatehouse Crossing (Newfoundland Power owned).

Coordination with Newfoundland Power will be required for raising at the Director Drive Crossing and AGS Security Gatehouse Crossing. All electrical work will be conducted by local contractors. Once formal approval is received from Newfoundland Power, longer poles will be installed at designated locations. The scope of work is estimated as one (1) day for pole installation, and one (1) day to transfer and raise the lines. Four (4) days have been allowed in the Project schedule to allow for coordination and weather contingencies. Figure 2.6-3 illustrates the proposed power distribution to the Project.

618000 618500 619000 619500 620000 620500 621000 621500

5196000 5195500 5195000 5194500 5194000



618000 618500 619000 619500 620000 620500 621000 621500 622000

Survey Date Drone Imagery: 2025 Base Map: ESRI Imagery **Coordinate System:** **NAD 83 / UTM Zone 21 N** Scale: 1:7,299	**Legend** Proposed South Ridge Pit Topsoil Stockpile Proposed Waste Rock Dump OB Dump Proposed Haul Road Road Edges Powerlines	CFI CANADA FLUORSPAR INC.	**Prepared by: POD**	TITLE	**Figure 2.6-3** **AGS MINE POWER DISTRIBUTION**	
			Date: 31-01-2026	Rev 01	CFI_SURVEY_2026_01_31	

2.6.1.1.2 Existing Road Upgrades

2.6.1.1.2.1 CFI Security Gatehouse Bypass

The existing bypass adjacent to the main gatehouse (currently blocked by a berm) will be reopened. The berm will be removed, and a heavy-duty gate will be installed to allow for the Caterpillar 777 haul trucks to access the South Ridge site. Berms will be adjusted, and additional signage will be installed to prevent public entry and ensure clear separation of mine and community traffic.

2.6.1.1.2.2 Blue Beach Haul Road – Steep Section Regrading

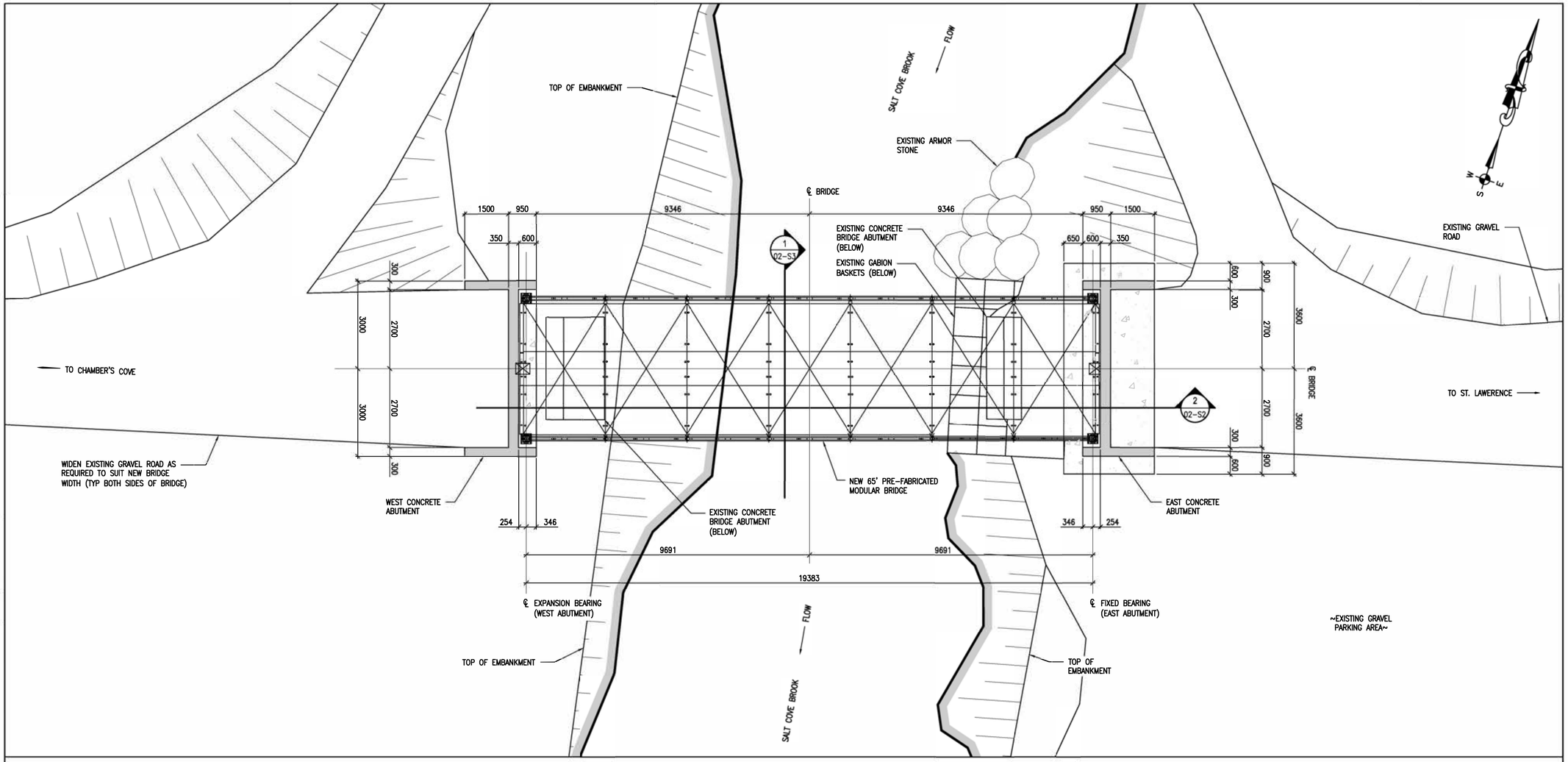
The steep incline immediately south of the AGS Security Gatehouse along the Blue Beach Haul Road will be regraded. Material sourced from the AGS pit will be used for this scope of work. Approximately 14,000 m³ of fill material will be placed to reduce the grade. This will effectively reduce the gradient, allowing for safer, more efficient hauling of ore from the South Ridge stockpiles to the AGS crusher. Existing roadside berms will be heightened and widened to accommodate escorted Caterpillar 777 trucks. Following regrading, the entire section of road will be gravelled and finish graded.

2.6.1.1.2.3 Director Drive to Memorial Bridge Road Upgrade

Currently, the road from Director Drive to the Memorial Bridge is overgrown and degraded. This road will be reactivated and upgraded to serve as the main public access route after the Iron Springs Road is closed. This scope of work includes:

- Clearance of vegetation and re-establishment of the roadway,
- Inspection of the Memorial Bridge for load capacity and condition,
- Inspection of the Blake's Brook Bridge,
- Widening and realignment of tight and unsafe corners,
- Improvements to ditches, installation or replacement of culverts as required, and
- Gravel and grade the full length of the road to provide safe two-way passage.

The road upgrades ensure continued safe public access to Chamber Cove and the historical and recreational sites throughout the life of the Project. Once the early works associated with this road is completed, that section of Iron Springs Road impacted by the Project can be closed to the public. The proposed road arrangement is provided in Figure 2.6-1. Updates to Memorial Bridge and Blake's Brook Bridge will not require in stream works as a clear span bridge will be installed as needed. Figure 2.6-4 provides a generic clear-span bridge design, finalized designs are pending engineering assessment.



1 02-S2 NEW SITE PLAN
1 : 75
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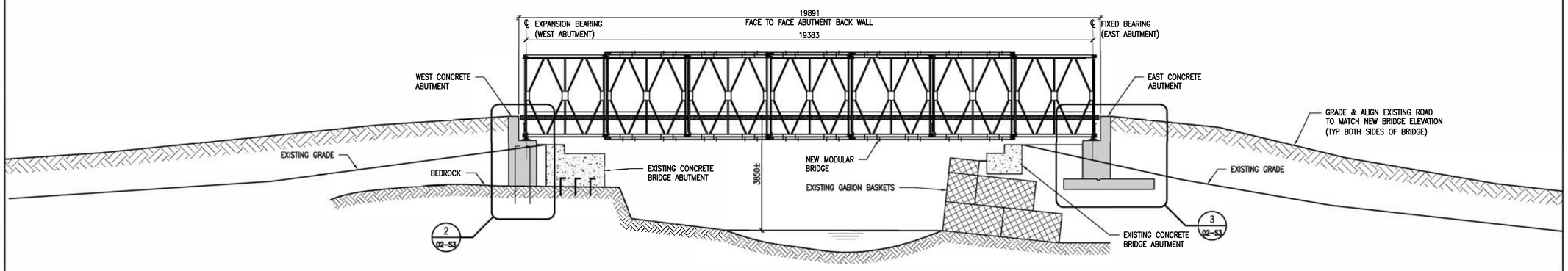

2 02-S2 NEW BRIDGE SECTION
1 : 75
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DRAWING NOTES

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2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND CONDITIONS ON SITE BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK.
3. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS ISSUED FOR CONSTRUCTION AND STAMPED AND SIGNED BY THE ENGINEER OF RECORD.

NO.	DESCRIPTION	Y/M/D	BY
A	ISSUED FOR	2026.00.00	RB

REVISIONS

A – PLAN,SECTION,ELEVATION,OR DETAIL NO.
B – NO. OF DRAWING WHERE ABOVE IS DRAWN

STAMP

PERMIT
PROVINCE OF NEWFOUNDLAND AND LABRADOR
PEGL Newfoundland and Labrador
PERMIT HOLDER
This Permit Allows
JEWER BAILEY CONSULTANTS LTD.
MIRC:
To practice Professional Engineering in Newfoundland and Labrador.
Permit No. as issued by PEG N0540 which is valid for the year 2026.

CLIENT
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CANADA FLUORSPAR INC.

CONSULTANT
JBC JEWER BAILEY CONSULTANTS
STRUCTURAL · MECHANICAL · ELECTRICAL
75 TPMay Court, St. John's, NL, A1A 0L1
TEL: (709) 579-4225 FAX: (709) 579-3423

PROJECT
MEMORIAL BRIDGE UPGRADES
ST. LAWRENCE, NL

DRAWING
Figure 2.6-4
NEW BRIDGE PLAN & ELEVATION

DRAWN BY	CHECKED BY	APPROVED BY	
G. MARSH	R. BAILEY	R. BAILEY	
PROJECT NO. JBC-26-C-032	DWG. FILE NO.	FILE NO.	
DATE FEB 2026	SCALE AS SHOWN	DRAWING NO. 02-S2	REV. A

Feb 27 2026-01:01pm Dave.Cahill P:\2026 Projects\JBC-26-C-032 - CFI - Memorial and Blakes Brook Bridges\Drawings\Struct\Working Drawings\JBC-26-C-032 02-S2.dwg

JBC 22 x 34

2.6.1.2 Site Preparation

Upon the completion of Early Works phase, and the receipt of the final construction and development permits, the Project will transition directly to the Site Preparation phase. As part of Site Preparation phase construction crews will complete the pre-stripping and clearing of the remaining South Ridge pit shell and designated waste rock storage areas to allow for a smooth transition to the Operations phase.

2.6.1.2.1 Connector Road

The Connector Road is a priority item as its completion establishes the required 500 m blast exclusion radius around the South Ridge Pit, which would allow for safe blasting to commence upon receipt of the final permits. This scope of work involves the following:

- Clear and grub the full alignment;
- Strip and stockpile topsoil separately;
- Reuse stripped topsoil to construct a continuous safety/visibility berm along the road corridor;
- Place and compact subgrade fill sourced primarily from on-site borrow areas; and
- Surface with gravel (sourced locally or hauled from the AGS mine).

Surplus stripped material will be hauled via Iron Springs Roads to a temporary stockpile or directly placed in approved areas. Once the Connector Road is fully operational, the section of Iron Springs Road impacted by the Project can be closed to the public. Access to Iron Springs Road from the North side of the Project area to the Town will remain unchanged.

2.6.1.2.2 Water Management Infrastructure

Along the northern side of the pit, dewatering wells will be installed to lower groundwater levels and improve pit-slope stability. Water from these wells will be piped directly to the settling ponds. Surface runoff will be intercepted and prevented from entering the pit and surrounding environment by a system of diversion ditches and culverts, which will route all flows to the appropriate settling ponds for treatment prior to discharge.

Internal drainage ditches will intercept runoff from disturbed areas and prevent it from flowing onto the haul roads. All diversion and collection ditches will be trapezoidal in cross-section with 1.7V:1H side slopes, fully lined with locally sourced riprap for erosion control, long-term stability, and minimisation of sediment release.

The proposed design respects the natural topography, preserving existing drainage patterns and maintaining natural flows within the Shoal Cove and Salt Cove watersheds. Surface water management is illustrated in Figure 2.6-5.

The sediment ponds have been engineered to be cut-to-fill neutral using on-site overburden. If any excavated material is deemed as unsuitable for use (e.g., excessive organics), suitable fill will be sourced from other areas within the Project footprint or from the AGS waste rock stockpiles.

A specialized liner crew will be mobilised to install the high-density polyethylene (HDPE) geomembrane immediately after the sediment ponds are excavated and trimmed. Rip-rap armour (300 mm) will be placed over the liner, sourced from the on-site

blasting/quarrying within the South Ridge. If required, additional material will be trucked in from the existing AGS operation via the Blue Beach Haul Road. The staggered approach ensures the capture and treatment of sediment-laden runoff, effectively minimizing the magnitude and duration of sediment loading on surrounding water bodies. The permanent water management system is intended to be fully commissioned prior to the commencement of significant pit or waste rock disturbance.

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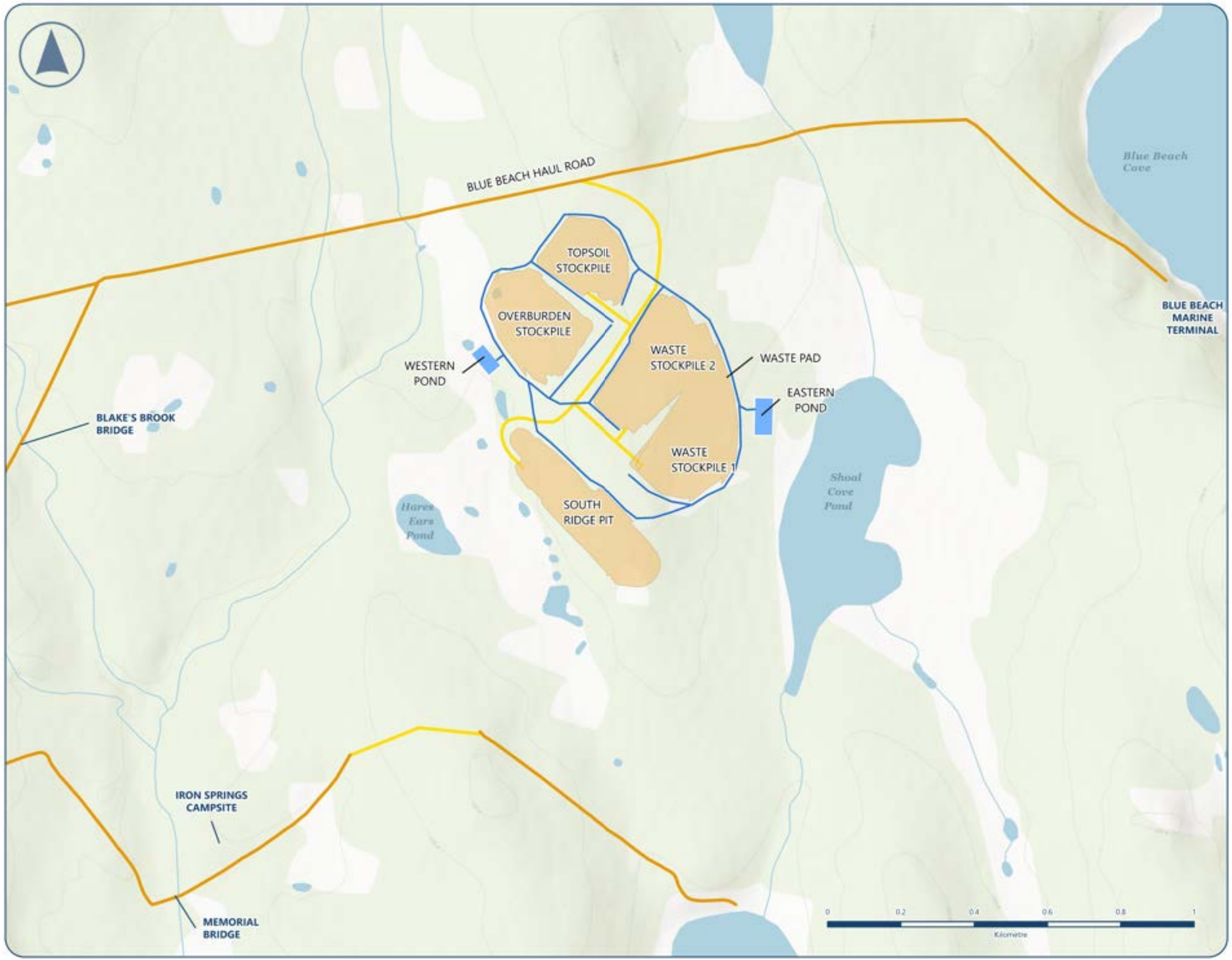
SOUTH RIDGE MINE

FIGURE 2.6-5
SURFACE WATER MANAGEMENT

MARCH, 2026



- Proposed New Road
- Existing Road Upgrades
- Proposed Surface Drainage Ditch
- Proposed Sedimentation Pond
- Proposed Project Infrastructure

Scale: 1:10,000
when printed on 11 by 17 inch paper

FALKIRK

This map and associated spatial data were prepared by Falkirk Environmental Consultant Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express, written consent of Falkirk Environmental Consultant Ltd. Data featured in this map has been derived from a variety of digital sources and, as such, FEC does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: EA_Figures_20260304.aprx, Published to pdf on 2026-02-04 9:30 PM by AndreB.Gomez

2.6.1.2.3 Pit Haul Roads

Construction of the Pit Haul Roads will commence upon completion of the water management infrastructure (diversion ditches and bermed sediment ponds) to ensure all required sedimentation and erosion controls are installed and operational.

The Pit Haul Roads will be constructed utilizing the same methodology as the Connector Road:

- Clearance, grubbing, and stripping of topsoil (stockpiled separately for progressive reclamation);
- Excavation and stockpiling of overburden in designated areas;
- Import of waste rock and sub-base as needed – preferentially sourced from ongoing AGS operations or from new on-site quarries within the South Ridge footprint; and
- Supply of all gravel surfacing material from the existing AGS aggregate plant; if haul distances become unfavourable, the crushing and screening spread can be relocated to the South Ridge area to optimize costs and cycle times.

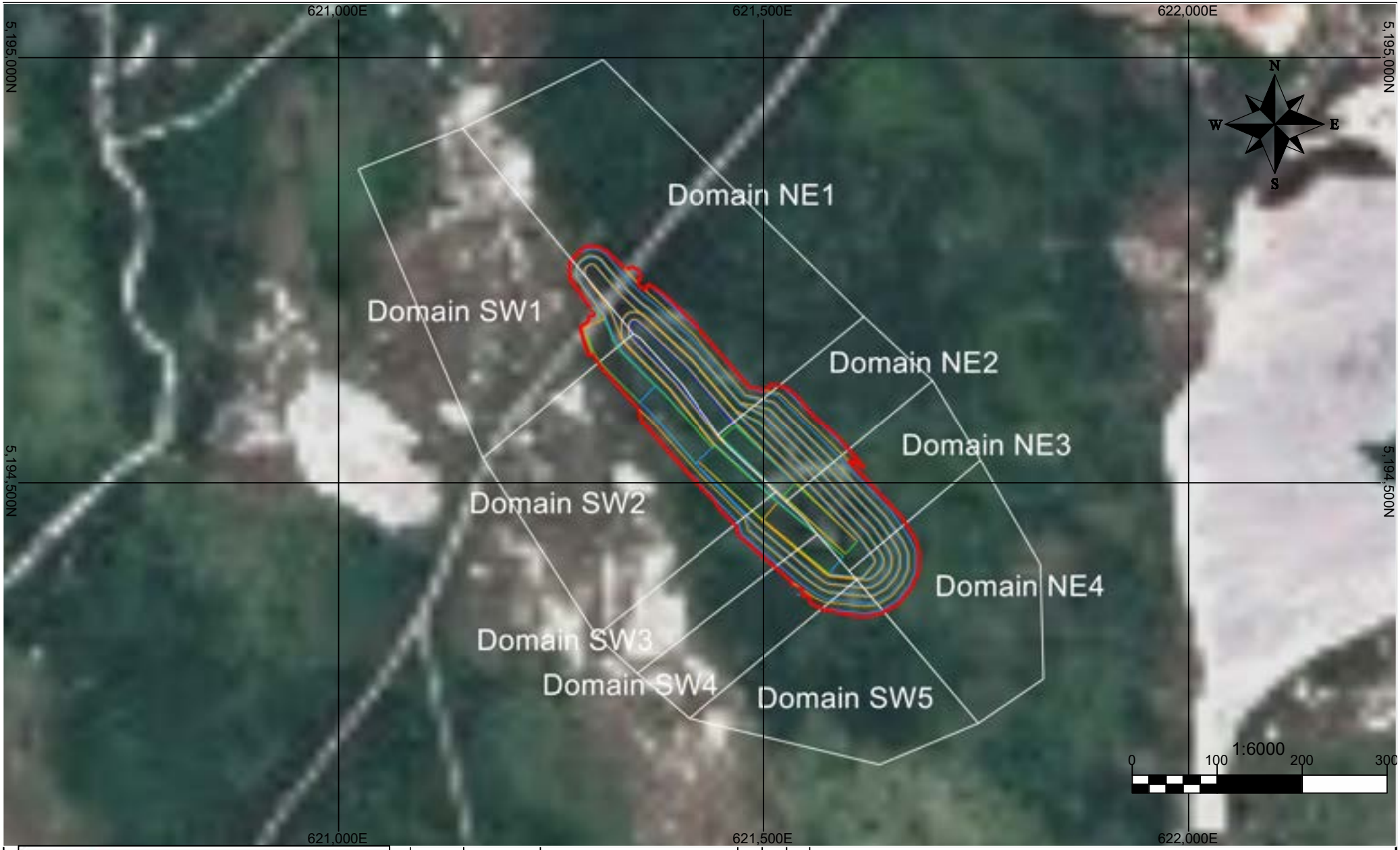
2.6.1.2.4 South Ridge Pit Design

The final pit shell design was determined through an optimization analysis of nested pit shells. The geotechnical design zones for the proposed South Ridge Pit are detailed in Table 2.6-2 below and illustrated in Figure 2.6-6. The final South Ridge Pit design is anticipated to generate 877,495 tonnes of ore and 3,667,691 tonnes of waste materials.

Table 2.6-2: Geotechnical Constraints of the South Ridge Pit

Domain	From	To	Bench Height (m)	Berm Width (m)	Batter Angle (Degrees)
SW1	Surface	1023	10	8	50
	1023	973	20	8	85
SW2	Surface	1023	10	8	50
	1023	973	20	8	85
SW3	Surface	1033	10	8	50
	1033	963	10[1]	8	80
SW4	Surface	1033	10	8	50
	1033	963	20	8	85
SW5	Surface	1033	10	8	50
	1033	963	20	8	60
NE1	Surface	1043	10	8	50
	1043	973	20	8	65
NE2	Surface	1044	10[1]	8	50
	1044	973	10	8	80

Domain	From	To	Bench Height (m)	Berm Width (m)	Batter Angle (Degrees)
NE3	Surface	1043	10[1]	8	80
	1043	963	10	8	80
NE4	Surface	1033	10	8	50
	1033	983	10[1]	8	80
	983	963	10[1]	8	55



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Rev:	Rev. Date:	Description	Drwn	Chkd	Apvd
1	2026-03-10	Initial Draft	Y	Y	Y

Project Title: South Ridge PFS
Project No: 44058_M

Drawing Title:

Figure 2.6-6

South Ridge: Geotechnical Zones

Originator:	Mining One Pty. Ltd
Date Drawn:	10-03-2026
Scale:	1:6000

Figure/Drawing No :-

South Ridge Pit Designs_1

2.6.1.2.5 Stockpile Area Development

Clearing and preparation of the stockpile areas will commence shortly after pit construction begins. The scope of work for stockpile development includes the following:

- Areas will be cleared and grubbed in advance. No merchantable timber is expected, and all woody material will be mulched on site.
- Topsoil stripping will follow with the topsoil stockpile prioritized as the first receptor to ensure all stripped topsoil from overburden, waste rock, ore stockpile, and pit areas are preserved in optimal condition for future reclamation.
- Overburden removal from waste rock stockpile areas will be completed after topsoil stripping is completed. The overburden material will be hauled to the designated overburden stockpile, exposing a competent foundation for stable, long-term waste rock placement.
- The pit and waste rock stockpile footprints are divided into two staged areas:
- Stage 1 – stripped and prepared first to enable waste placement and stockpiling to commence as soon as mining commences.
- Stage 2 – will be developed later in the mine life as additional capacity is required.

This staged approach with prioritization on the topsoil minimizes double handling, protects soil viability, and keeps the critical path focused on efficient ore delivery.

The installation of topsoil, overburden, and waste rock stockpiles will be carried out concurrently with early production activities, enabling efficient material handling from the outset. There will be a planned overlap between initial production ramp-up and the final clearing and development of the stockpile areas.

During construction and operation of the stockpiles, rockfill containment berms and other erosion control measures will be installed as needed to prevent downstream migration of materials.

The South Ridge waste stockpiles are temporary facilities as all waste rock from the open pit will ultimately be processed into construction aggregates and transported to the BBMT for sale to customers. Any remaining waste rock storage will be at AGS WRF as necessary.

The stockpile area has been designed in three components: a foundation pad, plus two dedicated processing stockpiles as shown in Figure 2.6-7 (shown in grey and magenta respectively). Additional topsoil and overburden stockpiles have been incorporated to securely store reclamation materials. The overburden stockpiles and waste rock stockpiles have been intentionally positioned near the pit in order to minimize haul distances.

621000 621500 622000 622500 623000

5195500

5195000

5194500

BLUEBEACH ROAD

TOPSOIL STOCKPILE

OVERBURDEN STOCKPILE

WASTE ROCK DUMP

SOUTH RIDGE PIT

SHOAL POND

BLUEBEACH MARINE TERMINAL

N

0 87.5 175 350 525 700 Meters

Sources: Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, GEBCO, N Robinson, IGN, and the GIS User Community; Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

621000 621500 622000 622500 623000

Survey Date

Drone Imagery: 2025

Base Map: ESRI Imagery

Coordinate System:
NAD 83 / UTM Zone 21 N

Scale: 1:4,986

Legend

- Proposed South Ridge Pit
- Topsoil Stockpile
- Proposed Waste Rock Dump
- OB Dump
- Proposed Haul Road
- Road Edges
- Powerlines

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Prepared by: POD

TITLE

Figure 2.6-7
SOUTH RIDGE GENERAL ARRANGEMENT AND BLUEBEACH

Date: 31-01-2026

Rev 01

CFI_SURVEY_2026_01_31

The foundation pad provides a stable and expansive base capable of supporting two large stockpiles with a capacity of approximately 650,000 m^3 each. The dual stockpile layout allows for continuous operations: while mining equipment actively places waste in one stockpile, the aggregate processing team can concurrently draw material from the other stockpile without interruption. Dedicated access ramps have been positioned on the northeast side of the stockpiles to allow the aggregate team to enter and exit independently of mining equipment.

Summary of the design capacities are presented in Table 2.6-3.

Table 2.6-3: Stockpile Capacities

Location	Capacity (m^3)	Capacity (t)
Topsoil Stockpile	318,627	477,941
Overburden (OB) Stockpile	755,144	1,132,716
Waste Stockpile Pad	345,086	638,409
Waste Stockpile #1	720,520	1,332,962
Waste Stockpile #2	653,785	1,209,502
Worst Case Waste Stockpile	2,025,029	3,746,304

A geotechnical stability analysis has not yet been completed for the South Ridge waste stockpiles. In contrast, comprehensive stability analyses have been finalized for the AGS waste dumps. To ensure conservatism in the absence of site-specific South Ridge data, the South Ridge stockpiles were designed using more stringent parameters than those applied to the AGS dumps. The South Ridge design parameters are presented in Table 2.6-4.

Table 2.6-4: South Ridge Stockpile Design Parameters

Parameter Type	AGS Waste Dumps	South Ridge Waste Stockpiles	Notes
Face/Slope Angle	34°	32°	Lower angle for additional safety margin
Berm Width	12 m	9 m	Reduced width to enhance stability
Lift Height	20 m	10 m	Halved height to reduce risk and facilitate management
Overall Slope Angle	~25°	~22°	Conservative approach pending site-specific analysis

If the aggregate demand is lower than projected, an optional expanded design has been developed to determine the maximum storage capacity of the facility as illustrated in Figure 2.6-8. The combined pad and stockpile layout provide sufficient volume to accommodate all the waste rock generated from the Project with additional contingency capacity included.

621000 621500 622000 622500 623000

5195500

5195000

5194500

BLUEBEACH ROAD

TOPSOIL STOCKPILE

OVERBURDEN STOCKPILE

WASTE ROCK DUMP

SOUTH RIDGE PIT

MINWORTH TAILINGS

SHOAL POND

BLUEBEACH MARINE TERMINAL

N

0 87.5 175 350 525 700 Meters

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, GEBCO, N Robinson, IGN, Kadaster NL, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

621000 621500 622000 622500 623000

Survey Date

Drone Imagery: 2025

Base Map: ESRI Imagery

Coordinate System:
NAD 83 / UTM Zone 21 N

Scale: 1:4,986

Legend

- Proposed South Ridge Pit
- Topsoil Stockpile
- Proposed Waste Rock Dump
- OB Dump
- Proposed Haul Road
- Road Edges
- Powerlines

CFI CANADA FLUORSPAR INC.

Prepared by: POD

TITLE

Figure 2.6-8
SOUTH RIDGE
EXPANDED STOCKPILE DESIGN

Date: 31-01-2026

Rev 01

CFI_SURVEY_2026_01_31

2.6.1.2.6 Pit Dewatering System

Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability. Water from these wells, together with intercepted surface runoff, will be routed via diversion ditches and culverts to the settling ponds for treatment prior to discharge. Key components pertaining to the installation of the pit dewatering system are:

- Drilling and completion will be executed by a specialist water well contractor.
- Each well will be fitted with a high-capacity submersible pump.
- Pump shacks will be delivered on-site as complete, prefabricated, fully insulated units containing pump starters, controls, lighting, heating, and heat-trace power supply and craned into position.
- All above-ground piping sections will be fully heat-traced and insulated to prevent winter freezing.

Site transformers have been sized appropriately to accommodate the additional load from heat tracing. Each pump shack will include the required contractors, thermostats, and control hardware for safe, automated operation of the heat-trace circuits.

Buried HDPE discharge lines will be installed from the wells to the Western and Eastern sediment ponds by the mining contractor's crew. Lines will be placed below frost depth, with any short, exposed sections to be heat-traced and fully insulated.

2.6.1.2.7 Iron Springs Powerline

The overhead powerlines currently crossing Iron Springs Road will be raised and re-routed to accommodate the Caterpillar 777 haul trucks and future pit expansion. Key components of the scope include:

- Installation of taller poles along the revised alignment;
- Re-routing of the main line around the western perimeter of the future open pit; and
- Construction of a spur line to service the future dewatering wells.

All electrical modifications will be completed by an electrical contractor in coordination with Newfoundland Power.

2.6.1.2.8 Memorial Bridge

The existing Memorial Bridge is currently only suitable for foot and ATV traffic. The closure of the Iron Springs Road without an alternative would eliminate vehicular access to the popular recreational and historical sites in the south-eastern portion of the property.

Construction of a new vehicular bridge immediately adjacent to (or in replacement of) the existing structure is required to maintain uninterrupted public access. Installation of a new bridge is scheduled to commence after the completion of the road upgrades from Director Drive to the bridge, to allow for a seamless transition when Iron Springs Road is closed.

2.6.1.2.9 Blake's Brook Bridge

The existing Blake's Brook Bridge needs repairs. The closure of Iron Springs Road would require the Blake's Brook Bridge to be part of the public access route to recreational

areas. This re-routing would increase the traffic this bridge receives. A structural assessment will be conducted to determine the suitability of the bridge for the increase in vehicular traffic. Updates to the existing vehicle bridge may be required to provide continued safe vehicle access to recreational areas for the public. If deemed necessary following the structural assessment, installation of a new/upgraded bridge is scheduled to commence after the completion of the road upgrades to allow for a seamless transition when Iron Springs Road is closed.

2.6.1.2.10 Portable Washroom Facilities

A portable washroom trailer will be placed north of the pit along the waste rock stockpile access road. The unit requires a power connection and periodic water fill/waste pump-out by a local service contractor. Power will initially be supplied by a diesel generator; however, it can be switched to one of the dewatering wells, providing reliable year-round electricity and winter heat.

2.6.1.2.11 Disturbance Areas

The South Ridge site development is expected to cover a total of 58.3 hectares (0.583 km^2): 43.5 ha (0.435 km^2) hectares are associated with the development of the pit, stockpiles, access roads and drainage network; 14.8 (0.148 km^2) hectares are associated with the development of roadways (either the widening of the existing haul road, or the construction of new community connector roads). The area of individual project components and the overall disturbance area totals are provided in Table 2.6-5 shown below. Figure 2.6-2 provides the general arrangement for the South Ridge Project components.

Table 2.6-5: South Ridge Project Component Disturbance Areas

Project Component	Disturbance Area
South Ridge Pit	7.3 ha
Topsoil Stockpile	4.2 ha
Overburden Stockpile	6.1 ha
Waste Rock (Aggregate) Stockpiles	18.3 ha
Pit Haul Roads	4.2 ha
Main Haul Road (widening existing road)	10.2 ha
Bypass and Connector Roads	4.6 ha
Drainage Network	3.4 ha
Total Estimated Project Disturbance	**58.3 ha**

2.6.2 Operations

This section describes the activities for the Operations Phase including blasting, open pit mining, hauling, ore processing, stockpiling, water management, and tailings management.

2.6.2.1 Blasting

Modern blasting techniques will be implemented to mitigate environmental effects. The technique uses an electronic initiation system providing highly accurate, programmable delay timing (adjustable in 0.1 millisecond increments, up to 30 seconds) to best control the sequence and individual blasts. This precise timing allows the blasting to be managed in a way that controls burden movement, maintains ground stability, and minimizes vibration and flyrock. This approach supports more predictable and safer blasting. The systems components feature corrosion resistance and long sleep times that allow deployment in-hole for extended periods and increased resistance to dynamic shock. The precise timing accuracy also contributes to improved fragmentation and reduced downstream impacts by helping limit ground vibration. The technique also offers operational efficiency through the support of large blast patterns along with bench tie-in and remote initiation options that reduce on-bench exposure and allows for reduced blasting frequency. Safety and compliance features include spark-gap protection, bleed resistors, and detonator data logging for analysis further support the Projects ability to meet regulatory compliance by ensuring traceability throughout the blasting process.

2.6.2.2 Open Pit Mining

The Project consists of a single active open pit, supported by a total of four stockpiles. Production from the Project is expected to steadily increase through first six months as stockpile construction is completed and operations ramp up.

Open Pit Mining will operate on 10 m or 20 m benches, with a berm height of 8 m. Batter angle ranges from 50-85 degrees. In some domains bench height cannot be increased to maintain a Factor or Safety (FOS) <1.3. These parameters were coded into the block model for use with the Deswik Pit Design tool.

Mining will occur on two x 12-hour shifts, seven days per week. Material will be excavated using CAT 992 class wheel loaders (105 t) and CAT 395 class excavators (95 t) and moved from within the South Ridge Pit to the various stockpiles using CAT 777 haul trucks. Ore will be rehandled to the AGS Mine mill.

Road designs within South Ridge are tailored specifically to the Caterpillar 777 haul truck. A standard Ramp grade of 10% will be implemented across the site. The haul road specifications (including operating lane, safety berms, and drainage) is summarized in Table 2.6-6 below.

Table 2.6-6: Road Operating Requirements within South Ridge Site

	Value (m)	Notes
Windrow height	2.0	75% tire diameter
Windrow width	4.9	(Windrow height/tan (37 deg i.e. rill angle)) x 2
Drain width	1.0	Assumed drain width
Operating width	6.67	CAT 777
Overall ramp width – single lane	15.95	(Single lane operating safety factor x operating width) + windrow width + drain width

	Value (m)	Notes
Overall ramp width – dual lane	26.2	(Dual lane operating safety factor x operating width) + windrow width + drain width
Selected single lane ramp width	20	Rounded up for conservative approach
Selected dual lane ramp width	26.5	Rounded up for conservative approach

Production from the South Ridge Pit is expected to last 18 months, with production building through months 1 to 7, peaking in months 8 through 13, and ramping down during months 14 through 18.

Table 2.6-7 and Table 2.6-8 detail production rates at the proposed Project, and the proposed Project compared to existing AGS operations, respectively.

Table 2.6-7: South Ridge Production Rates

Material	Average Monthly Material Removed (dry tonnes)	Maximum Monthly Material Removed (dry tonnes)	Total Cumulative Material Removed (dry tonnes)
Ore	51,617	63,384	877,496
Overburden	40,253	209,806	684,305
Waste Rock	215,747	506,478	3,667,692
Total Material Removed	307,617	577,670	5,229,493

Table 2.6-8: South Ridge vs. AGS Production Totals

Parameter	South Ridge	AGS
Ore (tonnes)	877,496	7,118,654
Grade (%)	25.1%	19.7
Waste Material (tonnes)	4,351,996	58,649,916
Total Material Removed (tonnes)	5,229,493	65,768,570
Strip Ratio	5.0	8.2

The Project's optimized pit design is detailed in Figure 2.6-9.

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Rev:	Rev. Date:	Description	Drwn	Chkd	Appd
1	2026-03-10	Initial Draft	Y	Y	Y

Project Title: South Ridge PFS
Project No: 44058_M

Drawing Title:

Figure 2.6-9
South Ridge: Final Pit Design

Originator: Mining One Pty. Ltd
Date Drawn: 10-03-2026
Scale: 1:3500

Figure/Drawing No: -
South Ridge Pit Designs_2

Table 2.6-9: South Ridge Open Pit Mining Inventory (MI Only)

	HG	MG	LG	WASTE	OB	Total
Volume (m³)	148,408	59,804	80,716	1,366,154	378,549	2,033,631
Dry Tonnes	450,726	181,824	244,945	3,667,691	684,306	5,229,494
Diluted CaF2 (%)	35.32	17.47	11.86	0.62	0.39	4.69
Diluted CO3_METH (%)	1.27	1.42	1.12	0.05	0	0.25

2.6.2.3 Hauling

Ore extracted from the pit will be transported approximately 3.5 km to the AGS Mine mill for processing into acid-grade CaF_2 concentrate. The mined ore will be transported from the South Ridge temporary ore stockpile (to be located on top of the overburden and/or topsoil stockpile(s)) to the AGS Mine mill using standard on-highway semi trucks hauling a custom-built tipper trailer. SmithCo Tipper trailers will be custom built design based on the Western Star 6900XD prime mover coupled with a SmithCo 75 t payload side-dump trailer built for off-road use. Design features include tubs designed to dump over barriers, berms, or into crusher chutes, long-haul mine-rated tires and suspension, and heavy frames designed for loading and unloading. All overburden, topsoil, and waste rock will be hauled directly to their respective waste and reclamation stockpiles using the same Cat 777 haul truck fleet.

2.6.2.4 Ore Crushing

Ore crushing and processing will be conducted at existing AGS facilities. Ore will be hauled from the open pit and stockpiled at the run-of-mine (ROM) pad. The ore is reclaimed from the stockpile in a pre-determined blend, based on head grade and minerology, and fed directly to the ROM bin. The vibrating grizzly feeder draws from the bin. Undersize material passes through the vibrating grizzly feeder while oversize ore is fed to the jaw crusher. The vibrating grizzly feeder bypass and jaw crusher discharge are combined with the discharge from both the secondary and tertiary cone crushers and all to a double deck vibrating screen. Oversize from the top deck is fed to the secondary crusher while oversize from the lower deck is fed to the tertiary crusher. Undersize product is conveyed to the fine ore stockpile.

Figure 2.6-10 depicts the conventional flotation circuit used at AGS to produce high-purity acid-grade fluorspar concentrate.

To account for shared use of the AGS crusher with ore from the existing AGS operation, South Ridge ore feed will be limited to ~65 % of total crusher capacity.

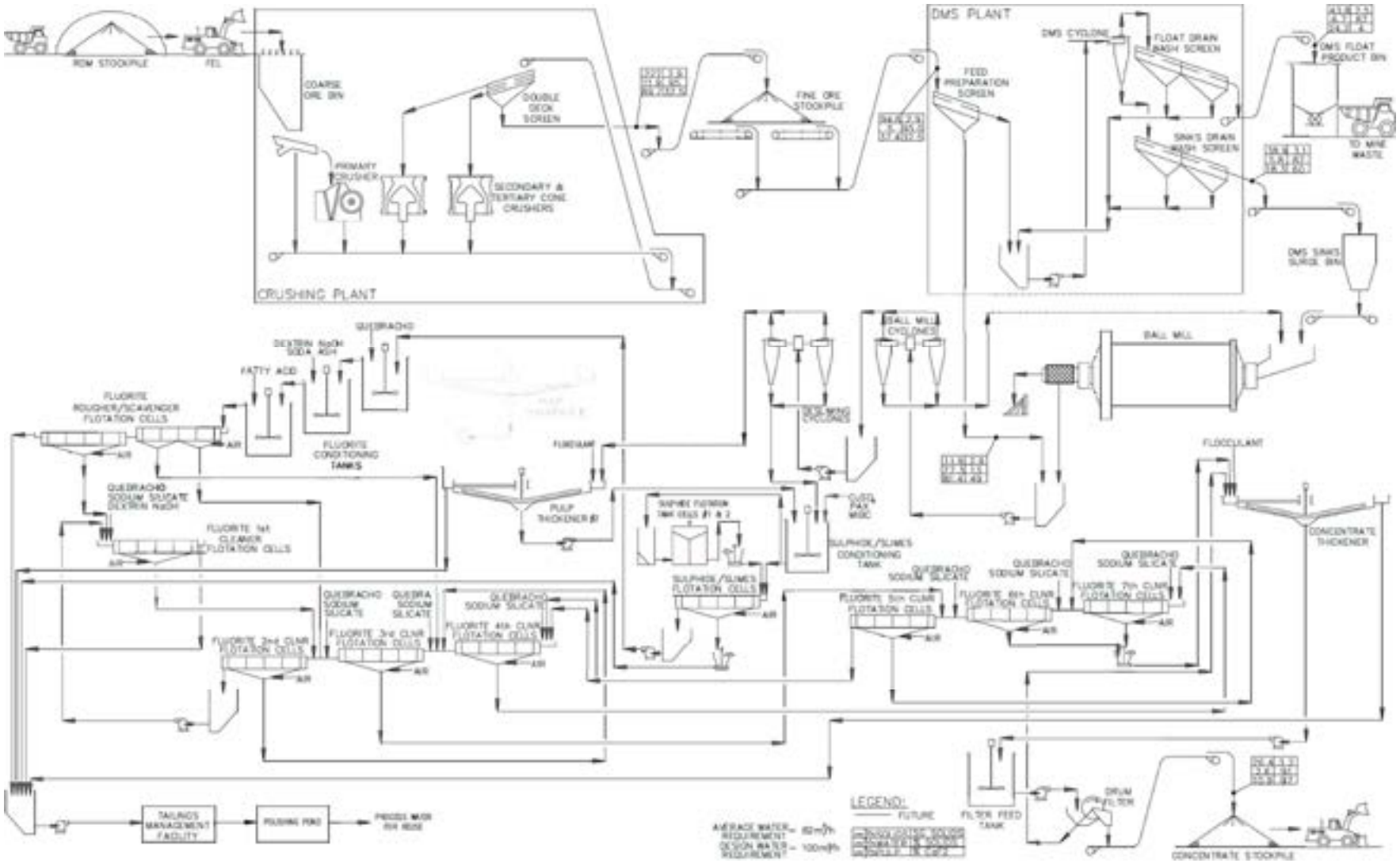


Figure 2.6-10: AGS Flowsheet

2.6.2.5 *Stockpiling*

Waste rock generated during mining operations will be deposited into two designated stockpile areas. Waste rock produced at the South Ridge site is expected to be of sufficiently high quality that it can be crushed, screened/sorted, and used as construction aggregate to support development of the South Ridge project infrastructure; surplus material will be removed from site and sold.

The stockpile area has been designed in three stages, a foundation pad (shown in grey) plus two dedicated processing stockpiles (shown in magenta) Figure 2.6-7. Overburden and topsoil will be stockpiled separately, adjacent to the waste rock stockpiles; this material will be used to conduct conventional reclamation activities at the South Ridge site following completion of operations, with surplus material to be reserved to support future conventional reclamation activities at the AGS Mine site. A temporary ore stockpile will be located on top of the overburden and/or topsoil stockpile(s); this stockpile will act as the transfer point where ore will be deposited and subsequently loaded and hauled to the AGS Mine mill.

Upon completion of final ore extraction, South Ridge pit operations will cease. At that point, the remaining waste rock stockpiles will continue to be processed and sold as aggregate until all waste material has been removed from the site.

2.6.2.6 *Processing Plant*

The AGS processing plant consists of crushing and grinding followed by dense media separation and flotation. The concentrator is designed to produce an acid-grade fluorspar with a purity of 97.5% CaF_2. Since AGS operations began, several improvements have been made to the process plant to improve both reliability and recoveries. Ore extracted from the Project will be processed at the existing AGS mill using the process described below.

The AGS mill has a processing capacity of up to 250,000 tonnes per year of acid-grade fluorspar concentrate. The mill consists of the following sections:

- Crushing to nominal -13 mm
- Dense Medium Separation
- Grinding to 80% passing 116 µm
- Sulphide flotation
- Pulp Thickening and Conditioning
- CaF_2 Flotation
- Concentrate Thickening and Filtration
- Tailings
- Reagent preparation and handling systems

The mill is supported by ancillary infrastructure including:

- Assay/Metallurgical Laboratory
- Reagent Storage
- Concentrate Storage
- Mill Offices/Dry Building

The mill flow sheet is illustrated in Figure 2.6-10 as updated in 2024 based on current configuration of the processing plant flow.

The Project will supply ore in place of lower-grade AGS feed on a tonne-for-tonne basis. Consequently, no increase in milling throughput is required, and the Project introduces no additional process-water demand.

The processed concentrate will then be shipped via the BBMT. Total material extracted from the Project is equivalent to 8.6% of the material planned to be extracted from AGS.

2.6.2.7 Freshwater Intake

There will be no freshwater intake at the Project site. All processing activities will be conducted at the existing AGS processing facility. Fresh water intake required for processing is part of existing AGS infrastructure described below.

The majority of process water used at AGS is recycled from the TMF Polishing Pond (>70-80%). Raw water required for mineral processing, gland sealing water, and potable water supply is sourced from the Tarefare Shaft (Tarefare Water Intake).

Raw water is stored in dedicated tanks and pumped throughout the process plant for general operational use. A separate gland seal water pump pressurizes a ring main that supplies sealing water to pumps and agitators. For potable needs, fresh water is transferred via a potable water pump to the on-site treatment plant, where it is treated, stored in a dedicated tank, and then pressurized by a potable water supply pump for distribution through the potable water ring main.

Water for industrial and office use is drawn from nearby ponds and Tarefare Shaft. Bottled water and large containers are also provided to supplement potable water requirements for personnel.

A firewater tank is located next to the process water tank where fire pumps withdraw water for the system. The system includes a primary diesel pump and a jockey pump. The header system provides firewater solely to the process plant.

2.6.2.8 Water Management

Knight Piésold Ltd. completed a site wide water management plan and water balance for the AGS Mine. The site wide water management strategy for the AGS Mine (to be amended to include South Ridge) focuses on the following objectives:

- Ensure all discharge complies with the site water quality objectives (Schedule A and the Certificate of Approval) (Government of Newfoundland and Labrador, 2003 and 2016),
- Provide sufficient water to support milling operations,
- Minimize impacts on the surrounding watersheds, and
- Provide flexibility and allow for future adaptation to actual conditions.

The TMF (including the Tailings Impoundment and the Polishing Pond) is described in detail in the St. Lawrence Fluorspar Project Mine Development Plan (MDP).

All non-contact water (runoff from clean overburden, undisturbed areas, revegetated areas) will be diverted away from work areas to the maximum practical extent. Potentially

impacted water (from the tailings and process, open pit workings, waste rock facility, Mill Site, and ore stockpiles) will be collected, monitored, and released to the environment once it is demonstrated the water meets the water quality objectives. All contact runoff from significantly disturbed project areas will be routed through sediment ponds that allow for flocculant and geo bag treatment prior to discharge to the environment.

The water containment ditch will collect surface water from the collection area north of the pit which feeds the sediment pond. Ditching will collect surface water from the waste and reclamation stockpile areas and divert them into the sediment pond. The pit sump will also feed up into the sediment ponds. The sediment ponds provide storage and treatment capacity for the Q_{10} storm runoff (approximately 1.05 m³/s peak inflow – West and 1.85 m^3/s peak inflow – East) from its contributing catchment, in addition to the daily pumped/dewatering volume of 1,500 m³/day. Water from the sediment ponds will be monitored and discharged into Salt Cove and Shoal Cove. The dewatering wells are closest to Shoal Cove Pond so this would be the most practical location to discharge fresh water.

A Water Management Plan will be prepared for the Project as an amendment to the existing AGS Water Management Plan. This plan will detail the use and flow of water through and around the Project during all project phases and the mitigation measures to be implemented to maintain water quality and quantity within each watershed.

The existing Water Management Plan was developed in consultation with the Water Resources Management Division of NL and revisions will be similarly developed to ensure that the goals, objectives, and outcomes of the plan satisfy all parties.

2.6.2.9 Tailings Management

The AGS East TMF will receive tailings generated from the Project. The AGS East TMF was designed and constructed to industry standard Canadian Dam Association (CDA) Dam Safety Guidelines (CDA 2013) and inclusion of the revised criteria presented in (CDA 2014). The objective of the design is to protect groundwater and surface water during both operations and long term (post-closure). The design supports safe and efficient tailings storage and effluent management during operations and allows for efficient rehabilitation upon mine closure.

The TMF features a geomembrane-lined rockfill embankment, constructed using rockfill sourced from open-pit operations. The geomembrane is anchored into dense silty sand and gravel till foundation soils to minimize seepage. A full basin liner is not required, based on favorable geochemical test results for tailings. Embankment specifications include crest width of 15 m, with upstream and downstream slopes of 2H:1V, and a minimum freeboard of 2 m.

DMS rejects are sold as aggregate where possible, or used for road construction on-site, and otherwise deposited with the waste rock in the South WRF. Flotation tailings are deposited in the AGS East TMF around the perimeter along the embankment. The process of tailings deposition follows the TMF Operations, Maintenance, and Surveillance Manual as developed by the Engineer of Record.

Should the AGS East TMF reach design capacity, there is potential to further increase the capacity of the AGS East TMF as part of a third raise. CFI will complete the necessary technical studies and regulatory permitting to support any required amendments. The TMF was constructed to store up to 2,100,000 tonnes at a settled density of 1.1 tonnes/m^3 based on preliminary settling tests. Additional tailings setting tests were completed in 2024 which provided a revised settled density of 1.45 tonnes/m^3. The TMF has capacity available to store a normal operating pond volume of 100,000 m^3.

2.6.2.10 Site Roads and Highway Access.

The Project will be accessed via the existing Blue Beach Haul Road, which connects the South Ridge area directly to the AGS processing facility.

2.6.2.11 Support Infrastructure and Communications

Electrical supply will be provided as described in Section 2.4.1 with upgrades as described in Section 2.6.1.1.1.

The South Ridge Project area benefits from established utility and communication infrastructure already in place to support AGS, eliminating the need for new investment in services. Existing power infrastructure to AGS is supplied via a 25 kV transmission line connected to the Newfoundland Power provincial grid, supported by the 8 MW Bay d'Espoir hydroelectric plant and the 27 MW St. Lawrence Wind Project, ensuring reliable energy. No additional power capacity is required for the Project. Dewatering at the Project will be powered by a 15 kV line currently crossing the pit via Iron Springs Road; this line will be rerouted around the pit, with a spur extended to supply the dewatering pumps.

Standard two-way handheld radios provide an effective range of 3–8 km, depending on terrain and line-of-sight conditions. Given the 3.5 km direct line-of-sight distance from the AGS to the Project area, the existing radio network ensures reliable coverage across both operations.

2.6.3 Closure

Once the operation phase of the mine has ended, the facilities will be properly closed, and rehabilitative measures will be taken to ensure that the site and surrounding areas are returned to an environmentally appropriate condition. This section outlines the basic elements of the proposed Rehabilitation and Closure Plan, which is designed to restore, to an acceptable state, the biological, chemical, and physical quality of the environment that may have been affected by the Project.

In keeping with its Environmental Health and Safety Policy, CFI is committed to progressive rehabilitation during the Operation phase. Progressive rehabilitation will form an integral part of the operating plan and will be implemented progressively over the life of the Project. Rehabilitation planning will begin prior to construction when considerations such as delineating and limiting the area of disturbance are incorporated into construction planning. Progressive rehabilitation will be implemented as components or phases of the Project have concluded. For example, at any phase of the Project, disturbed areas no longer required will be reclaimed and revegetated.

A Rehabilitation and Closure Plan will be prepared and submitted to the Government of NL under the Newfoundland and Labrador Mining Act. The plan will meet regulatory requirements for rehabilitation and will include closure and rehabilitation of the infrastructure at the AGS Mine Site, Mill Site, TMF, Marine Terminal, quarries and borrow sources, and South Ridge. The rehabilitative measures have generally been developed at a conceptual level for the purpose of the prefeasibility study and this EA Registration. The closure plan will evolve through subsequent Project phases, becoming more detailed as the environmental monitoring database is built-up, enabling refinement of the technical basis for the closure design. The plan will include methods for progressive rehabilitation activities to be implemented during all Project phases, when disturbed areas are no longer required.

Decommissioning, closure, and rehabilitation work is anticipated to take up to two years followed by post-closure monitoring activities. The exact length of the monitoring period will be determined at decommissioning and following an assessment of the site, in consultation with the appropriate regulatory authorities.

Specific objectives of the Rehabilitation and Closure Plan are:

- Restoration of disturbed slopes to a stable and safe condition, which will protect public health and safety;
- Reduction or elimination of potential adverse environmental effects associated with each phase of the Project;
- Re-establishment of conditions that permit a comparable land use of the Project area, to that which existed prior to the Project; and
- Reduction of the need for long-term monitoring and maintenance by establishing, as quickly as practical, effective physical and chemical stability of disturbed areas, including revegetation.

The decommissioning principles that will guide the overall development and implementation of these objectives include:

- Establishing adequate background information to determine the extent and type of adverse effects resulting from the Project, if present;
- Developing effective strategies and techniques for conducting reclamation; and
- Conducting audits of procedures and documentation of results to satisfy regulatory and corporate requirements.

The preliminary closure plan for the Project is described below.

2.6.3.1 Roads

Haul roads will be decommissioned and rehabilitated by scarifying the road surface, covering with overburden and topsoil, then re-seeding to establish vegetation regrowth and provide erosion control.

The main haul road will be retained and repurposed for ongoing use as a dedicated port haulage route from the primary processing plant to BBMT.

Southern access roads will remain in place and open for continued public use following site closure. South of the pit area will be opened to provide access for post-closure monitoring.

2.6.3.2 Waste Rock Piles

As successfully implemented at AGS, waste rock will be processed into saleable aggregate and transported to BBMT for shipment. Once depleted, the waste rock stockpile areas will be capped with 0.5 m of overburden and 0.3 m of topsoil, then seeded (with native seed where possible) to establish vegetation cover.

In the event of delays to the sales plan or if the waste rock proves unsuitable for aggregate markets, the two stockpiles will be consolidated into a single facility to provide adequate storage capacity for all waste generated from the South Ridge pit. At closure, the combined stockpile would be reclaimed to a 20-degree slope angle, which is suitable for effective revegetation. Access ramps would be reduced to approximately 20 m wide (sufficient for light vehicle access and ongoing monitoring), while preserving the potential for future aggregate processing if opportunities arise. The final small footprint would then receive the same cover treatment of 0.5 m overburden, 0.3 m topsoil, and native seeding.

2.6.3.3 Overburden Stockpile

The overburden stockpile will be partially utilized for future site reclamation efforts (e.g. AGS). Any surplus material will be covered with topsoil and seeded to promote vegetative growth and preserved for future reclamation as needed.

Topsoil will be seeded and stored to ensure availability for ongoing and future reclamation activities across the St. Lawrence Fluorspar Project.

2.6.3.4 Satellite Pit

The primary closure objectives for the South Ridge open pit are to ensure long-term physical stability, public safety, and that any water discharging from the pit meets applicable water quality criteria while being conveyed through stable, engineered channels designed to the required post-closure standards.

Upon cessation of mining, the South Ridge Pit will be flooded to create the South Ridge Pond. An engineered spillway channel will be constructed to maintain the final flood elevation and safely direct overflow into the Salt Cove Brook watershed. A safety berm, fencing, and appropriate signage will be installed around the perimeter to prevent access. The existing pit ramp will be retained as an emergency egress route in the unlikely event of inadvertent access during active closure and post-closure.

CFI has the intention to explore the potential for South Ridge pit to act as a portal to a future underground development underneath and adjacent to legacy underground workings in the area. If underground development is found to be feasible, the pit can be dewatered and developed into an underground access portal to support underground exploration and mining activities.

Final highwalls on the north and south-eastern sides will range from 10 m to 25 m in height, consistent with current pit design and surrounding topography. These walls will be left in a geotechnically stable condition.

2.6.3.5 *Sediment Ponds and Ditching*

All ditches and sediment ponds will be drained, breached, and regraded to stable form to restore natural drainage patterns and blend with surrounding topography. Prior to liner removal and regrading, accumulated sediments will be sampled. Sediments meeting Environmental Control Water and Sewage Regulations, (2003) and the CCME Canadian Sediment Quality Guidelines (2016) and provincial land-use criteria will be incorporated into reclamation. Any sediments exceeding guidelines will be excavated and transported to a licensed disposal facility. Geomembrane liners, pumps, pipelines, and associated equipment will be removed and disposed of by a certified contractor at an approved, licensed landfill.

Once areas are stabilized, the regraded surfaces will be covered with stockpiled topsoil and seeded with native vegetation to promote re-establishment of cover.

2.6.3.6 *Infrastructure*

The washroom trailer will be removed upon completion of operations and either reused on another project or disposed of at a licensed facility.

Dewatering wells and related infrastructure including the powerline spur will remain in place to support potential future underground operations. If future operations do not proceed, the wells will then be rehabilitated and capped in accordance with regulatory requirements, and the powerline spur disconnected and removed. Pump shacks, dewatering pipelines, and ancillary equipment will be dismantled and either reused, recycled, or disposed of at a licensed facility. Based on the intended TMF schedule, closure of the TMF will occur outside the timeline of the Project and therefore no closure considerations are within the scope of this application.

In both cases, the disturbed footprints will be graded and contoured to align with the surrounding topography. Stockpiled overburden and topsoil will be spread over the area, followed by seeding with native species if available to promote rapid revegetation and restoration of the landscape.

2.7 Project Equipment Requirements

Minimal new equipment is required for the Project, and the majority will be relocated from the AGS mine. Equipment required for the project includes haul trucks, drills, excavator, and loaders. Figure 2.7-1 provides a summary of the equipment numbers currently planned for the Project during early works construction and operation.

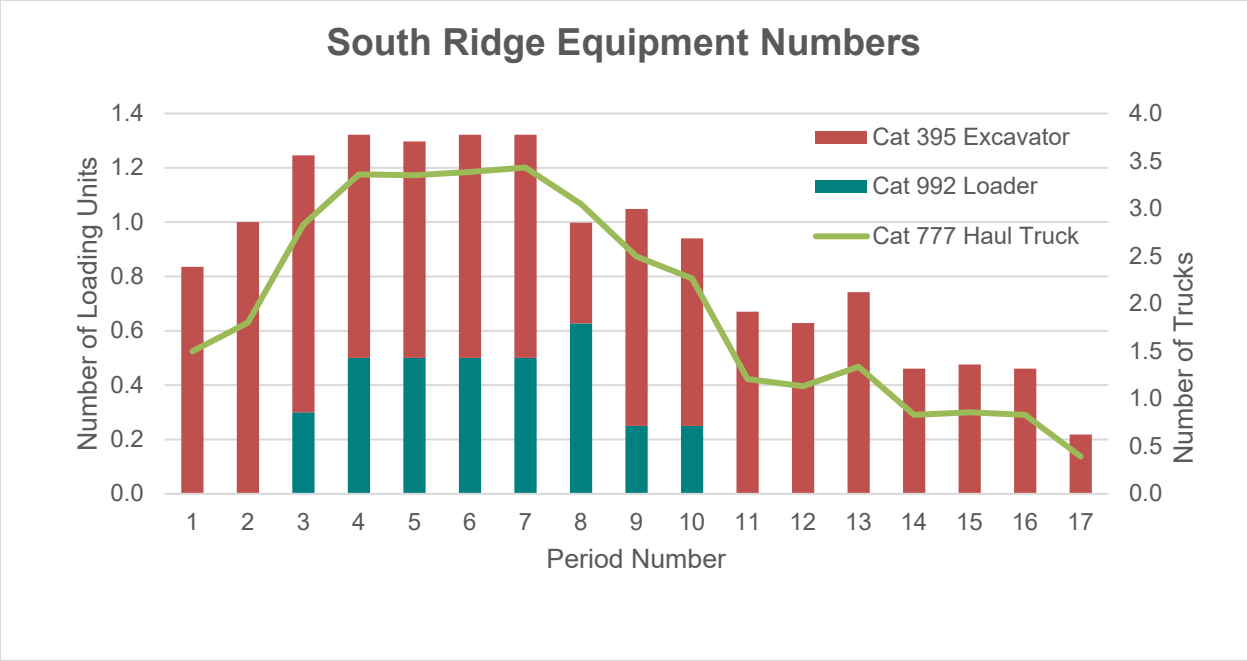


Figure 2.7-1: Equipment Needs

2.8 Employment and Workforce Development

Development of the Project and the provision of ore from the Project to the AGS mill is intended to support continued operations at AGS and to reduce the risk of layoffs associated with insufficient ore supply. While the Project does not involve direct hiring by CFI, it is expected to support employment continuity by maintaining mill throughput and operational stability.

2.8.1 Construction, Restart, and Commissioning

During the restart, commissioning, and early production phases, the majority of employment will be provided though mining contractors. These roles will support mining, hauling, drilling, blasting, and related operational activities. CFI will prioritize the use of local and Canadian contractors, where feasible, consistent with its commitments under the Impact Benefits Agreement. Based on current workforce planning, the Project is expected to support approximately 35 full-time contractor positions during steady-state operations. These positions will be employed by the mining contractor and are expected to remain relatively stable as the Project transitions into production.

2.8.2 Operations and Production Ramp-Up (CFI Direct Employment)

As the Project advances into sustained production, CFI's ramp-up plan anticipates a measured increase in direct employment associated with owner-operator functions. These roles are distinct from contractor-provided mining services and are required to support long-term operational oversight, compliance, and integration with the AGS mill.

During the production ramp-up period, CFI anticipates creating approximately 5–10 additional direct positions, phased in over time in alignment with operational readiness and production milestones. These roles are expected to include, but are not limited to:

- mine planning and technical services
- environmental monitoring and regulatory compliance
- health, safety, and risk management
- operations coordination and administrative support

CFI's approach to direct workforce growth is intentionally conservative and reflects the integration of contractor-operated mining activities with CFI's existing organizational structure, avoiding duplication of roles while ensuring adequate internal capacity to support safe and compliant operations.

In addition, up to 10 personnel may be transferred from AGS to the Project site, as operationally required, to support coordination between mining and milling activities. These transfers are intended to maintain employment continuity for existing AGS employees while supporting efficient Project execution.

2.8.3 Local Employment and Workforce Development

CFI is committed to maximizing local and provincial benefits associated with the Project. This includes encouraging its mining contractor to prioritize the recruitment of locally and provincially qualified candidates where feasible, as well as supporting training and skills development initiatives that align with Project needs and long-term employment opportunities.

As of 2025, CFI employs 106 personnel, of which approximately 13% are women, reflecting the current workforce composition across operational, administrative, and support functions associated with the St. Lawrence Fluorspar Project.

2.8.4 Gender Equity, Diversity, and Inclusion

CFI's employment and workforce development approach for the Project is guided by its Gender Equity, Diversity, and Inclusion Plan (GEDIP), updated in January 2026. The GEDIP establishes aspirational workforce targets of 20–25% women and 5–8% Indigenous participation for a fully ramped operation, informed by provincial labour force availability, operational requirements, and long-term workforce planning.

CFI will continue to align its recruitment, retention, and workforce development practices with the principles of the January 2026 GEDIP. This includes encouraging contractors, where practicable, to adopt inclusive hiring practices and to support increased participation of women and other under-represented groups in traditionally male-dominated roles.

CFI recognizes that workforce composition and operational needs evolve over time and will continue to review and refine its employment practices as the Project progresses.

2.8.5 Occupational Requirements

Table 2.8-1 outlines the estimated personnel requirements by occupation during construction and operations, based on the National Occupational Classification (NOC)

2021 system (Statistics Canada, 2021). These estimates reflect the anticipated contractor-based workforce required to support the Project and are consistent with the overall employment levels described above.

Other indirect employment generated by the Project, including employment associated with supply chains and service providers, is described further in Section 6.11 (Economic Assessment).

Table 2.8-1 provides the estimated full-time personnel requirements during the construction and operations periods by type of occupation based on National Occupational Classification code (Statistics Canda 2021).

Table 2.8-1: Skills and Labour Requirements by Project Phase

Position	Construction Requirements	Operations Requirements	National Occupational Classification 2021
Excavator Operator	3	3	73400
Grader Operator	3	3	73400
Dozer Operator	3	3	73400
Truck Operator	12	12	73300
Drill Operator	6	6	73402
Blasting Operator	6	6	73402
Loader Operator	3	3	73400
Supervisor	3	3	7202
General Labourer	6	6	75110
Service Personnel/Mechanics	9	9	72401
Multiskilled Operators	2	2	73400

2.9 Capital Cost and Funding

The capital expenditure for the Project is estimated to be between CAD $8 million and CAD $12 million. Capital cost estimates are conceptual and reflect the current Project design, construction methods, and market conditions. These estimates will continue to be refined as the Project advances and further detailed studies are complete.

The Project will be funded by CFI. CFI has the financial capacity to advance the Project in compliance with all regulatory requirements throughout construction, operations, and closure. Financial assurance or security, as required will be provided as part of the RCP which will be amended to include the Project.

2.10 Emissions Discharge and Waste

Project activities will generate emissions, effluents, discharges, and wastes. These will be minimized through the application of best available control technologies (BACT) incorporated during project design, and through the implementation of industry-standard

best management practices during the construction and operation phases. Mitigation and environmental management measures standard for the Project are outlined in Section 2.12 of this document. Additional valued component (VC) specific mitigation measures are outlined in the applicable VC sections (Section 6).

2.10.1 Air Emissions

Air contaminants may be generated during all Project phases, primarily from equipment operation, fuel combustion, blasting, and fugitive dust from materials handling. Emissions during decommissioning and closure are expected to be comparable or lower than those during construction and operation. Project-related air contaminants, when considered alongside background concentrations, are not anticipated to exceed applicable provincial or federal air quality objectives. Further discussion of potential Project effects on the atmospheric environment are discussed in Section 6.2 (Air Quality).

Greenhouse gas (GHG) emissions will primarily result from diesel combustion in mobile equipment during construction and operations, with smaller contributions from propane use and blasting. Indirect GHG emissions are also expected to arise from offsite electricity generation and the transportation of materials and supplies to site. GHG emissions will also occur during decommissioning, rehabilitation, and closure, but are expected to be lower due to reduced activity levels of mobile equipment.

2.10.2 Noise

Construction is expected to generate noise from the operation of heavy mobile equipment for earthworks, handling of ore, waste rock, and overburden, as well as hauling of aggregate to BBMT. Noise will also result from blasting during construction and operations. Blasting is expected to be limited to daytime hours and will follow management practices outlined in guidance documents, such as the Blasters Handbook (International Society of Explosives Engineers, 2016).

Throughout the operations phase, material handling and some heavy truck traffic will increase in proportion to an increase in production levels. During operation, there will also be blasting, rock breaking, and crushing. Crushing is part of ongoing noise associated with the existing process mill at AGS. Noise generated during the decommissioning of the pit closure rehabilitation is predicted to be less than that during construction and operation. CFI will conduct detailed noise modelling prior to construction. Further discussion of potential noise effects from the Project are discussed in Section 6.3 (Noise and Vibration).

2.10.3 Effluent Management

Sources of effluent include the TMF (part of existing infrastructure), contact water, and grey water. The assessment of Project-related effects on surface water, including proposed mitigation measures and effects is provided in in Section 6.5 (Surface Water Quality). Water quantity and quality modelling and assessment will be completed prior to the submission of EA Registration doc. A portable washroom trailer will be installed at the Project site. Grey water and sewage from portable washroom facilities will be collected in above ground storage containers. Wastes will be transported by a provincially licensed company to an approved facility.

2.10.4 Acid Rock Drainage (ARD) Management

Ore, overburden, and tailings are classified as non-Potentially Acid Generating (NPAG) and do not require ARD management per characterization provided in Section 6.5.

Low fraction (less than 4%) of mine rock samples conservatively classified as Potentially Acid Generating (PAG) indicate that risk of ARD is low. This low risk can be further reduced through mixing with NPAG rock, which has excess neutralization potential. This mixing will occur as part of normal mining activities during blasting, excavation, and stockpiling.

Contact water monitoring data from several operating and historical fluorite mines in the St. Lawrence area show no indications of acid drainage supporting overall risk of ARD associated with the project.

2.10.5 Solid and Hazardous Waste Management

The Waste Management Plan (WMP) establishes consistent and efficient roles and responsibilities to be undertaken by various site personnel and site contractors. The foundation of the WMP is based on the regulatory framework for industrial waste management in NL, including legislation, regulations, and guidelines at the federal, provincial, and municipal levels. Wastes generated during the operation and closure of the Project is/will be temporarily placed in suitable refuse containers located within a designated waste management area. Wastes generated at the project site will be collected, segregated, labeled, and temporarily stored until transported for reuse, recycling, or disposal. A licensed waste contractor will be selected for liquid waste disposal services, hazardous waste removal, and non-hazardous waste removal. Waste is picked up by a licenced contractor and disposed of at a facility that is permitted to receive the waste type.

Table 2.10-1: Waste Types and Disposal Methods

Category	Waste Type	Waste Origin	Disposal Method
Solid Domestic Waste	Solid Domestic Waste	Office/Lunchroom	Landfill
	Beverage Containers	Office/Lunchroom	Recycling
	Corrugated Cardboard and Paper	Offices	Recycling where possible or approved off-site landfill
	Printer and Copier Toner Cartridges	Offices	Recycling where possible or approved off-site landfill

Category	Waste Type	Waste Origin	Disposal Method
Inert Solid Waste	Conveyor Belts and Tires	Process plant and maintenance shop	Recycled where possible or approved off-site C&D landfill
	Vehicles, Equipment and Machinery	Equipment Operations	Licensed metals contractor to haul to metals recycling facility
	Metals	Mine, process plant, maintenance shop	Metals recycling where possible or C&D landfill
Hazardous Waste	Petroleum Waste Stream	Maintenance shop	Removal by Qualified Contractor
	Chemical Waste Stream	Maintenance shop	Removal by Qualified Contractor
	Sewage/Human Waste	Washroom Trailer	Removal by Qualified Contractor

2.11 Environmental Approvals, Authorizations, and Permits

The Project is supported under the existing Mineral Working zoning and established provincial mining leases. This zoning streamlines regulatory approvals for the Project. The Project is potentially subject to several additional approvals, authorizations, and permits following EA release, summarized in Table 2.11-1.

Table 2.11-1: Provincial and Federal Environmental Approvals, Authorizations, and Permits Potentially Required for the Project

Permit, Approval or Authorization	Required for Project	Issuing/Approval Agency
Provincial		
Release from Environmental Assessment	Yes	NLECCC – Minister
Environmental Protection Plan	Update Required	
Permit to Alter a Body of Water	Yes	NLECCC – Water Resources Management Division
Water Use Authorization (License)	Update as Required	
Environmental Approval of Culverts	Yes	
Certificate of Approval for Site Drainage	Yes	

Permit, Approval or Authorization	Required for Project	Issuing/Approval Agency
Approval for Storage and Handling of Gasoline and Associated Products (Fuel Storage Tank Registration)	Not Applicable	NLECCC
Certificate of Approval - Construction	Update Required	NLECCC – Pollution Prevention Division
Certificate of Approval - Operations	Update Required	
Approval of Environmental Contingency Plan/Emergency Spill Response Plan	Update Required	
Environmental Effects and Monitoring Plan	Update Required	NLECCC – Environment, Conservation and Climate Change
Approval of Best Available Control Technology (BACT) Plan	Update Required	
Surface Lease	Update Required	Department of Energy and Mines Mineral Lands Division
Mining Lease	Update Required	
Notice for Planned Mine	Update Required	
Development and Operational Plan	Update Required	
Rehabilitation and Closure Plan	Update Required	
Financial Assurance	Update Required	
Quarry Development Permit	As Required	
Mill License	Update as Required	
Commercial Cutting/Operating Permit	Update Required	Department of Forestry, Agriculture and Lands Forestry Services Branch
Permit to Burn	Update Required	Department of Fisheries, Forestry and Agriculture Forestry Services Branch
Permit to Control Nuisance Animals	As Required	Department of Fisheries, Forestry and Agriculture - Wildlife Division
Compliance Standard	Update as Required	Tourism, Culture and Recreation *Historic Resources Act*

Permit, Approval or Authorization	Required for Project	Issuing/Approval Agency
Federal		
Fisheries Act Authorization	Updated or new authorization may be required	Department of Fisheries Canada
Nuclear Substance and Radiation Device License	As Required	Canadian Nuclear Safety Commission
License to Store, Manufacture, or Handle Explosives (Magazine License)	Update Required	Natural Resources Canada
Municipal		
Demolition Permit	Update Required	Town of St. Lawrence
Site Development Permit	Update Required	Town of St. Lawrence

2.12 Environmental Management

The environmental management practices and mitigation measures for the Project are presented in the EPP and will be used for guidance in Project operation and maintenance activities. The EPP conditions will be reviewed, and an addendum will be created to include the South Ridge Project.

2.12.1 Standard Mitigations

Mitigation measures are required for each phase of the Project to properly address potential environmental effects either from routine activities or from potential accident scenarios. Mitigation measures may include standard management practices as well as VC-specific measures to address VC-specific issues or planned environmental management and response measures. The current EPP for AGS Mine (Appendix 2-6) includes the following standard mitigations which will be expanded to include the Project:

Table 2.12-1: Standard Mitigations

Activity	Mitigation	Environmental Receptor	Reference
Clearing of Vegetation	Erosion controls, revegetation plan	Terrestrial habitat, flora and fauna, soil	EPP June 2017, Section D.1, D.5, D.8
Grubbing, Stripping and Disposal of Related Debris	Stockpiling, erosion controls	Soil quality, surface water, terrestrial ecosystems	EPP June 2017, Section D.2, D.5, D.8
Storage, Handling, and Transfer of Fuel and Other Hazardous Materials	Secondary containment; spill kits, spill prevention, and response plans; trained personnel	Soil, groundwater, surface water, aquatic life	EPP June 2017, Section D.3

Activity	Mitigation	Environmental Receptor	Reference
Sewage Disposal	Approved sanitation facilities; regular maintenance; compliant discharge	Surface water, groundwater, public health	EPP June 2017, Section D.4
Solid Waste Disposal	Sorting waste streams; licensed disposal	Soil, water quality, wildlife	EPP June 2017, Section D.5
Trenching	Buffer Zones	Soil, vegetation, surface water	EPP June 2017, Section D.5, D.11
Excavations, Embankment and Grading	Erosion Prevention	Soil, surface water, aquatic environment	EPP June 2017, Section D.5, D.8
Dewatering – Work Areas	Clean/contact water separation, sediment control, water treatment,	Surface water quality, aquatic environment	EPP June 2017, Section D.12
Marine Vessels	Speed limits; spill prevention; vessel maintenance	Water quality, aquatic wildlife, fish, and fish habitat	EPP June 2017, Section D.13, D19
Pumps and Generators	Noise control, spill prevention	Air quality, noise receptors	EPP June 2017, Section D.14, D.15
Blasting	Noise control, vibration monitoring	Air quality, noise receptors, human environment	EPP June 2017, Section D.10, D.15, D.16
Drilling	Dust control, waste management	Air quality, soil, groundwater quality	EPP June 2017, Section D.17
Vehicular Traffic	Traffic management, speed limits, haul road dust control, regular maintenance	Air quality, noise levels, public safety	EPP June 2017, Section D.10, D15, D18
Surveying	Minimize surface disturbance	Vegetation, wildlife	EPP June 2017, Section D.20
Equipment Operations	Noise and emission controls, containment	Noise, air quality, surface, and groundwater	EPP June 2017, Section D.21
Stream Crossing	Culverts, erosion control	Fish and fish habitat, aquatic life, surface water quality, and quantity	EPP June 2017, Section D.9

Environmental management tools include mitigation measures, management plans, response plans, and follow-up and monitoring, which will allow for the commitments made in this EA Registration and permitting conditions to be implemented, monitored, and adapted as needed throughout the life of the Project.

2.12.2 Acknowledgement of Past Exceedances

CFI acknowledges past exceedances of ammonia/nitrates and water quality specific to total suspended solids and plan to implement the following mitigations. Improved water

management including the dewatering of boreholes, ditches, sumps, and sediment basins; ensuring all blast holes are dry before loading explosives. Additional measures include reducing in-hole sleep time, using bulk emulsion with improved oxygen balance and lower solubility, and optimizing stemming and loading practices to ensure complete detonation. Emulsion quantities are matched to rock mass quality to minimize partially reacted ammonium nitrate. Modern blasting technologies are being implemented to enhance precision of timing, drilling accuracy depth and spacing, and controlled blast size to reduce misfires, overloading, and unreacted explosive residues, in turn limiting nitrate release and groundwater contamination.

Water management measures to mitigate TSS exceedances include improved control of boreholes, ditches, sumps, and sediment basins, supported by hydrogeological studies and groundwater modelling. Mitigation also includes maintaining controlled discharge of contact water, updated water management including planning for freshet, improved ditching, and sediment basins to prevent pit flooding and minimize sediment disturbance. Tailings management continues to focus on tailings beach development, seepage water quality control, water treatment prior to discharge, and maintaining sufficient capacity in the Mill Site Event Pond. Runoff is continuously monitored to ensure compliance, with contingency actions including additional filtration, pumping to vegetated areas, or added settlement ponds to be implemented if water quality thresholds are exceeded.

2.12.3 Management Plans

Table 2.12-2 describes existing management plans that are applicable to the AGS operations. South Ridge will operate entirely under the existing suite of AGS permits and management plans that will be updated to include the Project operations, including but not limited to those described below. This list will be updated as the need for additional management plans may be identified throughout the permitting process.

Table 2.12-2: Management Plans

Management Plan	Comments
Environmental Protection Plan (EPP)	The EPP outlines practical procedures required for Project personnel to reduce or eliminate potential adverse environmental effects associated with construction and operations of the project sites.
Environmental Effects Monitoring Plan (EEMP)	The EEMP establishes a comprehensive, adaptive monitoring and reporting framework for the operations phase to verify environmental effects predictions, ensure regulatory compliance, and enable early detection and management of potential adverse effects on water quality, air quality, noise, and related environmental components.
EEMP Addendum for the Blue Beach Marine Terminal Construction Project	The Addendum to the EEMP provides interim, project-specific monitoring requirements to address surface water quality effects associated with construction and operation of the BBMT, ensuring regulatory compliance and protection of receiving environments. The Addendum will be incorporated into a fully updated EEMP which will include AGS Mine, BBMT, and the South Ridge Project.

Management Plan	Comments
Water Management Strategy	The Water Management Strategy outlines a preliminary, life-of-mine approach for managing surface water and groundwater that maintains natural drainage where practicable, segregates and treats contact water, supports mine operations, and ensures environmentally stable conditions through closure and post-closure.
Site Wide Water Management Plan	The Operational (Site Wide) Water Management Plan outlines how surface water, groundwater inflows, and process water will be collected, segregated, reused, treated, and discharged during operations o ensure sufficient water supply for milling, compliance with regulatory water quality requirements, and minimized effects on surrounding watersheds through an integrated system of diversions, sediment basins, and the TMF.
Best Available Control Technologies Report	The BACT Report evaluates particulate matter control options and concludes that fabric filter baghouses combined with enclosed and optimized transfer chutes represent the most effective, practical, and economically feasible technology for controlling crusher and conveyor dust emissions in compliance with provincial air quality regulations.
Fugitive Dust Management Plan	The Best Management Practices Plan for the Control of Fugitive Dust establishes a structured, risk-based framework for identifying, controlling, monitoring, and continuously improving the management of fugitive dust emissions from mining, processing, and transportation activities to ensure regulatory compliance and protection of nearby receptors.
Emergency Response Plan (ERP) Includes Contingency/Spill Response Plan	The ERP provides a comprehensive, site-wide framework for preventing, preparing for, and responding to emergencies at CFI operations to protect personnel, the environment, and assets through clearly defined roles, communication protocols, response procedures, and continuous training and improvement.
The Spill Prevention and Response Plan (SPRP)	The SPRP establishes a comprehensive, site-wide framework to prevent, promptly respond to, report, and remediate spills in order to protect human health, the environment, and regulatory compliance throughout all phases of the Project.
Mine Development Plan (MDP)	The current MDP outlines the phased approach for safely and efficiently advancing mining operations and will be updated to include the South Ridge Project, integrating mine layout, sequencing, production targets, infrastructure, and health, safety, and environmental controls in alignment with regulatory approvals and operational requirements.

Management Plan	Comments
Mine Rehabilitation and Closure Plan (RCP)	The current RCP will be updated to include the South Ridge Project and outlines the plan for progressive rehabilitation and ultimate decommissioning to achieve long-term physical, chemical, and environmental stability, eliminate ongoing liabilities, and return the site to safe, sustainable post-closure land uses with minimal long-term monitoring and maintenance.
Waste Management Plan (WMP)	The WMP establishes a comprehensive framework for minimizing, segregating, handling, storing, transporting, and disposing of all hazardous and non-hazardous wastes in compliance with regulatory requirements and leading environmental management practices.
Health and Safety Manual (H&S Manual)	The CFI H&S Manual establishes a comprehensive, company-wide health and safety management framework that defines leadership responsibilities, hazard identification and control processes, training and emergency preparedness requirements, and continuous improvement measures to protect workers, contractors, and visitors across all CFI operations.
Gender Equity and Diversity Plan	CFI has established gender equity objectives through its Gender Equity and Diversity Plan, originally developed in 2018 for the St. Lawrence Fluorspar Project. The Plan sets a target of approximately 20% female participation during the operations phase, based on provincial labour force participation data and long-term workforce planning considerations. While the South Ridge Project does not introduce a separate or new standalone gender employment target at this time, CFI continues to align its recruitment, retention, and workforce development practices with the intent and principles of the existing Plan, including efforts to increase the participation of women in traditionally under-represented roles. The 2018 Gender Equity and Diversity Plan remains the most recent formal plan in place and continues to guide CFI's approach to inclusive employment practices. CFI recognizes that workforce composition and operational needs evolve over time and will continue to review and update its gender equity practices, as appropriate, to reflect current operations and future project phases, including South Ridge.

2.12.4 Environmental Effects Monitoring Plan

The EEMP describes how CFI will monitor and manage environmental conditions during the operations phase. Developed as a requirement of the EA release, the EEMP ensures that actual environmental effects remain consistent with those predicted during the EA. It also confirms compliance with regulatory conditions, supports early detection of adverse trends, and provides a structured means for responding to stakeholder and regulatory

expectations. The plan is a living document that will adapt over time based on results, operational changes, and updated regulatory guidance.

2.12.4.1 Roles and Responsibilities

Environmental management responsibilities are shared across CFI's Operations Team, the Health, Safety, and Environment (HSE) Team, and all site personnel. The Operations Team is responsible for implementing environmental plans and ensuring compliance with permits, approvals, and internal protocols. The HSE Team leads EEMP implementation through environmental monitoring, data management, field audits, training, and regulatory reporting. The team also interfaces with regulators and the public, identifies non-compliance trends, and initiates corrective actions. All employees and contractors must follow environmental protocols, support monitoring activities, and promptly report any environmental concerns. This collaborative structure ensures environmental considerations are integrated throughout operational decision-making.

2.12.4.2 Monitoring Framework and Quality Assurance

The EEMP is founded on an adaptive management approach supported by comprehensive quality assurance and quality control procedures. Sampling methods, laboratory analyses, data management standards, and chain-of-custody protocols are designed to ensure defensible, high-quality data. Certified laboratories analyze samples using accredited methods, with measures such as duplicate samples, reference materials, and validation tests built into the process. The monitoring program supports four key objectives: evaluating whether environmental effects match EA predictions; ensuring compliance with permits and regulatory frameworks; addressing public and stakeholder concerns; and detecting changes early enough to adjust mitigation measures.

2.12.4.3 Water Quality Monitoring

Water quality monitoring is the largest component of the EEMP. It incorporates both real-time hydrometric and water quality sensors, as well as routine surface water sampling. Two real-time monitoring stations: one downstream of the mine site and another downstream of the TMF that measure turbidity, dissolved oxygen, pH, conductivity, temperature, total dissolved solids, and flow. These stations operate throughout the ice-free season for water quality and year-round for water quantity.

Surface water sampling is currently conducted weekly, monthly, or quarterly at 25 monitoring stations identified in regulatory approvals. Additional sampling locations may be implemented based on regulatory approval requirements for the South Ridge project. Samples are analyzed for general chemistry, total suspended solids, nutrients, metals, and specific parameters such as radium-226 and total petroleum hydrocarbons. Field technicians record weather, water characteristics, GPS location, and photographic documentation during sampling. Thresholds for turbidity and sedimentation follow provincial and CCME guidelines. When monitoring results approach regulatory limits, CFI increases the frequency of sampling and strengthens erosion or sediment control measures. This program provides a robust mechanism for detecting and managing water quality changes associated with mining and tailings management activities.

2.12.4.4 Air Quality Monitoring

Air quality is currently monitored and will continue to be monitored through a downwind ambient air station equipped with continuous analyzers for total particulate matter, $PM_{2.5}$, and nitrogen oxides. These analyzers track emissions associated with crushing, screening, vehicle traffic, combustion, and material handling. The monitoring program ensures compliance with the Air Pollution Control Regulations (2004), which establish protective standards such as a 24-hour limit of 25 µg/m³ for $PM_{2.5}$ and 120 µg/m³ for total particulate matter. Equipment maintenance is conducted bi-weekly and follows guidance from provincial ambient air monitoring standards. The station is also subject to periodic performance audits by the Department of Environment, Conservation and Climate Change. The data inform environmental compliance assessments and guide improvements to dust and emissions control practices. Additional Air Quality monitoring and mitigation is provided in Section 6.2.

2.12.4.5 Greenhouse Gas and Radon Monitoring

GHG monitoring is conducted through monthly tracking of fuel consumption for all mobile and stationary equipment and quantities of mining explosives used. Annual reporting to the provincial government is required for facilities emitting 15,000 tonnes or more of CO_2e per year, with third-party verification required for emissions exceeding 25,000 tonnes. This process ensures transparency and supports broader climate change management objectives. Tracking and reporting of GHG emissions will continue and include the South Ridge Project.

Radon monitoring focuses on pit areas and lower-elevation site features where radon may accumulate. Using alpha-track radon gas detectors, CFI conducts long-term (>90 days) sampling events to obtain mean radon concentrations. As part of the South Ridge Project, the radon monitoring program will expand accordingly. These efforts ensure worker safety and help characterize radon behaviour in the Project area.

2.12.4.6 Noise Monitoring

Prior to commissioning, a noise assessment is conducted using industry-standard methods to establish baseline conditions and identify necessary mitigation. Noise management is supported by a Hearing Protection and Conservation Program integrated into the broader HSE plan. Employees receive training and appropriate protective equipment to ensure compliance with occupational standards. The noise program will be revisited as operational activities evolve.

2.12.4.7 Reporting Requirements

CFI maintains structured reporting processes to meet regulatory obligations. Water quality reporting is conducted monthly, with results submitted within thirty days and accompanied by laboratory data in PDF and XML format for upload to the provincial Environmental Data Management System. Air quality data must be provided in real time through the DR DAS acquisition system, ensuring immediate access for regulators. GHG emissions reports are submitted annually, with additional verification steps when required. Across all monitoring programs, data are routinely evaluated to identify trends, assess effectiveness of mitigation measures, and determine whether modifications to the EEMP

are necessary. When data indicate a shift toward regulatory thresholds, the HSE Team implements enhanced mitigation, increases monitoring frequency, and documents corrective measures.

2.12.5 Addendum to Environmental Effects Monitoring Plan

This Addendum supplements the approved Environmental Effects Monitoring Plan to address additional environmental monitoring requirements associated with the construction and operation of the BBMT.

2.12.5.1 Scope of Monitoring

The Addendum introduces additional monitoring activities specific to the BBMT and associated port access road. Monitoring is intended to ensure regulatory compliance, verify the effectiveness of mitigation measures, and confirm that construction and operational activities do not result in unacceptable environmental effects. The focus of the Addendum is surface water quality monitoring to track the effectiveness of sediment control measures.

2.12.5.2 Surface Water Quality Monitoring Program

The Addendum expands the existing surface water monitoring program by adding five quarterly sampling locations in the vicinity of the port access road and downstream receiving environments. Three new monitoring stations are located along the port access road to assess potential effects from construction and operational activities, while two previously established baseline stations upstream of the access road are incorporated to provide reference conditions.

Surface water monitoring includes visual field assessments, in-situ measurements using portable analyzers, and laboratory analysis of collected samples. Samples are collected quarterly following the same methods and protocols outlined in the approved EEMP.

2.12.5.3 Water Quality Parameters and Frequency

The monitoring program includes a comprehensive suite of general water quality parameters and metals, including temperature, dissolved oxygen, nutrients, suspended solids, turbidity, major ions, alkalinity, and a broad metals scan. Sampling is conducted four times per calendar year at intervals not less than 30 days apart. The selected parameters are intended to detect changes related to sediment mobilization, runoff, and potential contaminant inputs associated with activities of the marine terminal.

2.12.5.4 Data Review and Reporting

Monitoring results will be reviewed on an ongoing basis to evaluate compliance with regulatory requirements, permit conditions, and commitments. Data will be assessed against baseline conditions and applicable thresholds to identify emerging trends. Quarterly monitoring reports will be submitted to regulatory agencies within 30 days of the reporting period, with laboratory data provided in electronic format for integration into provincial environmental data management systems. Where adverse trends are identified, corrective mitigation measures will be implemented to address potential effects.

2.12.5.5 Integration with the Approved EEMP

The Addendum is intended as an interim update to the approved EEMP and will be fully incorporated into a revised version of the EEMP. The revised EEMP will consolidate monitoring requirements for all Project components, including the BBMT, to ensure a comprehensive and integrated approach to environmental effects monitoring over the life of the Project.

2.12.6 Environmental Protection Plan

The EPP outlines the environmental management framework governing active mining and processing activities. The EPP was developed to satisfy conditions of the provincial EA release and serves as a binding, operational document that translates regulatory commitments into enforceable procedures. It documents mitigation measures for routine operations and potential accident scenarios, ensuring environmental protection throughout the operations phase. The EPP is explicitly designed as a living document, subject to revision as approvals are issued, project conditions change, or new phases (e.g., South Ridge Project, underground mining, closure) commence.

2.12.6.1 Objectives, Scope, and Integration with the HSE Management System

The primary objective of the EPP is to prevent or mitigate adverse environmental effects associated with operations while ensuring full compliance with federal, provincial, and municipal regulatory requirements. The EPP establishes clear expectations and procedures for environmental protection, monitoring, reporting, and corrective action, and provides direction to both CFI personnel and contractors.

The EPP is fully integrated into CFI's broader HSE Management System and operates in conjunction with complementary plans, including the EEMP, WMP, Water Management Plan, Best Management Practices Plan, and RCP. Collectively, these instruments form the foundation for environmental governance, compliance assurance, and adaptive management across the Project lifecycle.

2.12.6.2 Governance Structure, Roles, and Responsibilities

The EPP establishes a comprehensive governance framework that assigns environmental accountability across all levels of project management and execution. Ultimate responsibility for environmental performance rests with CFI's General Manager, who ensures that the EPP is implemented effectively and that corrective actions are taken where non-compliance occurs.

Operational responsibility is delegated to the HSE Manager, who oversees implementation of the EPP, regulatory compliance, environmental monitoring, training, and incident response. The HSE Manager is supported by a HSE Technician responsible for day-to-day inspections, sampling, monitoring, data management, and on-site guidance. Department Superintendents and Supervisors (Mine, Mill, and Maintenance) are accountable for integrating environmental requirements into operational decision-making and ensuring workforce compliance.

Contractors and all project personnel are explicitly bound by the EPP and are required to follow environmental protection procedures, participate in training, report incidents, and

comply with permit conditions. This shared-responsibility model reinforces environmental stewardship as a core operational value rather than a standalone compliance function.

2.12.6.3 EPP Maintenance, Training, and Implementation Mechanisms

The EPP includes a formal system for document control, distribution, and revision to ensure that the most current requirements are consistently applied. Revisions must be reviewed and approved through a structured internal process led by the HSE Manager. Control copies are maintained by designated holders, including regulatory agencies.

Implementation of the EPP is supported through mandatory training programs, including site orientations, contractor orientations, visitor briefings, and ongoing refresher training. Environmental awareness, spill response, wildlife protection, waste management, and emergency procedures are core components of these programs. Compliance is reinforced through regular toolbox meetings, weekly HSE meetings, and annual environmental performance reviews, providing continuous opportunities to identify risks, address non-conformance, and improve performance.

2.12.6.4 Regulatory Framework and Reference Information

The EPP provides a detailed inventory of applicable federal, provincial, and municipal legislation, permits, approvals, and authorizations governing operations. These include requirements under the Fisheries Act, Environmental Protection Act, Mining Act, Water Resources Act, Wildlife Act, Historic Resources Act, and associated regulations administered by agencies such as Fisheries and Oceans Canada, Environment and Climate Change Canada, Transport Canada, and multiple provincial departments.

The document also references a wide range of technical studies, guidance documents, and environmental guidelines that inform mitigation design, monitoring standards, and operational best practices. This regulatory mapping ensures that environmental protection measures are legally grounded, transparent, and defensible.

2.12.6.5 General Environmental Protection Procedures

At the core of the EPP is a comprehensive suite of Environmental Protection Procedures that apply across all operational activities. These procedures address vegetation clearing, erosion and sediment control, fuel and hazardous materials management, waste disposal, buffer zones, dewatering, blasting, dust control, noise management, vehicular traffic, marine operations, and protection of historic resources.

These procedures are deliberately prescriptive, providing clear operational direction to minimize ambiguity and reduce the risk of environmental harm. They are contractually binding on contractors and are subject to inspection, monitoring, and enforcement through CFI's HSE framework.

2.12.6.6 Area-Specific Environmental Management

The EPP provides detailed, area-specific environmental guidance for all major components, including project infrastructure, stockpiling areas, the AGS East TMF, mine operations, mill operations, and the Blue Beach Marine Terminal.

For each area, the document outlines the nature of operational activities, key environmental risks, applicable mitigation measures, and monitoring requirements. Emphasis is placed on water management, erosion and sediment control, wildlife protection (including migratory birds and species at risk), air quality, and spill prevention. The TMF and mine sites are supported by real-time water quality and quantity monitoring systems to enable early detection of emerging issues and rapid implementation of corrective actions.

2.12.6.7 Contingency Planning and Emergency Response

The EPP is closely aligned with CFI's Emergency Response Plan (ERP) and includes contingency procedures for fuel and hazardous material spills, wildlife encounters, forest fires, and vessel accidents. These plans prioritize human safety while ensuring rapid containment, reporting, remediation, and regulatory notification where required.

Clear lines of authority are established for emergency response coordination, and specialized training and equipment are maintained on site. This proactive approach is intended to minimize the likelihood and severity of unplanned environmental incidents.

2.12.6.8 Communications, Stakeholder Engagement, and Complaints Management

The EPP establishes a structured Communications Protocol to guide interactions with regulators, local communities, media, and other stakeholders during operations. Objectives include transparency, timely information sharing, responsiveness to concerns, and continuous improvement informed by stakeholder feedback.

A formal complaints management process is defined to document, investigate, and resolve public concerns related to noise, dust, traffic, or other operational effects. This mechanism supports social licence, accountability, and adaptive management throughout the operations phase.

2.12.6.9 Documentation, Reporting, and Continuous Improvement

To support accountability and traceability, the EPP includes standardized forms for environmental meetings, spill reporting, non-compliance tracking, and EPP revision requests. These tools ensure consistent documentation of environmental performance, facilitate regulatory reporting, and support ongoing evaluation of mitigation effectiveness.

Overall, the EPP establishes a robust, integrated, and adaptive environmental management framework that aligns regulatory compliance with operational discipline, risk management, and continuous environmental improvement.

2.12.7 Water Management Strategy

The Water Management Strategy presents a preliminary framework for managing surface water and groundwater. The strategy focuses on environmental protection, regulatory compliance, and sustainable water use during construction, operations, and closure. It is intended as a living document that will be refined as additional technical and environmental information becomes available and will be updated to include water management associated with the South Ridge Project.

2.12.7.1 Water Management During Construction and Operations

During Construction and Operations, water management will focus on controlling surface runoff and groundwater inflows, maintaining natural drainage patterns where feasible, and ensuring all discharges meet applicable regulatory requirements or baseline conditions. Clean water will be diverted around disturbed areas to minimize contact with mine infrastructure, while contact water will be collected and managed separately.

Key system components include diversion channels, interceptor ditches, mine dewatering sumps and pumping systems, sedimentation ponds, and a staged TMF. Sedimentation ponds will be used to treat contact water by settling suspended solids prior to discharge or reuse. Mine water, stormwater, and wastewater will be reused where practicable to reduce freshwater demand.

The existing TMF includes a tailings pond and downstream polishing pond to manage tailings slurry, supernatant water, and seepage. Water released from the facility is retained until quality is suitable for discharge, ensuring protection of downstream watercourses and aquatic environments.

2.12.7.2 Closure Water Management and Rehabilitation

Closure phase water management is designed to restore drainage patterns and environmental conditions to the extent practicable while minimizing long-term maintenance and monitoring requirements. Clean water diversions, interceptor ditches, and sedimentation ponds will be removed or regraded, and disturbed areas will be stabilized and revegetated.

Open pits and underground workings are expected to flood naturally following closure, promoting long-term geochemical stability. Waste rock dumps, processing facilities, access roads, and other infrastructure will be dismantled or rehabilitated, with surfaces regraded and vegetated to control erosion. At the TMF, tailings surfaces and embankments will be stabilized and vegetated, natural flows restored, and a permanent pond and wetland system established to support long-term drainage and ecological function.

2.12.7.3 Data Gaps and Path Forward

The strategy identifies the need for additional studies to reduce uncertainty and refine water management design. These include expanded geochemical testing, comprehensive surface water and groundwater baseline monitoring, refined water balance assessments, predictive water quality modelling, and further hydrogeological investigations to better understand groundwater inflows and interactions with surface water features.

As Project design advances, these studies will inform updates to the water management approach, ensuring that environmental risks are appropriately managed and that water-related commitments can be met throughout the life of the Project.

2.12.8 Operational Water Management Plan

The Operational Water Management Plan defines the site-wide strategy for managing surface water, groundwater inflows, and process water. The plan supports permitting,

construction, and early operations by demonstrating that adequate water supply is available for milling, that discharges will meet regulatory requirements, and that impacts to surrounding watersheds will be minimized.

2.12.8.1 Water Sources and Water Use

Water management needs at the site are primarily derived from precipitation and runoff, supplemented by groundwater inflows to the open pits. Additional water inputs include reclaim water from the TMF and limited freshwater withdrawal from Tarefare 1 Shaft and John Fitzpatrick Pond for potable use. Process water demands for the mill are largely met through reclaim water from the polishing pond, reducing the need for external freshwater supply. Groundwater inflows to the open pits are collected and managed through sediment basins prior to discharge or reuse.

2.12.8.2 Site-Wide Water Balance

A series of integrated water balance models were developed to assess water availability, storage, reuse, and discharge over the planned mine life. Separate models address mill water requirements, TMF water balance, and mine site runoff and dewatering flows. Results indicate that sufficient water is available to support milling operations throughout the open pit phase, with initial make-up water supplied by mine dewatering and runoff management systems during commissioning. The TMF functions as the central water management hub, providing reclaim water to the mill and controlling discharge volumes to the environment. The South Ridge Project will be incorporated into the water balance model and the Operational Water Management Plan.

2.12.8.3 Water Management Infrastructure and Controls

The operational water management system includes diversion ditches, collection ditches, low-height berms, pumps and pipelines, and a network of sediment basins. Clean, non-contact water is diverted away from disturbed areas where practicable, while contact water is collected and routed through sediment basins to reduce suspended solids prior to discharge or reuse. Sediment basins are designed to temporarily store runoff from design storm events, allowing adequate settling time before controlled release. Emergency spillways are incorporated to safely convey extreme flows during major storm events.

2.12.8.4 Sediment and Water Quality Management

Sediment control is the primary operational water quality concern. All contact runoff from disturbed areas is directed to sediment basins or the TMF system prior to discharge. Water is only released to the environment once it meets site-specific water quality objectives and regulatory requirements. Provisions are included for pumping, transfer, and batch treatment if required, providing operational flexibility during variable climatic conditions or unexpected water quality changes.

2.12.8.5 Operational Performance and Adaptability

The plan confirms that the water management strategy is sufficient to support the first several years of mine operations, including the period prior to underground mine development. During dry conditions, additional make-up water can be sourced from

sediment basins, the Mill Site Event Pond, or existing ponds, subject to approvals. The plan emphasizes adaptability, with provisions for annual updates to the water balance as monitoring data, operational experience, and design refinements become available.

2.12.8.6 Monitoring and Ongoing Management

Effective implementation of the plan relies on regular inspection, maintenance, and environmental monitoring. Sediment control structures and drainage systems will be routinely inspected, particularly following major storm events and spring freshet. Monitoring programs and operational procedures will be refined through an operations, maintenance, and surveillance framework to ensure continued compliance and performance throughout the mine life.

2.12.9 Best Available Control Technologies Report

The BACT Report documents the assessment and selection of air pollution control measures for particulate matter emissions. The assessment was undertaken to meet the requirements of Newfoundland and Labrador's Air Pollution Control Regulations, which require the application of best available control technology for new or modified emission sources. In the absence of province-specific BACT guidance, the assessment follows a "top-down" methodology consistent with established North American regulatory practice.

2.12.9.1 Facility Description and Emission Sources

AGS operations includes surface and underground mining, ore processing, a mill, a TMF, and associated infrastructure. Air emissions at the facility include particulate matter (total PM, PM_{10}, and $PM_{2.5}$), metals associated with dust, combustion-related emissions from mobile and stationary equipment, and minor volatile compounds associated with processing.

The BACT assessment focuses specifically on particulate matter emissions from the crushing circuit, including primary, secondary, and tertiary crushers, screens, and conveyor transfer points. These sources were identified as the most significant contributors to controlled particulate emissions requiring engineered mitigation. Fugitive dust from roads, stockpiles, and general material handling is addressed separately through best management practices rather than this BACT analysis.

2.12.9.2 BACT Assessment Methodology

A structured five-step "top-down" BACT process was applied:

- Identification of all potentially applicable particulate control technologies.
- Elimination of technically infeasible options based on site conditions, material characteristics, and operational constraints.
- Ranking of remaining technologies based on control effectiveness.
- Evaluation of the most effective technologies considering practicality, reliability, and cost.
- Selection of the preferred BACT option for the crushing circuit.

Control technologies were identified using literature, manufacturer data, and regulatory databases documenting comparable industrial applications.

2.12.9.3 Control Technologies Considered

A range of particulate control options were reviewed, including fabric filter baghouses, cyclones, wet scrubbers, electrostatic precipitators, water or fog suppression systems, improved chute design systems, and dust curtains. Each technology was evaluated in terms of expected emission reduction performance, operational suitability for cold-climate outdoor conditions, compatibility with dry ore handling, and demonstrated use in similar mining and mineral processing operations.

2.12.9.4 Elimination of Infeasible Technologies

Several control options were eliminated from further consideration due to technical or operational infeasibility. Wet scrubbers were found to be poorly suited to dry material handling and cold weather conditions. Electrostatic precipitators were deemed inappropriate due to particle size characteristics and lack of demonstrated use in comparable crushing applications. Water and fog suppression systems were considered limited in effectiveness due to freezing conditions and seasonal constraints.

2.12.9.5 Evaluation and Ranking of Feasible Controls

Remaining feasible technologies were ranked primarily by particulate removal efficiency. Fabric filter baghouses demonstrated the highest control effectiveness, with removal efficiencies approaching or exceeding 99% for fine particulates. Cyclones provided lower removal efficiency and were more suitable as pre-cleaners rather than standalone controls. Chute design improvements and dust curtains were recognized as effective supplemental measures that reduce dust generation at transfer points but provide lower overall removal efficiency when used alone.

2.12.9.6 Selected Best Available Control Technology

Based on the evaluation, the selected BACT for the crushing circuit consists of fabric filter baghouses combined with enclosed and covered transfer chutes. Dust collectors are installed at crusher conveyor feeds to capture particulate emissions at their source. Improved chute design is incorporated to minimize dust generation, reduce material turbulence, and limit entrained air at transfer points. This integrated approach provides high emission reduction performance while remaining practical, reliable, and economically feasible for the facility.

2.12.9.7 Conclusions and Applicability

The BACT assessment concludes that the selected combination of fabric filter baghouses and optimized chute design represents the most effective and appropriate particulate control strategy for the crushing circuit. The approach aligns with regulatory expectations, reflects proven industry practice, and provides flexibility for future facility modifications. The BACT framework may be updated as new sources are added or operational conditions change.

2.12.10 Fugitive Dust Best Management Practices Plan

The Best Management Practices Plan for the Control of Fugitive Dust establishes a structured framework for identifying, managing, and monitoring fugitive dust emissions.

The Plan supports the Air Emissions Inventory and outlines the procedures used to prevent, mitigate, and respond to dust emissions associated with mining, material handling, processing, and transportation activities. In the absence of province-specific guidance, the Plan is aligned with recognized best practices for industrial fugitive dust management and is designed to be updated as operations evolve.

2.12.10.1 Facility Overview and Operating Conditions

Existing Operations include mining, ore processing, concentrate handling, a TMF, and supporting infrastructure located within the municipal boundary of the Town of St. Lawrence. Operations may occur continuously, and the nearest sensitive receptors are located within the adjacent community. Prevailing winds are predominantly westerly, indicating a potential pathway for dust transport toward the town. On-site precipitation monitoring is used to inform dust suppression scheduling and adaptively manage roadway watering.

2.12.10.2 Roles and Responsibilities

Clear roles and responsibilities are assigned across all organizational levels to ensure effective implementation of the Plan. Senior management is responsible for oversight and resourcing, department managers and supervisors are responsible for implementing and documenting dust control measures, and all site personnel and contractors are required to follow established dust control procedures and participate in training.

2.12.10.3 Identification of Fugitive Dust Sources

The Plan identifies and classifies all major sources of fugitive dust, including unpaved and paved roadways, material handling and transfer activities, drilling and blasting, crushing, and screening operations, truck loading, and wind erosion from stockpiles. Each source is characterized based on material properties, operational activities, and environmental conditions that influence dust generation and dispersion.

2.12.10.4 Dust Control Measures and Best Management Practices

Dust control measures are structured as both preventative procedures and reactive controls. Preventative measures include roadway watering, enclosure of material handling and processing activities, optimized blast design, stockpile covering, good housekeeping practices, and use of dust collection systems for crushing operations. Reactive measures are implemented during adverse conditions, such as dry or windy periods, to prevent dust from reaching sensitive receptors.

2.12.10.5 Risk-Based Prioritization of Dust Sources

A risk assessment methodology is used to evaluate and rank fugitive dust sources based on factors such as emission potential, proximity to receptors, prevailing wind direction, and existing controls. The assessment identifies unpaved haul roads as the highest-risk sources of fugitive dust, requiring close monitoring and frequent application of control measures. Other sources are generally classified as low to medium risk due to effective enclosures and engineered controls.

2.12.10.6 Implementation, Training, and Monitoring

The Plan outlines a clear implementation schedule for dust control measures, including procedures for managing new emission sources. All personnel and contractors receive training on dust control requirements as part of site orientation. Routine inspections, activity logs, and non-conformance reporting are used to verify compliance, document corrective actions, and support adaptive management.

2.12.10.7 Continuous Improvement and Review

The Plan follows a Plan–Do–Check–Act framework to promote continuous improvement. Dust control practices are reviewed periodically, following operational changes, verified complaints, or observed increases in dust emissions. Monitoring data and inspection results are used to evaluate effectiveness and identify opportunities to enhance dust control performance over time.

2.12.11 Emergency Response Plan

The ERP establishes a comprehensive framework to guide CFI personnel and contractors in responding to emergency situations across all operations, including the Project. The Plan is designed to protect life, minimize environmental and asset impacts, and ensure clear communication and coordinated response during incidents such as serious injuries, fires, explosions, environmental spills, severe weather events, security threats, and other emergency scenarios. The Plan applies to all employees, contractors, visitors, and subcontractors working on behalf of CFI and is reviewed and updated annually. The plan will be updated prior to the initiation of the Project to include any Project specific information.

2.12.11.1 Emergency Management Structure and Responsibilities

Clear roles and responsibilities are defined for all levels of the organization to ensure an effective and coordinated response. Senior leadership provides oversight, external communications, and stakeholder liaison, while site management activates and directs the emergency response. Dedicated Health and Safety and Environmental personnel coordinate on-site response actions, regulatory communications, and documentation. Muster Station Captains manage evacuations and accountability, and all personnel are required to follow instructions, report emergencies promptly, and participate in emergency preparedness activities.

2.12.11.2 Planning, Resources, and Preparedness

The ERP emphasizes pre-planning and preparedness, including the maintenance of trained first aiders, emergency supplies, firefighting equipment, spill response materials, and communication systems. Agreements are in place with local emergency services, hospitals, and volunteer fire departments to provide rapid external support when required. Designated Emergency Operations Centres and alternate command locations are established to coordinate response activities and decision-making.

2.12.11.3 Communication and Notification Protocols

A structured communication and notification process is defined to ensure timely internal alerting and external reporting. Emergencies are reported immediately through established channels, with escalation to senior management as required. Communications with regulatory agencies are managed centrally, and all media interactions are controlled through designated company representatives and external public relations support to ensure accurate and consistent messaging.

2.12.11.4 Emergency Response Procedures

The ERP outlines step-by-step procedures for responding to a wide range of emergency scenarios, including injuries or illnesses, fires, rescues, and site evacuations. Priority is placed on scene safety, medical treatment, securing the incident area, and preventing secondary impacts. Detailed rescue procedures are included for confined spaces and working-at-heights incidents, emphasizing the use of trained personnel and appropriate equipment.

2.12.11.5 Spill Prevention and Environmental Response

A spill prevention and control program is integrated into the Plan to minimize the risk of environmental releases. Procedures are provided for spill response, containment, cleanup, reporting, and remediation in accordance with regulatory requirements. All spills, actual or potential, are documented and reported, and post-incident assessments are conducted to guide restoration and corrective actions.

2.12.11.6 Response to Specific Emergency Scenarios

The ERP includes tailored response protocols for potential emergency situations such as bomb threats or sabotage, quarantine or pandemic-related events, severe weather and natural disasters, shelter-in-place scenarios, radiation exposure, workplace violence, and missing or unaccounted-for personnel. These procedures provide clear guidance on protective actions, coordination with authorities, and personnel accountability.

2.12.11.7 Training, Exercises, and Continuous Improvement

Emergency response training is provided to all employees and contractors as part of site orientation, with regular drills and exercises conducted to test preparedness. Inspection, documentation, and post-incident reviews support continuous improvement of emergency response capabilities. The Plan is reviewed periodically and updated following operational changes, incidents, or regulatory requirements to ensure ongoing effectiveness.

2.12.12 Spill Prevention and Response Plan

The Spill Prevention and Response Plan (SPRP) is a comprehensive framework for preventing, managing, and responding to environmental spills. The SPRP applies to all activities, including mining, processing, tailings management, and marine terminal operations, and is intended to protect workers, the public, and the environment from adverse effects associated with releases of hydrocarbons, chemicals, wastewater, or sediment. The SPRP is a living document that is reviewed regularly and will be updated to include the Project.

2.12.12.1 Regulatory Context

The SPRP is informed by applicable federal and provincial legislation governing environmental protection, spill reporting, and the handling and transportation of hazardous materials. It is designed to align with regulatory requirements for spill prevention, notification, response, and remediation, and complements other management plans, including the EPP, EEMP, and WMP.

2.12.12.2 Potential Spill Sources

Potential sources of spills include equipment and vehicle operating fluids, fuels, hydraulic oils, hazardous chemicals, and reagents used in processing, wastewater from equipment washing, tailings-related materials, and sediment mobilization during construction and earthworks. The Plan recognizes that the severity of spill impacts depends on the type and volume of material released, toxicity, receiving environment, and response time.

2.12.12.3 Roles, Responsibilities, and Training

All personnel and contractors are responsible for spill prevention and immediate reporting of spills or near misses. Specific responsibilities are assigned to management, field staff, and contractors to ensure effective implementation of the SPRP. Environmental awareness, spill prevention, and response training are mandatory, including Workplace Hazardous Information System (WHMIS) and Transportation of Dangerous Goods training where applicable. Select personnel receive additional spill response training to support on-site response capability.

2.12.12.4 Spill Prevention Measures

The SPRP outlines proactive spill prevention measures, including regular equipment inspection and maintenance, controlled fueling practices, secondary containment for fuel and chemical storage, segregation of incompatible materials, and designated areas for maintenance and equipment washing. Spill kits are strategically located throughout the site and on mobile equipment to enable rapid containment and mitigation of releases.

2.12.12.5 Spill Response Equipment and Preparedness

Standardized spill response equipment, including absorbent materials, booms, disposal containers, and personal protective equipment, is maintained on site. Spill kit locations are mapped and communicated to personnel, and kits are replenished immediately after use. Contractors are required to maintain their own spill kits, with provisions in place for cost recovery if CFI equipment is used.

2.12.12.6 Spill Classification and Reporting

The SPRP establishes clear criteria for classifying spills based on material type, volume, and receiving environment. All spills, regardless of size, are reportable internally. Regulatory reporting thresholds are defined for spills to land and water, including specific requirements for hydrocarbons, chemicals, sediment, and marine spills. Timely notification to regulatory authorities is required for reportable spills, and detailed spill reports are completed to document response actions and corrective measures.

2.12.12.7 Spill Response Procedures

The SPRP provides a structured spill response process, beginning with immediate actions by the spill witness to assess safety, stop the source if safe to do so, and contain the release. Supervisors coordinate site-level response and notify the Environmental Department, which leads further response, regulatory communication, and escalation as required. Criteria are provided to determine when third-party spill response contractors must be engaged.

2.12.12.8 Investigation, Monitoring, and Continuous Improvement

All spills are investigated to identify root causes and corrective actions to prevent recurrence. Environmental effects monitoring may be implemented following a spill to evaluate containment effectiveness, remediation success, and potential impacts to surrounding environments. Lessons learned are incorporated into ongoing training and updates to the SPRP to support continuous improvement.

2.12.13 Health and Safety Manual

The Health and Safety (H&S) Manual establishes CFI Health and Safety Management Program for all operations. The H&S Manual provides a comprehensive framework to prevent workplace injuries and illnesses, protect workers and contractors, and ensure compliance with applicable occupational health and safety legislation. It applies to all employees, contractors, subcontractors, visitors, and suppliers working on CFI-controlled sites and is reviewed and updated periodically to support continuous improvement.

2.12.13.1 Health and Safety Philosophy and Policy Framework

CFI's health and safety philosophy is founded on the principle that all incidents are preventable, and that health and safety is a core responsibility of line management. Senior leadership is accountable for setting expectations, allocating resources, and demonstrating visible commitment to safety. The H&S Manual is underpinned by formal corporate policies addressing health and safety, early and safe return to work, incident investigation, inspections, personal protective equipment, hearing conservation, respiratory protection, workplace harassment and violence, and drug and alcohol use.

2.12.13.2 Leadership, Roles, and Responsibilities

The H&S Manual defines clear roles and responsibilities across all organizational levels, including senior management, general management, department heads, supervisors, health and safety personnel, contractors, and workers. Supervisors are responsible for day-to-day implementation of safety requirements, while workers are empowered and obligated to identify hazards, follow safe work practices, and exercise their right to refuse unsafe work. Contractors are required to meet CFI standards and applicable legislation as a condition of working on site.

2.12.13.3 Communication, Participation, and Worker Engagement

Effective communication and worker participation are central to the Health and Safety Management Program. The H&S Manual outlines structured communication mechanisms, including daily toolbox meetings, weekly safety meetings, Occupational

Health and Safety (OH&S) Committee meetings, and safety stand-downs. The OH&S Committee plays a key role in hazard identification, inspections, incident investigations, and continuous improvement, ensuring meaningful worker involvement in health and safety decision-making.

2.12.13.4 Hazard Identification, Risk Assessment, and Controls

The H&S Manual establishes a systematic approach to hazard recognition, evaluation, and control. Hazards are identified through inspections, observations, hazard reporting, job hazard analyses, and formal risk assessments. Risks are evaluated based on probability and severity, and control measures are applied using the hierarchy of controls, prioritizing engineering and administrative controls before reliance on personal protective equipment. Tools such as Field Level Risk Assessment, Take 5, Job Hazard Analysis, and Hazard Identification Cards support proactive risk management.

2.12.13.5 Training, Competency, and Awareness

CFI requires comprehensive training and competency verification for all personnel. Mandatory training includes site orientation, task-specific instruction, WHMIS, emergency response, and hazard awareness. Supervisors and managers receive additional training to support their leadership roles. Training records are maintained to ensure personnel are qualified to perform assigned tasks safely, and refresher training is provided as required.

2.12.13.6 Inspections, Audits, and Incident Management

The H&S Manual outlines formal and informal inspection programs, regular audits, and a structured incident investigation process. All incidents and near misses are investigated to identify root causes and implement corrective actions. Serious incidents are reported in accordance with provincial legislation, and lessons learned are communicated across the organization to prevent recurrence.

2.12.13.7 Occupational Health, Industrial Hygiene, and Ergonomics

Occupational health considerations addressed in the H&S Manual include industrial hygiene, air quality, noise exposure, ergonomics, and musculoskeletal injury prevention. Monitoring programs, engineering controls, and safe work practices are implemented to reduce exposure to harmful substances and physical stressors. Ergonomic assessments and back injury prevention measures support worker well-being in both office and field environments.

2.12.13.8 Emergency Preparedness and Supporting Programs

The H&S Manual integrates emergency preparedness and response through reference to the ERP and other Company-specific programs. These include confined space, working at heights, electrical safety, traffic management, drilling and blasting, crane and rigging, and contractor health and safety management programs. Together, these documents provide a comprehensive and coordinated approach to managing health and safety risks across all activities.

2.12.14 Mine Development Plan

The 2024 MDP presents the current technical and operational framework for mine development at the St. Lawrence Fluorspar Project and will be updated to include relevant details for the South Ridge Project. The MDP defines how mining activities will be executed in a safe, efficient, and environmentally responsible manner, consistent with regulatory approvals, permit conditions, and corporate health, safety, and environmental commitments. It reflects refinements to mine sequencing, infrastructure layout, and operational practices based on updated engineering, operational experience, and current project objectives.

2.12.14.1 Mine Layout and Development Strategy

The MDP outlines the current overall mine layout, including active and planned open pits, underground development areas, haul roads, waste rock and overburden storage areas, and connections to the mill and tailings management infrastructure. Development activities are phased to optimize access to ore, maintain geotechnical stability, and align mining rates with processing capacity. The MDP emphasizes efficient material movement, safe access routes, and integration with existing site infrastructure.

2.12.14.2 Mining Methods and Sequencing

Mining will be undertaken using conventional drill-and-blast methods, supported by loading and hauling equipment appropriate to pit geometry and production targets. The MDP details the current sequence of pit advancement and underground development, including benching strategies, blasting practices, and grade control considerations. Sequencing is designed to balance ore delivery to the mill, minimize rehandling, and manage waste rock placement in designated storage areas. Activities related to the South Ridge Project will be included in an updated MDP.

2.12.14.3 Production Rates and Material Management

The MDP defines anticipated production rates for ore and waste, aligned with mill throughput requirements. Material handling practices address segregation of ore and waste, temporary stockpiling where required, and efficient transport to processing or disposal locations. Waste rock and overburden management strategies consider stability, drainage control, and progressive reclamation opportunities where feasible.

2.12.14.4 Geotechnical and Ground Control Considerations

Geotechnical design parameters are incorporated to ensure pit wall stability, safe bench configurations, and appropriate ground support for underground workings. The MDP includes provisions for ongoing geotechnical monitoring, inspections, and adaptive management to address changing ground conditions as mining progresses. The geotechnical and ground control considerations for the South Ridge Project will be included in an updated MDP.

2.12.14.5 Health, Safety, and Environmental Integration

Health and safety considerations are integrated throughout the MDP, including traffic management, equipment operation protocols, blasting safety, and worker protection

measures. Environmental management measures address surface water and groundwater protection, dust control, noise management, and coordination with the EEMP and SPRP. The MDP supports compliance with applicable environmental permits and monitoring commitments.

2.12.14.6 Infrastructure, Services, and Support Systems

The MDP describes required mine services and infrastructure, including power supply, water management systems, communications, maintenance facilities, and emergency access routes and will be updated to include the South Ridge Project. These systems are designed to support safe operations, regulatory compliance, and operational reliability throughout the mine life.

2.12.14.7 Progressive Reclamation and Adaptive Planning

While focused on active mine development, the MDP acknowledges progressive reclamation opportunities and the need for adaptive planning. As mining advances, development strategies may be refined based on operational performance, monitoring results, and regulatory or stakeholder feedback. The MDP is intended to be a living document and will be updated as conditions evolve.

2.12.15 Mine Reclamation and Closure Plan

The Reclamation and Closure Plan (RCP) defines the framework for orderly, safe, and environmentally responsible closure of the St. Lawrence Fluorspar Project. The RCP is prepared to satisfy requirements under the Newfoundland and Labrador Mining Act and applicable environmental approvals and is aligned with provincial guidance for mine rehabilitation and closure planning. Its overarching objective is to eliminate long-term environmental liabilities, ensure physical and chemical stability, and return the site to a condition capable of supporting appropriate post-closure land uses with minimal ongoing maintenance. The RCP will be updated to include closure activities associated with the South Ridge Project.

2.12.15.1 Closure Philosophy

The RCP adopts a risk-based and adaptive approach to closure, emphasizing progressive rehabilitation during operations, followed by comprehensive decommissioning, landform stabilization, and ecological restoration at the end of mine life.

2.12.15.2 Future Land Use Objectives

Post-closure land use is intended to be compatible with surrounding conditions and historical land uses, including wildlife habitat, recreation (e.g., walking, hunting, berry picking, and ATV use), and potential future mineral exploration. Closure designs prioritize public safety, long-term stability, and access management, while avoiding the need for perpetual active treatment or intervention.

2.12.15.3 Progressive Rehabilitation Strategy

Progressive rehabilitation is a central element of the RCP and will occur throughout the life of the Project. Activities include reshaping and stabilizing waste rock facilities,

managing topsoil and overburden stockpiles for reuse, and early revegetation of disturbed areas where practicable. Progressive measures are intended to reduce the overall closure footprint, manage erosion and sedimentation, and improve long-term reclamation outcomes.

2.12.15.4 Mine Site Closure Measures

At final closure, open pits will be allowed to flood to stable elevations, with safety berms, boulder fencing, and signage installed to prevent inadvertent access to steep pit walls. Waste rock and overburden facilities will be regraded to stable slopes, contoured to blend with surrounding topography, and revegetated. Underground workings will be secured to prevent access and ensure long-term ground stability.

2.12.15.5 Tailings Management Facility Closure

The AGS East TMF will be closed through a combination of regrading, soil cover placement, and revegetation of the tailings surface to achieve long-term physical and chemical stability. Dams and associated water control structures will be modified or breached, as appropriate, to prevent impoundment and promote controlled drainage. Tailings and associated materials have been characterized as non-acid generating, supporting a closure strategy that does not rely on permanent water cover or active treatment.

2.12.15.6 Water and Waste Management at Closure

Closure water management focuses on maintaining natural drainage patterns, controlling erosion, and ensuring that post-closure discharges meet regulatory water quality requirements. Sediment basins, ditches, and diversion structures will be reconfigured or removed as conditions stabilize. Remaining wastes and hazardous materials will be removed from site or disposed of in accordance with regulatory requirements.

2.12.15.7 Infrastructure Decommissioning

Mine, mill, and support infrastructure—including buildings, utilities, roads, and the BBMT—will be dismantled or removed unless required for post-closure land use. Foundations and disturbed areas will be regraded and rehabilitated to restore safe and stable conditions.

2.12.15.8 Revegetation and Ecological Restoration

Revegetation will be undertaken using suitable soil covers and locally appropriate plant species to establish self-sustaining vegetation communities. Restoration efforts are intended to stabilize surfaces, reduce erosion, and support long-term ecological function consistent with surrounding landscapes.

2.12.15.9 Closure Monitoring, Maintenance, and Costing

The RCP includes a comprehensive post-closure monitoring and maintenance program addressing physical stability, water quality, dam safety, and ecological performance. Monitoring will continue until regulatory authorities are satisfied that closure objectives have been met. A detailed closure cost estimate and schedule are provided to support financial assurance and regulatory approval and will be updated to include the Project.

2.12.16 Waste Management Plan

The WMP establishes the framework for the systematic management of all wastes generated during construction, operation, maintenance, and closure activities. The WMP is intended to minimize environmental and human health risks, promote waste reduction and recycling where practicable, and ensure compliance with applicable federal and provincial waste management legislation. The WMP applies to all employees, contractors, and subcontractors working on behalf of CFI.

2.12.16.1 Regulatory Context

The WMP is informed by relevant federal and provincial regulations governing waste handling, storage, transportation, and disposal. It aligns with Newfoundland and Labrador requirements for hazardous and non-hazardous waste management and is designed to complement other management plans, including the EPP, SPRP, and EEMP.

2.12.16.2 Waste Streams and Classification

The WMP identifies and classifies all anticipated waste streams including:

- Non-hazardous solid waste (e.g., domestic waste, packaging materials, scrap metal, construction debris);
- Hazardous waste (e.g., waste oils, fuels, lubricants, solvents, oily rags, batteries, and chemical containers);
- Recyclable materials (e.g., metals, used oil, batteries, and select packaging); and
- Special wastes requiring controlled handling (e.g., contaminated soils, absorbents used during spill response).

Each waste stream is characterized based on source, composition, volume, and regulatory classification to ensure appropriate management practices are applied.

2.12.16.3 Waste Minimization and Recycling

Waste reduction is a core objective of the WMP. The WMP emphasizes source reduction through procurement practices, reuse of materials where feasible, segregation of recyclable materials, and return of unused products to suppliers when possible. Recycling programs are implemented for materials such as scrap metal, used oil, batteries, and approved packaging, subject to availability of licensed recycling facilities.

2.12.16.4 Waste Handling, Storage, and Labelling

The WMP outlines standardized procedures for waste handling and on-site storage. Wastes are segregated by type and stored in clearly labeled containers located in designated areas designed to prevent spills, leaks, and unauthorized access. Hazardous wastes are stored in approved containers with secondary containment and are labelled in accordance with WHMIS and Transportation of Dangerous Goods requirements.

2.12.16.5 Transportation and Disposal

All waste transportation and disposal activities are conducted using licensed carriers and approved disposal or recycling facilities. Manifests and tracking documentation are maintained for regulated wastes to ensure traceability from generation to final disposal.

Disposal methods are selected based on waste type, regulatory requirements, and best available options to minimize environmental impact.

2.12.16.6 Roles, Responsibilities, and Training

Clear roles and responsibilities are assigned for waste management implementation and oversight. All personnel are responsible for proper waste segregation and reporting, while supervisors and environmental staff oversee compliance, inspections, and documentation. Waste management training is provided as part of site orientation and refresher programs to ensure personnel understand waste handling procedures and regulatory obligations.

2.12.16.7 Inspections, Recordkeeping, and Continuous Improvement

Regular inspections are conducted to verify compliance with the WMP and identify opportunities for improvement. Records are maintained for waste generation, storage, transport, and disposal, including manifests and recycling documentation. The WMP is reviewed periodically and updated as operational conditions change, new waste streams are identified, or regulatory requirements are amended.

2.13 Emergency Response Planning

2.13.1 Emergency Preparedness and Response Plan

The Emergency Preparedness and Response Plan (EPRP) establishes the procedures CFI must follow to reduce risks to human life, worker safety, and the environment during emergencies associated with the TMF and the Mill Site Event Pond (MSEP). These structures are critical components of mine waste and water management. Because dam failures and related events may create rapid releases of water, tailings, or sediment, the EPRP provides a structured system for detection, escalation, communication, and response. The document also outlines instructions for its use, including how to determine the appropriate emergency level and how to follow the corresponding procedures.

The EPRP is treated as a controlled document. Distribution lists, revision protocols, and review procedures ensure all personnel responsible for emergency action—ranging from internal CFI managers to the St. Lawrence Fire Department and the Newfoundland and Labrador Department of Natural Resources—are equipped with up-to-date information. Annual reviews, involving both site leadership and emergency responders, help ensure familiarity with the procedures and readiness to act.

2.13.1.1 Description of Impoundments and Hazard Basis

The TMF and MSEP are both earthfill embankment structures designed for tailings deposition, water storage, and stormwater management. The TMF includes a tailings impoundment and polishing pond, each with rockfill embankments, HDPE liners, overflow spillways, and water transfer systems. According to CDA classifications, the TMF is designated Very High consequence, reflecting the potential downstream impacts should a failure occur. The MSEP, designed for stormwater containment and operational water management, is classified as Low consequence but is still capable of impacting downstream aquatic environments.

The structures are engineered to withstand extreme weather events—including Inflow Design Floods—and earthquakes, with specific freeboard and storage design criteria. Nevertheless, potential failure modes include overtopping, erosion, structural instability, excessive seepage, pipeline ruptures, and operational malfunctions. The EPRP identifies materials that could be released in an emergency (water, tailings, sediment) and notes that, while tailings are considered chemically benign, sediment releases could create significant ecological harm, especially to fish habitat.

Potential impacts differ depending on breach direction. A failure toward Mine Cove (Grebes Nest Watershed) is not expected to put human life at immediate risk but could severely impact salmon, trout, and eel habitat. A breach toward Salt Cove could damage access roads and pose temporary risk to people travelling on mine or public roads, along with similar habitat loss. The EPRP also identifies a potential emergency access route if main roads become impassable.

2.13.1.2 Emergency Levels and Their Application

The EPRP defines three emergency levels, each representing a different degree of urgency:

- Level 1 – Unusual Condition: A deviation from normal conditions that does not yet indicate an emergency but requires prompt investigation and corrective action.
- Level 2 – Potential Emergency Condition: A situation that could escalate into an emergency if not addressed but does not pose immediate failure risk.
- Level 3 – Emergency Condition: A severe situation indicating imminent or ongoing failure, requiring immediate action, evacuation, and external notifications.

2.13.1.3 Response Procedures for Level 1 Emergencies

Level 1 conditions include rising water levels below critical thresholds, minor erosion, unexpected spillway flows, or unusual piezometer readings. The plan requires personnel to:

- Begin an Event Log to record observations and actions.
- Notify the Mill Operations Superintendent (or alternates).
- Investigate causes, implement corrective measures, and increase monitoring frequency.
- Consult the Engineer of Record when required.
- Conclude the event only after conditions return to normal and a Termination Report is completed.

While actions at this level are primarily internal and operational, the goal is early intervention to prevent escalation.

2.13.1.4 Response Procedures for Level 2 Emergencies

Level 2 situations involve conditions such as water levels approaching maximum operating limits, significant erosion, abnormal seepage, cracking in embankments, pipeline ruptures, or equipment failures that compromise water control systems. These conditions require coordinated response across multiple CFI departments and external engineering support.

Key actions include:

- Immediate documentation through an Event Log.
- Rapid notification of CFI management, the HSE Manager, the General Manager, and the Engineer of Record.
- Detailed inspection of all embankment components, if safe to do so.
- Implementation of interim measures such as stopping tailings discharge, using portable pumps, installing barricades, or isolating flow paths.
- Development and execution of a corrective action plan by CFI leadership and the Engineer of Record.
- Continuous monitoring until system stability is restored and the event can be formally terminated.

These procedures ensure potential emergencies are stabilized before they evolve into Level 3 events.

2.13.1.5 Response Procedures for Level 3 Emergencies

Level 3 represents an urgent, high-risk event, such as suspected or actual embankment failure, major slope instability, boiling or seepage through foundations, vortex formation, or significant structural deformation following an earthquake. The plan emphasizes rapid communication, evacuation, and public safety measures.

Actions required include:

- Immediate notification of internal CFI leadership.
- Contacting external emergency responders, including the St. Lawrence Volunteer Fire Department and RCMP.
- Evacuating all personnel from immediate danger zones, including downstream areas and vulnerable road sections (e.g., Director Drive, Iron Spring Road).
- Notifying Department of Natural Resources officials using prescribed language provided in the plan.
- Conducting safe inspections to understand the extent of structural damage.
- Implementing interim actions to reduce water levels and stabilize structures.
- Coordinating emergency engineering measures under direction of the Engineer of Record.
- Maintaining heightened monitoring, updating emergency responders, and documenting all actions.

If failure occurs despite intervention, efforts shift toward damage minimization, including constructing temporary containment features within the inundation zone.

2.13.1.6 Reporting and Documentation

All emergency events—regardless of level—must be documented through Event Logs and Termination Reports. These reports are stored within CFI's electronic safety filing system and reviewed annually during dam inspections conducted jointly with the Engineer of Record. Thorough documentation ensures regulatory compliance, supports lessons learned, and contributes to dam safety governance.

2.13.1.7 Emergency Contacts and On-Site Resources

The EPRP provides a comprehensive list of emergency contacts, including CFI leadership, emergency responders, the Engineer of Record at Knight Piésold Ltd., geosynthetic specialists, and provincial regulatory authorities. The EPRP also outlines the equipment available on-site—such as haul trucks, loaders, dozers, and pumps—which may be required during emergency response activities. These resources support rapid and effective mobilization during both interim actions and major stabilizing interventions.

2.13.2 Accidental Event Scenarios

The following section describes accidental event and malfunction scenarios that could occur over the life of the Project, including during construction, operations, maintenance, and closure. These scenarios represent low probability, but foreseeable events associated with equipment operation, material handling, water and environmental management systems, and human activities. For each scenario, the potential environmental and safety effects are identified, along with the key management and mitigation measures that have been incorporated into Project design, operational procedures, monitoring programs, and emergency response planning. This structured approach demonstrates how risks are proactively managed and how the likelihood and consequences of accidental events are minimized throughout all phases of the Project.

Table 2.13-1 describes potential malfunctions and accidents that could occur over the life of the Project as well as the key management measures.

Table 2.13-1: Potential Accidental Event Scenarios

Accident/ Malfunction	Description of Scenario	Description of Potential Effects	Management Measures
Spills and Releases of Hazardous Materials	Accidental spills or releases of fuels, oils, lubricants, hydraulic fluids, or other hazardous or deleterious substances may occur during refuelling, equipment maintenance, material handling, or as a result of equipment malfunction or vehicle accidents. In marine areas, spills may occur from vessels, barges, or over-water construction equipment.	Potential effects include soil and sediment contamination, degradation of surface water or marine water quality, adverse effects on aquatic organisms and wildlife, and potential risks to worker and public safety. If not promptly contained, spills could migrate beyond the immediate work area and result in regulatory non-compliance.	Management measures include secondary containment, designated refuelling and maintenance areas, trained personnel, and routine equipment inspections. Spill response equipment is maintained on site and, where applicable, on marine vessels. The ERP and Contingency/Spill Response Plan provide procedures for immediate containment, recovery, cleanup, notification, reporting, and corrective actions.

Accident/ Malfunction	Description of Scenario	Description of Potential Effects	Management Measures
Water Management System Failures and Uncontrolled Releases	Failures of water management infrastructure may occur due to extreme precipitation, rapid snowmelt, freshet conditions, pump or power failures, pipeline or hose ruptures, or exceedance of storage or treatment capacity.	Potential effects include uncontrolled discharges of contact water, erosion and sedimentation, exceedances of water quality criteria, and downstream or off-site environmental effects. These events could also disrupt operations and require regulatory reporting.	Management measures include conservative water balance design, adequate freeboard, redundant pumping capacity, backup power where required, and routine inspections. The Water Management Strategy and Site-Wide Water Management Plan establish contingency pumping, temporary diversion, emergency storage, monitoring, and reporting procedures to manage upset conditions.
Erosion, Sedimentation, and Turbidity Events	Erosion and sediment control failures may occur during land disturbance activities, particularly during heavy rainfall events. In marine and nearshore areas, in-water works may result in elevated turbidity or sediment plumes if controls are compromised or unanticipated ground conditions are encountered.	Potential effects include increased turbidity, sediment deposition in aquatic habitats, degradation of water quality, and potential effects on fish, benthic organisms, and marine habitat. Uncontrolled erosion may also damage infrastructure.	Management measures include installation of appropriate erosion and sediment control measures, such as silt fences, sediment traps, and silt curtains, prior to disturbance. Controls are routinely inspected and maintained. Monitoring thresholds, work stoppage triggers, and corrective actions are defined in the EPP, EEMP, and the BBMT EEMP Addendum.
Monitoring Exceedances and Unanticipated Environmental Effects	Environmental monitoring may identify exceedances of action levels or unanticipated adverse effects that indicate malfunctioning controls or unforeseen interactions between Project activities and environmental receptors.	Potential effects include localized degradation of environmental quality or biological conditions if exceedances persist without intervention. These events may signal emerging risks requiring adaptive management.	The EEMP establishes procedures for confirmation sampling, investigation of causes, adaptive mitigation, and communication with regulators. Monitoring results are used to inform corrective actions and adjustments to management measures to prevent escalation.

Accident/ Malfunction	Description of Scenario	Description of Potential Effects	Management Measures
Fugitive Dust and Air Quality Incidents	Fugitive dust emissions may increase during dry or windy conditions, due to equipment malfunction, or when dust suppression measures are temporarily unavailable or ineffective.	Potential effects include nuisance dust, reduced visibility, off-site dust deposition, and potential exposure risks to workers or nearby receptors.	The Fugitive Dust Management Plan includes proactive controls such as watering, dust suppressants, wind-based operational restrictions, and equipment maintenance. Exceedances or complaints trigger investigations, corrective actions, and documentation. Coordination with safety procedures is implemented where dust presents a health or safety risk.
Marine and Vessel-Related Incidents	Marine operations may result in vessel collisions, allisions, grounding events, or accidental releases of fuels, concrete, grout, or other materials to marine waters. Interactions with marine wildlife may also occur.	Potential effects include localized marine water quality degradation, sediment disturbance, physical damage to habitat, and disturbance or harm to marine wildlife. Navigation safety may also be affected.	Management measures include trained operators, marine traffic coordination, exclusion zones, and marine-specific operating procedures. The BBMT EEMP Addendum and ERP provide response protocols for work stoppage, containment, wildlife protection, monitoring, and regulatory notification.
Geotechnical and Infrastructure Failures	Geotechnical instability, such as slope failure, rockfall, or ground movement, may occur during excavation, mine development, or infrastructure construction. Infrastructure failures, including road washouts or berm breaches, may occur during extreme weather events.	Potential effects include risks to worker safety, damage to infrastructure, generation of sediment-laden runoff, and disruption of site operations.	The MDP includes geotechnical investigations, conservative design criteria, monitoring programs, defined trigger thresholds, and work stoppage procedures. Integration with the ERP and the H&S Manual ensures coordinated response and remediation.

Accident/ Malfunction	Description of Scenario	Description of Potential Effects	Management Measures
Worker Health and Safety Incidents	Accidents involving worker injury or illness, vehicle or mobile equipment incidents, fire, or exposure to hazardous conditions may occur during all phases of the Project.	Potential effects include injury or fatality, interruption of operations, and secondary environmental impacts if incidents involve hazardous materials or infrastructure damage.	The H&S Manual establishes safe work procedures, training requirements, emergency response protocols, incident reporting and investigation, and stop-work authority. These measures are fully integrated with the ERP to ensure timely and effective response.

2.14 Potential Resource Conflict

As previously described the Project area has a long history of mining activity and much of the area has been previously disturbed and is classified as brownfield site. Potential interactions between the Project and the environment during Construction and Operation may include those associated with:

- Fish and Fish Habitat;
- Resource Harvesting (berry picking);
- Birds and Wildlife;
- Species at Risk (if present in the general area of construction); and
- Socio-Economic Environment; Recreation (trail access).

Potential resource conflicts arising from these interactions are identified through stakeholder consultations during all Project's planning stages, including the EA process. An analysis of these Project-environment interactions and potential resource conflicts is provided in Section 6 (Valued Components Effects Assessments).

3 Regulatory Engagement

Early and ongoing engagement with relevant regulators has been a critical component of preparing a fulsome and defensible EARD for the Project. These technical discussions have been used to confirm regulatory expectations, identify key information requirements, and proactively address potential gaps or risks prior to submission. Input received from regulators has directly informed the scope of baseline studies, effects assessments, mitigation measures, and monitoring commitments included in the EARD, helping to ensure alignment with applicable legislation, guidance, and conditions of the EA. A summary of technical discussions held with regulators to date is provided in Table 3-1. In addition, a draft EARD was submitted to relevant regulatory agencies. Feedback received and CFI's response to this feedback is summarized in Appendix 3-1.

Table 3-1: Summary of VC Study Plan Technical Discussions with Regulators

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Industry, Energy and Technology – Mineral Development Division	September 3, 2025	• Registration document must include preliminary ML/ARD results, testing plan, and a mineral resource estimate. • Methodology must comply with MEND guidelines. • Conditional EA release is possible while testing is in progress. • EA registration scope must align with final project scope to avoid need to re-register as a new project. • Post-EA Approvals: MDP/RCP require detailed mine design, final ML/ARD data, updated mineral resource statement, closure plans, and financial assurance.	• Include preliminary ML/ARD results, an ongoing testing plan, and a current mineral resource estimate. • Ensure ML/ARD methods are consistent with MEND guidance and clearly documented. • Conditional EA release may be acceptable with commitments to complete ML/ARD testing post-registration. • Align EA scope with the final Project footprint and design to avoid re-registration. • Post-EA approvals will require detailed mine design, finalized ML/ARD data, an updated mineral resource statement, closure plans, and financial assurance. • Provide a clear Project description (pit design, waste management, haulage, dewatering, schedule, closure). • Confirm mineral tenure for the proposed footprint. • Describe ML/ARD testing status and reporting timelines. • Address community access considerations.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Environment, Conservation and Climate Change – Pollution Prevention Division	September 4, 2025	• Registration document must include updated or scoped waste management plan, characterization of effluent and parameters of concern during construction and operations phases. • Baseline water quality data and proposed discharges. • Air quality assessment and dust control measures. • Acknowledgement of learnings from AGS site and improved mitigation strategies as a result. • Monitoring programs including surface water, air emissions, and groundwater must be outlined.	• Include an updated or scoped Waste Management Plan. • Identify and quantify effluent sources and parameters of concern. • Present baseline surface water quality data and proposed discharges demonstrating regulatory compliance. • Include an air quality assessment and dust control measures. • Incorporate lessons learned from the AGS site and improved mitigation measures. • Outline surface water, groundwater, and air monitoring programs. • Quantify incremental GHG emissions for all Project phases. • Include a BACT analysis where emissions approach thresholds.
Department of Tourism – Tourism Branch	September 9, 2025	• Registration document must include engagement history with local community and stakeholders. • Recommendation to engage with Miner's Museum management and the St. Lawrence Historical Advisory Committee. • Include clear description of potential effects on tourism assets and mitigating measures to reduce impacts. • Three primary assets of concern regarding effects assessment include: Cape Chapeau Rouge Trail, Shoal Cove Beach, and Chamber Cove Heritage Walk.	• Summarize engagement with tourism stakeholders and key issues raised. • Engage Miner's Museum management and the St. Lawrence Historical Advisory Committee, where applicable. • Describe potential effects and mitigation for tourism assets. • Address effects on Cape Chapeau Rouge Trail, Shoal Cove Beach, and Chamber Cove Heritage Walk. • Include an engagement log.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Environment, Conservation and Climate Change – Water Resources Management Division	September 11, 2025	Registration document must include: • Identification and assessment of all culverts, bridges, and stream crossings within the project area. • New or upgraded crossings require full design details, including hydrologic modeling and design flood return. • Proposed changes beyond the current Water Use Licenses (water sources, withdrawal rates, use purposes) must be identified, and an updated effects assessment and monitoring plan be provided. • Hydrogeological information to be included to support pit dewatering estimates. • Affected watersheds and existing surface water monitoring stations must be evaluated to determine needs for additional monitoring stations. • Monitoring wells must collect seasonal baseline groundwater conditions. • Identify encroachment or dewatering effects on ponds and wetlands near the pit. • There is potential for conditional EA release with commitments to conduct additional field studies or monitoring programs to address data gaps	• Identify and assess all culverts, bridges, and stream crossings within the project area. • Provide concept-level design and hydrologic information for new or upgraded crossings. • Identify any changes relative to the existing Water Use Licences and assess associated effects. • Include hydrogeological information to support pit dewatering estimates. • Evaluate watersheds and monitoring stations and identify needs for additional monitoring. • Collect seasonal baseline groundwater data. • Assess potential effects on nearby ponds and wetlands. • Identify baseline gaps and commit to additional studies or monitoring, where required. • Confirm whether Project water demand remains within the existing licences.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Fisheries, Forestry and Agriculture – Wildlife Division	September 15, 2025	Registration document must include: • Mapping of vegetation communities and wildlife use in the project area. • Watercourse classification/mapping and habitat surveys required to confirm fish habitat impacts. • EA should identify stream crossings and culverts even if design details are not yet finalized. • Crown Land status must be confirmed using maps to identify lease boundaries. • Forest clearing must be quantified in hectares, minimizing disturbance. • Wildlife surveys must identify species of conservation concern with mitigation measures to protect breeding/nesting periods.	• Map vegetation communities and wildlife use. • Conduct watercourse classification and habitat surveys to confirm fish habitat. • Identify all stream crossings and culverts, regardless of design finalization. • Confirm Crown Land status and tenure boundaries. • Quantify forest clearing (hectares) and demonstrate minimization. • Identify species of conservation concern and apply seasonal mitigation measures. • Confirm Crown Land use authorizations.
Department of Environment, Conservation and Climate Change – Pollution Prevention Division	November 27, 2025	• Reviewed EA pathway emphasizing conditional release over escalation to EPR/EIS, with Q1 2026 submission timing confirmed. • Confirmed PPD gap analysis items largely addressed, including discharge point compliance and effluent monitoring. • Identified air quality dispersion modelling as the primary remaining risk, particularly due to proximity to the Iron Springs Campsite. • Air modelling often triggers an EPR, but if this is the sole condition, conditional release may still be achievable. • Discussed historical effluent compliance issues with emphasis on addressing TSS. • Confirmed nitrate mitigation through blasting technologies and low future risk based on available data. • Confirmed groundwater review will rely on WRMD expertise, with no additional PPD concerns at this time. • Flagged need to consider Town of St. Lawrence Noise Bylaw and noted ongoing upgrades to air monitoring infrastructure.	• Present air quality dispersion modelling demonstrating compliance with standards. • Document lessons learned from past exceedances and corrective measures. • Address air quality as a potential trigger while supporting conditional EA release. • Demonstrate resolution of historical TSS compliance issues. • Describe nitrate mitigation measures and associated low residual risk. • Address compliance with the Town of St. Lawrence Noise Bylaw.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Environment, Conservation and Climate Change – Water Resources Management Division	November 28, 2025	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Confirmed approach to address WRMD gap analysis items and assess any remaining triggers for an EIS. • Confirmed Q1 2026 submission timing for the EA Registration Document. • Presented enhanced surface water monitoring program, including increase from quarterly to monthly sampling. • Confirmed inclusion of Memorial Bridge details in the EA Registration. • WRMD raised considerations related to historic underground workings. • Identified concerns regarding bog runoff in the Shoal Cove area. • Requested clarification on pit excavation discharge pathways, including potential flow to an unnamed tributary, and Shoal Cove Beach. • Noted Shoal Cove Beach as a potential area of heightened public sensitivity (tourist use). • Flagged that settling pond retention structures >1 m would be classified as a dam and require a dam permit.	• Include Memorial Bridge upgrade specifications. • Clearly identify construction and operational water discharge pathways. • Assess and mitigate potential discharge effects on Shoal Cove Beach. • Describe enhanced surface water monitoring commitments. • Confirm settling pond structure heights and dam permitting requirements, if applicable. • Address underground workings and bog runoff considerations.
Department of Environment, Conservation and Climate Change – Environmental Assessment Division	January 21, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Road construction regulatory approval clarification.	• Clarified that all roads must be included in the registration document, including road upgrades and the new public access road. • Ensure Health Canada guidelines are followed for noise assessments. • Ensure operational water movement is assessed and identified. • Complete updates to the EPP, EEMP, and Spill Response Plan.
Office of Indigenous Relations and Reconciliation	February 26, 2026	• Confirmed obligations for engagement. • Presented letter which was submitted to Qalipu and Miawpukek.	• No legal obligation to consult. • Notification and engagement with indigenous groups through the public engagement process.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Environment, Conservation and Climate Change – Water Resources Management Division	March 3, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Presented enhanced surface water monitoring program, including increase from quarterly to monthly sampling. • Presented preliminary water quality predictions and plan to re-assess with inclusion of the hydrology program inputs.	• Inquired if any fish were discovered in Shoal Cove Pond during the fish habitat study. • Clearly define life of mine schedule in the presentation and EA Registration Document submission. • Assess if blasting and ground vibration will have any impact on the Minworth tailings.
Department of Environment, Conservation and Climate Change – Environmental Assessment Division	March 3, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Presented preliminary water quality predictions and plan to re-assess with inclusion of the hydrology program inputs.	• Show municipal boundary on map. • Inquired about public perception of the Project. • Inquired about the cost of the Memorial Bridge. • Noted the importance of inclusion of the hydrology information in the EA Registration Document.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Forestry, Agriculture, and Lands	March 4, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Presented preliminary water quality predictions and plan to re-assess with inclusion of the hydrology program inputs.	• Clearly define how the regional study area was chosen. • Address the area of habitat that will be impacted and the vegetation clearing plan. • Recommended a meeting with DFO and the Department of Forestry, Agriculture, and Lands to discuss fish/fish habitat details. • Include a summary list of wildlife identified at AGS. • Address requirements for SAR including the Short-Eared Owl, breeding season, and 800 m buffer zones. Survey within 7 days will satisfy requirements. • Confirm 50 m buffer zone from salmon rivers, and 30 m buffer zones from water. • Include information on water crossing and the extent of habitat impacted by road widening.
Department of Environment, Conservation and Climate Change – Pollution Prevention Division	March 4, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Presented preliminary water quality predictions and plan to re-assess with inclusion of the hydrology program inputs.	• Inquired about the consensus of community feedback and concerns. • Address dust and show that compliance can be achieved with mitigation measures. • Clearly define that the draft EA registration document will not include water information and relevant sections, however, it will be included in the final EA Registration Document. • Demonstrate that water quality effluent compliance can achieved, highlighting past ammonia compliance issues. • Provide proposed surface and ground water quality sampling locations for environmental water quality monitoring in the South Ridge area.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Department of Fisheries and Oceans Canada	March 6, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Presented preliminary water quality predictions and plan to re-assess with inclusion of the hydrology program inputs.	• Identify water course crossings and culverts on any roads. • Include a commitment that when no longer in use, culverts and infrastructure shall be removed and rehabilitated or maintained by the proponent. • Recommend reviewing haul road setbacks if any water bodies are nearby while developing road designs. • Erosion and Sediment control plan including South Ridge to address washouts and sedimentation in nearby waters. • Review code of practice documentation to determine if a request for review is required for any bridges or work near water.
Department of Energy and Mines – Mineral Development Division	March 9, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Presented preliminary water quality predictions and plan to re-assess with inclusion of the hydrology program inputs.	• Inquired if results from static testing are received. • Confirm if South Ridge is part of Director Vein. • Identify if Project area is a brownfield site. • How does the South Ridge Project fit in with the AGS Project. • How many tonnes of ore and waste will be mined and at what grade. • What is the stripping ratio compared to AGS. • What is the cutoff grade compared to AGS. • Will all of the open pit minable resource be mined? • What lithology is the waste rock (granite). • Will there be any geotechnical concerns with Director Vein below. • Include a geotechnical report with the Mine Plan. • Inquired if the structural engineer for bridge designs was local. • Noted that rehabilitation and closure financial assurance payment will be required prior to commencing with the Project after release.

Regulator	Date	Summary of Technical Discussion	Key Regulatory Requirements
Impact Assessment Agency of Canada	March 9, 2026	• Reviewed presentation demonstrating project, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Discussed Federal EA regulations and triggers.	• Calculate area of mining operations and total production capacity to confirm the Project doesn't meet Federal E requirements.
Department of Environment, Conservation and Climate Change - Climate Change Division	March 12, 2026	• Reviewed pathway toward conditional EA registration release rather than to EPR/EIS. • Reviewed presentation demonstrating project updates, studies in progress, and preliminary results. • Confirmed approach to submit draft EA registration document for review prior to submission of the final EA registration document. • Confirmed Q1 2026 (draft) and Q2 2026 (final) submission timing for the EA Registration Document. • Presented preliminary water quality predictions and plan to re-assess with inclusion of the hydrology program inputs.	• Include GHG profile with year over year full emissions inventory for the total project with a summary by source (stationary, mobile, etc.) • Include construction in emissions calculations. • Climate change projections vs historical weather data to ensure infrastructure is prepared for storms, rain, and flooding. No regulated mechanism but a request.

CFI will maintain ongoing, proactive, and transparent engagement with applicable regulators and authorities throughout all phases of Project development, Construction, Operations, and Closure. This engagement will be structured to ensure continued alignment with evolving regulatory requirements, permit conditions, and guidance, while supporting timely identification and resolution of issues before they affect Project implementation. CFI will provide regular updates to regulators on Project status, monitoring results, and any changes to design, scheduling, or management plans, and will seek regulatory input where adaptive management or amendments may be required. Through early notification of incidents, exceedances, or potential non-compliance, and through collaborative review of mitigation and corrective actions, CFI will support regulatory confidence and ensure that regulatory expectations are clearly understood and integrated into Project decision-making as the Project advances.

4 Community Engagement and Stakeholder Consultation

To advance the development and assessment of the proposed Project CFI has conducted community engagement activities to identify and address interests, issues, and concerns of public and local stakeholder groups, in alignment with Section 10 of NL Environmental Assessment Regulations, 2003 related public consultation with public.

This section outlines the engagement activities conducted to date, a summary of issues heard and how they were addressed, as well as a summary of ongoing or planned engagement activities.

4.1 CFI's Engagement Objectives and Approach

CFI's public consultation and engagement program is founded on transparency, responsibility, collaboration, stewardship, and accountability. CFI is committed to building relationships, understanding issues and concerns, and maintaining open, transparent dialogue with communities and stakeholders in the St. Lawrence region. CFI continues to engage with the public, agencies, community stakeholders, and special interest groups to identify and address concerns, issues, and interests to strengthen the validity and robustness of the EARD and to support responsible Project development.

CFI understands that consultation findings may influence Project activities, including protection and mitigation measures during the Construction, Operation, and Closure phases of the Project. CFI is committed to involving people who are potentially affected by or interested in the Project, gathering meaningful input, and conducting targeted outreach to address concerns and strengthen the accuracy of EA predictions and follow-up measures.

4.1.1 Objectives

The primary objectives of CFI's consultation and engagement program are to:

- Establish clear approaches and protocols to efficiently manage stakeholder information sharing, feedback, input, and documentation for the EA.
- Ensure balanced, accessible, and inclusive involvement of individuals and organizations who are affected by, likely to be affected by, or have an interest in environmental decision-making.
- Apply effective communication techniques to support public understanding of the assessment process, the Project, and its potential effects and benefits, including health, social, and economic considerations.
- Provide opportunities for dialogue, agreement, or compromise on key issues relevant to the Project.
- Establish the foundation for ongoing discussions to support environmental and social impact assessment, Permitting, Construction, Operation, and Closure.

4.1.2 Approach

CFI's overall approach to consultation and engagement is relationship-based and adaptive. CFI will continue to listen for concerns and feedback and demonstrate how issues, opportunities, and interests are considered and addressed through Project design, mitigation, and management measures. Stakeholders will be informed and kept

up to date on the Project and the EA process and will be provided with clear opportunities to ask questions and provide feedback.

CFI's consultation and engagement program is intended to:

- Provide appropriate personnel, resources, and procedures to conduct and document meaningful, responsive engagement.
- Identify interested and affected stakeholders and build trusted relationships that support productive and collaborative discussions about managing potential effects and maximizing benefits.
- Communicate in plain language, using clear and accessible materials that educate, inform, and motivate participation.
- Consult early and maintain regular, open dialogue throughout the life of the Project.
- Provide opportunities to receive feedback and exchange ideas, with adaptations to reach diverse demographic groups.
- Listen to and carefully consider concerns and ideas, recognizing that diversity of perspectives contributes to fair and informed decision-making and improved Project outcomes.
- Communicate decisions in a timely manner and respond to information requests as fully and quickly as possible.

This approach builds on CFI's existing relationships and experience with community stakeholders and will continue to guide engagement as the Project advances through assessment, Construction, Operation, and Closure.

4.2 Engagement Methods and Activities

This section summarizes the engagement methods and activities completed to date for the Project.

4.2.1 Communications Tools and Strategies

CFI used a variety of means to communicate information about the Project and solicit feedback from the public, regulatory agencies, and stakeholder groups. Core information and messages were concise, used plain language, and were accessible in print, and presentation formats to accompany discussions and to facilitate understanding of the Project and the EA.

4.2.1.1 CFI Office and Mine Site

CFI's operational office is in St. Lawrence and serves as a point of contact for stakeholders. Access is by invitation or request only and requires safety orientation before entering the mine site.

Stakeholder meetings are held in CFI boardrooms, at the Town Hall and other locations, and remotely through electronic meeting systems. Site tours are provided to stakeholders to describe the Project's location and proximity to mine facilities and operations, roads, trails, sightlines and Town residences and facilities.

Information on the Project and the Environmental Assessment process, as used in the public meetings, is available at this office. Included is CFI's EA team's contact information and instructions to provide comments and concerns relevant to the Project and the EA.

4.2.1.2 Website

CFI's website www.canadafluorspar.ca provides limited information about the mine operation and the Project, beyond contact information and a link to job opportunities. It is under construction.

4.2.1.3 Information Materials

Materials include brochures for handouts, maps, illustrations, designs, presentations, scientific/technical and topic-specific information such as baseline studies, summary sheets, and signage to accompany discussions and to facilitate an understanding of the Project and the Environmental Assessment. Appendix 4-2: Canada Fluorspar South Ridge Development brochure from October 3 session. Appendix 4-5: Canada Fluorspar South Ridge Development brochure from March 9 session.

4.2.1.4 Presentations

The company prepared a series of PowerPoint presentations for use in stakeholder and public meetings that were updated as information became available, plans were prepared, and feedback was provided on mitigations, impact, and benefits. See Appendix 4-3: Canada Fluorspar South Ridge Development presentation for October 3 session. Appendix 4-6: Canada Fluorspar South Ridge Development presentation for March 9 session.

4.2.1.5 Social Media and Advertising

CFI used LinkedIn[1] and Facebook[2] to post Project information, updates, and South Ridge site notifications, including notices about Public Meetings and the Environmental Assessment process. Advertising and posts complied with the format required by the Section 10 of NL Environmental Assessment Regulations, 2003 related public consultation with public. The Project Team informed the public through social media content about ways to provide feedback during the Environmental Assessment process. The social media accounts were used to direct feedback and as a proactive means of notifying the public. See Appendix 4-1: Public Notice: Public Information Session on the Proposed South Ridge Project, October 3 session, Appendix 4-7: Public Notices and Advertisements for Public Information Session on the Proposed South Ridge Project, March 9 session, and Appendix 4-8 Public Engagement Session poster for March 9 session.

4.2.1.6 Email

A dedicated email account southridge@canadafluorspar.com was established to facilitate email correspondence between the Project Team and those with an interest in the Project.

[1] https://www.linkedin.com/company/canada-fluorspar-inc/?originalSubdomain=ca

[2] https://www.facebook.com/CanadaFluorspar

The email account is internally linked to key Project Team members (including those responsible for consultation record keeping) to provide access to incoming and outgoing messages. The email was posted on all social media platforms and public notices, and advertisements.

Several emails were sent following public information sessions and events with requests for information including a copy of the presentation and the handout brochure, lists of questions, a plan showing access routing along the coastline via Iron Springs Road, and an explanation of CFI's mining plan to further develop and protect historic sites within the municipal boundary.

4.2.1.7 Public Meetings

CFI hosted several in person public meetings. Organized in the format of an Open House, public meetings include presentations, displays of maps and key information, and information stations with representatives of CFI and the Environmental Assessment team to provide information and respond to questions, concerns, and expressions of support. The sessions included professional facilitation and management, and reports from the sessions.

4.2.1.7.1 Public Meeting #1 October 3, 2025

Forty people, not including CFI personnel and the organizing team, attended a two-hour public meeting held on October 3, 2025, at the Community Recreation Centre in St. Lawrence. The key objective was to provide information to the public about the Project and to document feedback and comments on concerns, interests, and issues.

The meeting format included a registration table at the entrance, with sign-up sheets, questions and comments sheets, handout brochure. Information stations provided maps and diagrams, with CFI EA team and executive available to respond to questions.

Appendix 4-4 provides the "What We Heard" report for the October 3 session.

The range of questions, issues, concerns, and expressions of support discussed at the public sessions included:

- Optimism for increased employment and contracting;
- Impact on heritage trails and access roads – if Red Head (Cape Chapeau Rouge) trail would be accessible; the type of access to the pedestrian bridge to Chamber Cove if traffic is diverted to Director Drive, and if a bigger bridge replacing the pedestrian bridge would affect trails by giving vehicle access to an area where it is not now permitted;
- Water management at South Ridge and where displaced water would be diverted, with concern if sent to the Shoal Cove Road beach area and the ocean;
- Concern about the impact of dust and noise from South Ridge being so close to Town and residences;
- Need for a permanent marine facility at Blue Beach was raised, noting that the lack of loading facilities impacted operational costs and viability of previous owners;
- Rationale of moving to South Ridge Project before depleting current open pits;
- Naming the Project as South Ridge was questioned, as the local name for that area was Shoal Cove Ridge;

- Concerns about viability of the mine, and reliance on surface mining, given history of mine closures.

4.2.1.7.2 Open House for Seniors September 11, 2025

CFI invited the public through Facebook and direct contact to a Seniors' Engagement Session on September 11 in St. Lawrence at the 50+ Club. The company provided an update on activities at the mine, and plans for the South Ridge Project. The discussions highlighted St. Lawrence's decades of deep connection, history, and local families' experiences with the mine.

4.2.1.7.3 Town of St. Lawrence Public Meeting November 27, 2025

The Town Council of St. Lawrence hosted a public meeting at the St. Lawrence Recreation Centre to provide residents with information on council's activities and plans. CFI was invited to present an update on the company's activities and plans for the South Ridge Project, and to participate with Council in the formal signing of the 2025 Tax Agreement with the Town.

CFI's management team attended and engaged with the public before and after the meeting. Board Chairman Willem Jacobs provided an update on the project and participated in the signing of the 2025 Tax Agreement.

South Ridge Project topics in CFI's update presentation included:

- Economic impact of resources from South Ridge will add to the long-term viability of the mine.
- Revenue to the Town will be provided through Tax Agreements – the 2025 agreement, with intentions for a new three-year agreement to be negotiated in 2026.
- Cooperation and collaboration commitments will continue to address concerns and opportunities.

4.2.1.7.4 Public Meeting #2 March 9, 2026

CFI hosted a Public Information Session in St. Lawrence on March 9. Fifty-nine people attended, not including CFI personnel and the organizing team, attended the two-hour evening session at Stella Maris Hall. The key objective was to update and provide additional information to the public since the initial public information session on October 3 about the Project's environmental assessment, studies, and analyses of impacts. CFI described the planned mitigations and commitments to minimize impacts and support opportunities and the community. Residents provided feedback and comments on concerns, interests, and issues.

The meeting format included a registration table at the entrance, with sign-up sheets, questions and comments sheets, a handout brochure, and a survey to complete at the session.

See Appendix 4-7: Public Notices and Advertisement for Public Information Session on the Proposed South Ridge Project, March 9 session; Appendix 4-5: Canada Fluorspar South Ridge Development brochure from March 9 session; Appendix 4-6: Canada Fluorspar South Ridge Development presentation for March 9 session; Appendix 4-9 Exit

Survey Public Information Session March 9 session. Appendix 4-10: Canada Fluorspar South Ridge Development Report from March 9 session.

There was a range of questions, issues, concerns, and expressions of support discussed at the public session, during the presentation and at the information stations.

- Concern about managing/preventing vehicle access to Chamber Cove if Memorial Bridge provides vehicular access.
- Interest in accessing Environmental Assessment Registration document to review and provide comments.
- Interest in timeline and length of South Ridge Project.
- Concern about noise levels at Shoal Cove Beach.
- Concern about contaminates in dust and water.
- Concern about water drainage to Shoal Cove Beach.
- Interest in if additional environmental assessment will be required for the open pit itself.
- Concern about water contamination and management, and if it would be better than former operations that at times killed fish and produced brown water.
- Interest if the new Memorial Bridge would be accessible for driving and towing campers and recreational vehicles, and waste management trucks to collect garbage at Iron Springs Campground.
- Concern about dust management when construction combines with typical dry summertime conditions, thereby creating overflow dust.
- Interest in number and types of water trucks.
- Question about Blue Beach repairs, if there will be anchoring for the barge, and continued investment in a permanent wharf.
- Question if the new road reroute from Director Drive will be close to sink holes.
- Question if there is any other drilling for potential fluorspar ore near Iron Springs Road and South Ridge.
- Concern for protecting children who are known to use Iron Springs Road, on their way to Shoal Cover Beach and in the general area, when construction begins.
- Recommendation for school presentations to youth about the project and safety.
- Concern about small red birds nesting by Iron Spring Road, and what is an acceptable fatality rates for birds.
- Interest in other options for road routes e.g. from Blake’s Brook, before the bridge, to connect to Shoal Cove Road.
- Interest in the type, and length of time, of disruption during bridge construction.
- Interest in the amount of drilling completed at Director, and the findings.
- Interest in if underground mining plans are included in this EARD.
- Interest if CFI has explored the Tarefare 2 deposit – the shaft was sunk but no ore was hauled out when the former company closed operations.
- Interest in plans for waste stockpiles and aggregate process.
- Interest in weight capacity of bridges, and whether they are accessible to graders, loaders, and dump trucks with materials for road maintenance to Iron Springs and beach road.
- Interest in expected tonnage from South Ridge, and its grade, and contaminants.
- Interest in expected recovery rate of mill, compared to AGS.

- Interest in being able to fish at Salt Cove Gut; and if it will be contaminated as seen before at AGS.
- Support for production and jobs for the area.
- Support overall improvement in road network when pit is closed.

4.2.1.8 Stakeholder Meetings

4.2.1.8.1 Town Council of St. Lawrence

CFI held individual discussions with Mayor Pittman and Councillors and attended several meetings with the Town Council of St. Lawrence.

4.2.1.8.1.1 Mayor and Councillors

Individual discussions provided direction and insight to CFI on several priorities and interests, for the South Ridge Project, and long term mine operations including:

Employment of residents
Local procurement, supplier, and commercial purchasing
Revenue and tax agreements
Residential housing demand, affordability, and long-term development; and workforce housing solutions
Support for and partnerships in economic development, including tourism.
Valued heritage, traditions, and culture tied to town mining history, sport legacy, and honouring commemorations.
Building credibility with the community
Engaged council and community communications and relations.

4.2.1.8.1.2 Town Council - August 11, 2025

Mayor and several councillors attended a meeting in the CFI boardroom. Presentations by CFI executive and team addressed several topics, including future opportunities with the South Ridge Project and other potential developments. The meeting was followed by a tour of the mine and the proposed South Ridge Project area.

The discussion related to the South Ridge Project included:

- Request for more information, with a 3D model and a clearer image of the proposed pit, to help council determine potential community impact;
- EA process sequence of activities and timing;
- Employment-related questions about potential jobs, employment interest from St. Lawrence residents in terms of applications and inquiries, and Council's expectations for targeted employment of St. Lawrence residents and women by the company and its contractors;
- Associated impact on the Blue Beach Marine terminal and plans for its development as a permanent marine facility;
- Requests for public notices and information about transportation and loading activity and schedules, and an update on taxation agreement;
- Questions about levels of increased activity from South Ridge;
- Safety issues – in addition to signage, need for security at public road and trail crossings during heavy traffic;
- Interest in CFI's intended aggregate operation; and
- Requests to apply calcium on roads to mitigate dust.

4.2.1.8.1.3 Town Council - January 22, 2026

CFI provided an update to Council at the Town Hall on the environmental assessment process, baseline studies in progress for noise, water and air quality management, and intentions to present findings to Council and the public for review and feedback prior to submission to the Government of Newfoundland and Labrador. The discussion included:

- Work completed: Air emissions inventory, Fish Habitat Survey, Noise Assessment, Geochemical Characterization – Static Testing (Phase 1), and Regulatory and Community Engagement (ongoing)
- Work in progress: Air Quality Dispersion Modelling, Groundwater field program, Groundwater characterization study, Geochemical Characterization – Kinetic Testing (Phase 2), Predictions of water flow and quality, Comprehensive fish and fish habitat impact assessment (pending site-specific water quality and quantity predictions), and seeking quotes for bridge designs and structural assessments for access to Blakes Brook Bridge, Memorial Bridge, and Shoal Cove Beach.

CFI outlined Community Benefits and Investments, including:

- Protecting Existing Jobs: South Ridge extends the life of AGS Mine operations, securing current employment (over 100 employees). Mining careers that support families and keep young people in the community.
- New Jobs and Opportunities: Additional positions during construction plus 35 new jobs in operation phase. St. Lawrence residents and Newfoundland and Labrador workers will be given priority for hiring.
- Supply Chain Opportunities: Fuel, equipment, maintenance, catering, transportation, local procurement, and professional services.
- Economic Ripple Effect: Mining wages get spent in local stores, supporting everyone.
- Community Partnerships: commitment to building long-term relationships with local businesses and contributing to local initiatives, programs, and infrastructure.
- Building on Local Heritage: CFI acknowledges the community's deep mining expertise and deep family memories; and how it benefits from that knowledge; CFI is committed to excellence to sustain the community's proud legacy.
- Provincial Leadership: Supporting NL's vision as a critical minerals leader in Canada.

4.2.1.8.1.4 Town Council - March 4, 2026

CFI provided an update to Council at the Town Hall on March 4. CFI executive and team addressed several topics, including completed baseline studies and more detailed planning, and the net public information session before submitting the EARD by the end of April. The discussion included:

- Clarification of new public access road to Shoal Cove Beach (New LV Road) and a private mine access road from Iron Springs to the South Ridge stockpiles.
- Confirmation that Iron Springs will not be reopened for public access, as the pit will remove a portion of Iron Springs Road, there will be no throughfare traffic possible.
- Recommendation to provide an easy-to-understand road map with local landmarks for the public information session, along with an updated brochure and maps.

- Concern that water discharge into Shoal Cove Beach will be mitigated with the installation of two sediments pond to divert water to the east and west, and not entirely through Shoal Cove Pond.
- Size of sediment ponds.
- Impact on road to Red Head.
- Request for a dedicated water truck for South Ridge area to mitigate dust.
- Concern with dust affecting water wells at Newfluor Crescent.
- Request for dust mitigation measures and comparable mapping.
- Impact of dust on Cape Trail.
- Confirmation that monitoring of Shoal Cove Pond will continue.
- Request for communications - comprehensive signage and public information regarding safety, to define private mine roads and areas, and placement of blast notice signs at either side of South Ridge Project area.
- Maintenance of roads in cooperation with the Town as required.
- Government regulations ensure monitoring of water discharge at Shoal Cove Beach.
- Current air monitoring station includes South Ridge.
- Acknowledgment that tourism information (signs and brochures) requires updating.
- Cooperation with Town and Historic Advisory Committee to determine Memorial Bridge traffic and controlling access to Chamber Cove.

4.2.1.8.2 Iron Springs Campground Committee

Iron Springs Campground Committee members met with CFI in the company boardroom on February 19. The company provided a presentation with an overview of the Project and described intended actions to minimize the impact of the Project on the campground, trails and roads, and the community. The committee provided a list of questions to the company in advance.

Concerns and issues raised by committee members in the discussion included:

- Question about road maintenance, and if CFI would work with the Town to keep it upgraded.
- Liability and responsibility remain with the Town as Iron Springs Road and other access routes, and bridges are not on CFI's major surface lease.
- Concern with safety around South Ridge construction and operation as an open pit. and if barricades will be placed at both ends of the road close to the Project.
- Water settling from mine ponds.
- Wildlife on the road and close to the South Ridge Project especially moose, but also fox, coyotes, and geese.
- Local vegetable gardens located close to roads and trails but are not close to the Project.
- Noise at night and during daytime hours.
- Dust impact on the campground and nearby roads with increased traffic. if CFI will provide watering and calcium chloride.
- Communications to provide responses to the questions submitted in advance and as discussed. share more information and drone images.
- Size of vehicles that can access roads and cross bridges will not include heavy mine trucks.

- Concerns with impact of increased vehicle traffic on children safety and increased dust at campground.
- Question about how water is monitored and tested for contaminates.
- Question about reclamation of the South Ridge Project, if there will be a pond, or be backfilled, or continuous use.
- Drainage of water from Shoal Cove to Shoal Cove Brook and beach, where children swim, and how it is tested and monitored. realizing there was runoff from old tailings ponds.
- Public notification if there are exceedances or changes shown in monitoring and tests.
- Salt Cove Brook was used as a habitat replacement mitigation for the AGS mine, with salmon and sea trout now found in the river.
- Restricted areas around South Ridge Project.
- Campground water uses and discharge. and outdoor toilet outhouses along the trail system.
- Request for additional signage to route traffic and remind users about safety.
- Request to widen road along Iron Springs to Shoal Cove Beach, which company also uses to test Salt Cove Brook water quality.
- Proximity of sink holes to the Project and to the campground.
- Construction and environmental assessment schedule.
- Ongoing communications after the Project begins.
- Potential for new roads for Heritage Committee, and process for potential designation as Heritage Roads and Trails.

CFI requested the committee to provide information about water usage and discharges at the campground to consider in CFI's water quality analysis.

4.2.1.8.3 Mining Industry

CFI attended the annual Mineral Resources Review mining conference held in St. John's November 4-7, 2025, where supply and service companies, educators, and government officials expressed interest in the company's plans for South Ridge.

4.2.1.9 Community Programs and Events

CFI remains committed to being an active and supportive partner in the St. Lawrence and Burin Peninsula communities. The company focuses on creating meaningful opportunities, supporting local initiatives, and strengthening community connections, with key activities and contributions. These programs and events allow CFI employees to engage directly with the community to provide information and respond to and forward questions and concerns, along with demonstrating ongoing commitment to being a positive, visible partner.

Youth Engagement and Employment Opportunities

During summer 2025, CFI hired five local summer students to work in warehouse operations. The program provided hands-on experience, mentorship, and exposure to careers in the mining industry, while supporting local youth with meaningful employment opportunities close to home.

Support for Seniors: Senior Lunch and Tea Events

CFI has continued to engage and support local seniors by hosting and sponsoring events such as community lunches and tea socials. These gatherings offer opportunities for socialization, connection, and recognition of the important role seniors play in the community. They are consistently well received and help reinforce CFI's commitment to inclusivity and community well-being.

Community Events and Celebrations

CFI has regularly participated in and supported a variety of local events, including:

- Family Day BBQ.
- St. Lawrence Day activities.
- Canada Day celebrations.
- Wreath laying at Remembrance Day Ceremony.
- Halloween Candy handout.
- $1,000 Donation for 2025 graduating class for top marks.
- Christmas events and Santa Claus Parade.
- Wreath laying at Ecumenical Service of USS Truxtun and USS Pollux deceased sailors and rescuers.

Local Engagement and Collaboration

CFI maintains open communication with the Town of St. Lawrence and local organizations to ensure that community needs and priorities are understood and reflected in operations. This includes:

- Sharing updates at public town halls.
- Responding to public, council, and stakeholder inquiries.
- Participating in local planning discussions.
- Hosting meeting and tours at mine offices, operations, and the proposed South Ridge Project site.
- Attending community events.

Economic and Social Contributions

CFI continues to contribute to the region's economic stability through:

- Local hiring practices, prioritizing residents of St. Lawrence and the Burin Peninsula.
- Partnerships with local vendors and service providers.
- Ongoing efforts to reinvest in community programs and infrastructure where possible.

A summary of the meetings and engagement opportunities held by CFI and the key discussion points are summarized in Table 4.3-1.

4.3 Summary of Interests, Issues, and Concerns

Table 4.3-1: Summary of Interests, Issues, and Concerns

Topic	Source/Date	Concern/Interest	Document Reference
Environment			
Water management	• Public sessions • Iron Springs Campground Committee • Town Council	• Amount of water to be diverted from South Ridge Pit • Diversion of pit water to Iron Springs and Shoal Cove rivers and beach • Recreation use in rivers and on Shoal Cove beach	Section 6.4 Section 6.5
Roads and trails access	• Public sessions • Town Council • Historic Advisory Committee • Iron Springs Campground	• Access to Red Head • Balancing pedestrian safety and enjoyment with increased vehicle access and usage • Design of Memorial Bridge and Blakes Brook for vehicle access • Route changes • Safety at public and company, road crossings • Signage and communications • Road maintenance responsibility and liability	Section 2 Figure 2.6-1 and Figure 2.6-2 Section 2.6.1.1.2 Section 2.6.1.2.8 and 2.6.1.2.9
Noise	• Public sessions • Iron Springs Campground	• Proximity to residence, community, and campground • Construction and operations – blasting, vehicles • Schedules daily, seasonally • Communications	Section 6.3
Dust	• Public Sessions • Iron Springs Campground • Historic Advisory Committee • Town Council	• Proximity to residences, community, and campground • Dust management • Increased traffic • Presence of contaminates	Section 6.2
Wildlife	• Public Sessions • Iron Springs Campground • Historic Advisory Committee • Town Council	• Bird population, geese • Moose, fox, coyotes • Salmon, trout	Section 6.8 Section 6.9 Section 6.10
Economic			
Employment	• Town Council • Public Sessions	• Increased immediate and long-term employment and retention opportunities • Recruitment of women and local residents	Section 2.8 Section 6.11 Section 6.12
Town revenue	• Town Council • Public Sessions	• Tax agreements	Section 6.11

Topic	Source/Date	Concern/Interest	Document Reference
Economic Development	• Town Council	• Community partnerships	Section 6.11 Section 6.12
Business opportunities	• Town Council • Public sessions	• Supply chain opportunities • Local spending	Section 6.11 Section 6.12
Tourism and Heritage	• Historic Advisory Committee	• Value of mining and community and heritage legacies • Increased visitation • Updated tourism information, signage, and promotion • Potential attraction and trail enhancement and development	Section 6.12 Section 6.13
Community			
Safety	• Public Sessions • Iron Springs Campground • Historic Advisory Committee • Town Council	• Traffic management • Signage and traffic personnel at public, company, and trail road crossings • Dust contaminants • Water quality	Section 2 Section 6.3 Section 6.5
Housing	• Town Council • Public Sessions	• Demand exceeds supply • Affordability • Opportunity for development • Temporary workforce housing	Section 6.11 Section 6.12
Healthcare	• Town Council • Public Sessions	• Availability of services and healthcare workers	Section 6.12
Community benefits and investments	• Town Council • Public Sessions • Historic Advisory Committee	• Collaboration, contributions and cooperation in economic development, trails and roads, tourism, healthcare, and community interaction as opportunities to improve lifestyle, values, and heritage	Section 6.11 Section 6.12
Operations			
Mine Plan	• Town Council • Public sessions • Historic Advisory Committee • Iron Springs Campground	• Historic sites development and protection • Rationale for more open pits without finishing existing pit mining	Section 2
Marine facility	• Town Council • Public sessions	• Plan for Blue Beach as a permanent facility • Company viability	Section 2
Aggregate	• Town Council • Public sessions	• Development plans	Section 2
Project name	• Public sessions • Town Council	• Known locally as Shoal Cove Ridge	Section 2

Topic	Source/Date	Concern/Interest	Document Reference
Communications	• Town Council • Public sessions • Historic Advisory Committee • Iron Springs Campground	• Construction and operations notices and alerts: safety, loading schedules, development plans, employment, procurement • Update Project plans and modelling. • Report on air, dust, and water monitoring • Update on company viability	Section 2 Section 6.2 Section 6.5

4.4 Planned Engagement

CFI is committed to ongoing community engagement. The following engagement is planned to occur after the submission of the EARD:

- Meetings Town Council Liaison Committee – monthly meetings.
- Town Council presentation and update – biannual meetings.

Digital Communications

- Website project updates.
- Facebook notices, updates.
- Email southridge@canadafluorspar.com.

Community Open Houses and Presentations

- Participate in Town Council Public Town Halls – as scheduled.
- CFI Public Open House – for major Project milestones.
- Respond to stakeholder group invitations – community groups, schools, regional and provincial conferences, and events.

Site Tours

- Coordinated site tours for regulators, and key stakeholder groups.

Signage

- Directional signage at route crossings and intersections, including contact information for CFI.

Community Events and Sponsorships

- Christmas parade and events.
- Sponsorships.
- Charitable donations.
- Scholarships.

5 Effects Assessment Scope and Methodology

This section provides an overview of the EARD scope and assessment methodology and approach to identifying potential Project related effects and mitigation of identified potential effects.

5.1 Scope of the Assessment

The scope of the assessment includes the South Ridge pit and activities associated with construction and operation of the pit while utilizing shared existing infrastructure for processing, storage, and exporting currently employed by the existing AGS Mine site. This is described in Section 2.4 and 2.6.

5.1.1 Selection of Valued Components

Valued Components (VCs) are components of the environment (i.e., physical environment, biological environment, socio-economic environment, archaeological and heritage resources, human health) identified as important or sensitive to change and likely to interact with the Project or Project activities.

Selection of VCs for this assessment were informed by:

- Technical knowledge of the Project and local environment,
- Preliminary regulatory engagement (summarized in Section 3),
- Public and stakeholder engagement (summarized in Section 4),
- Understanding of the area and key issues identified in the AGS mine EA and through lessons learned during the operation of the existing project.

VCs selected for assessment and associated key issues to be considered in the assessment are summarized in Table 5.1-1.

Table 5.1-1: Identified VCs and Key Issues

Topic	Key Issues/Concerns	Reference Section
Air Quality	• Proximity of Project to the town of St. Lawrence and the non-registered Iron Springs camp site. • Project related dust and other emissions.	Section 6.2
Noise and Vibration	• Proximity of Project to the town of St. Lawrence. • Construction and Operations noise, such as blasting. • Scheduled hours of work and loud noises.	Section 6.3
Groundwater Quality and Quantity	• Potential effects to groundwater quality and quantity.	Section 6.4
Surface Water Quality and Quantity	• Amount of water to be diverted from South Ridge Pit. • Diversion of pit water to Iron Springs and Shoal Cove rivers and beach.	Section 6.5
Fish and Fish Habitat	• Project water management and potential effects on nearby water courses and fish bearing streams.	Section 6.6
Wetlands and Vegetation	• Potential effects to water quality and potential effects to vegetation from dust.	Section 6.7

Topic	Key Issues/Concerns	Reference Section
Avifauna	• Disturbance to birds and bird habitat. • Presence of Species at Risk and Species of Conservation Concern.	Section 6.8
Bats	• Disturbance to bats and foraging habitat. • Potential presence of Species at Risk and Species of Conservation Concern.	Section 6.9
Other Wildlife	• Disturbance to nearby wildlife and wildlife habitat, specifically of interest: • Moose, • Red Fox, • Invertebrate taxa, and • Other Species at Risk or Species of Conservation Concern potentially in the area	Section 6.10
Economy	• Providing employment and training opportunities for locals, where possible. • Increased immediate and long-term employment and retention opportunities. • Community partnerships and tax agreements. • Supply chain opportunities. • Local spending.	Section 6.11
Social, Community Health and Well-being	• Traffic management. • Community well being as it relates to potential for dust or water quality. • Availability of services and healthcare workers. • Company plans for shared mine medical services. • Potential disturbance to recreational enjoyment.	Section 6.12
Historic Resources	• Preservation of known and unknown historic and archaeological sites.	Section 6.13
Project-related effects and Cumulative effects	• Concerns with additional disturbance from South Ridge project in addition to/ cumulative effects of existing AGS operations.	Section 6

5.1.2 Assessment Boundaries

The boundaries of the VC assessment were selected based on the appropriate bounds of assessment for the specific VC to capture the Project-related potential effects. The temporal boundaries represent the timeframe of the assessment based on the Project phases and associated durations.

The temporal boundaries for the VC effects assessments included:

- Construction: Approximately 6 months.
- Operations: Approximately 18 months
- Closure: Approximately 24 months. To be determined through development of the reclamation and closure plan.

Spatial assessment boundaries are defined by the area within which direct and indirect Project-related potential effects may occur to the VC. Each VC section in Section 6 will define spatial assessment boundaries and provide a figure.

5.2 Existing Conditions

The identified VCs have each conducted information or data collection to establish existing conditions of the VC prior to the Project. These existing conditions form the basis for which Project related effects are established. Each VC section will include a description of the VCs existing conditions. There are instances where ongoing data collection is occurring to continue to validate understanding of potential Project-related effects and refine Project mitigation and environmental management approaches; These instances are clearly identified where relevant in the respective VC sections.

5.3 Assessment of Effects

A stepwise process was used to assess the environmental effects of the Project in a systematic manner, as follows:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects;
- Identification of potential cumulative effects; and
- Follow-up commitments and monitoring programs.

5.3.1 Identification of Project Interactions and Potential Effects

Project interactions with VCs will be identified in each VC assessment section, including a description of the potential effect that may result from the potential interaction.

Potential Project-related effects on VCs will be determined by comparing baseline conditions to those expected to result from the construction and operation of the Project.

5.3.2 Mitigation and Management Measures

Mitigation measures will be outlined in each VC section as relevant.

Potential effects of the Project will be managed through existing Project mitigation and management programs and Project design measures described in Section 2.12. VC specific recommended mitigation measures will be described in each VC section as relevant.

The potential effects identified in each VC assessment section will inform the design and implementation of Project mitigation measures for the Project. Mitigation measures for the identified effects are outlined in detail, where available, including a discussion of the effectiveness and confidence related to the success of the mitigation in avoiding, minimizing, or restoring the VC to avoid residual effects.

Where mitigations are not expected to reduce or avoid effects to a negligible level a residual effect is identified and characterized further in the VC assessment chapter.

5.3.3 Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in in the

VC assessment sections, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 5.3-1 below. The criteria used in each VC chapter may vary to suit the specific VC.

Table 5.3-1: Residual Effects Characterization Criteria

Characterization Criteria	Description
Magnitude	The expected size or severity of the residual effect. When evaluating the magnitude of the residual effect, relevant factors to consider include the proportion of the VC affected within the spatial boundaries and the relative effect (e.g., relative to natural annual variation in the magnitude of the VC or other relevant characteristic)
Extent	The spatial scale over which the residual effect is expected to occur. Typically, a residual effect may be described as site-specific, local, sub-regional, regional, or greater in extent. As the spatial scale of each VC varies, so too may the definitions of the VC-specific spatial scales of the residual effect. That is, the scale of a "local" or "regional" effect may be different for different VCs. Thus, it is important to define each scale used for each VC. It may also be useful to state the extent of the residual effect in relation to the distribution of the VC, to clarify the scale of the residual effect
Duration and Frequency	For the effect describe the: • Duration is the period of time over which the effect will be present between the start and end of an activity or stressor. Duration would be characterized for each effect as short-term, medium-term, long-term, or permanent, based on the specific VC. • Frequency is how often the residual effect occurs and is usually closely related to the frequency of the physical work or causal disturbance resulting in the residual effect
Reversibility	Whether or not the residual effect on the VC can be reversed once the physical work or activity causing the disturbance ceases. A residual effect may be fully reversible, partially reversible, or irreversible. In this regard, reversibility is closely linked with duration: an irreversible residual effect is of permanent duration, while the length of time required for the VC to fully or partially revert to its pre-effect condition or functionality may vary.
Likelihood/Confidence	The chance for the residual adverse effect will occur. Factoring in confidence of the predicted effect including confidence in proposed mitigations. The EA Registration will summarize the process and methodology used to evaluate the levels of confidence associated with residual effects predictions and in particular, how any identified uncertainty may affect either the likelihood or the significance of the predicted residual effect. The EA Registration will also describe any measures to reduce uncertainty through monitoring, adaptive management, or other follow-up programs.
Significance	For each residual effect a determination of significance of the effect will be provided. Each VC section will provide a definition of significance relevant to the VC.

5.3.4 Cumulative Effects

Where relevant and appropriate each VC section will identify the potential for cumulative effects. Cumulative effects are those effects of other past, present, or foreseeable other

projects that may interact with the effects of the Project. This will include the potential for cumulative effects with the existing AGS mine operations.

5.3.5 Follow-Up and Monitoring

Follow-up and monitoring programs, when required, are identified in each VC assessment section.

Follow up programs are identified when appropriate to validate effects predictions or confirm the effectiveness of a proposed mitigation measure. That is where data limitations may introduce uncertainty to the assessment additional follow up programs are identified to ensure effects predictions are validated. Follow up programs may identify:

- Measures to ensure that mitigation measures are implemented as planned and evaluates the accuracy of the predicted effects;
- Measures to evaluate the effectiveness of proposed mitigation measures to meet the intended mitigation commitments and goals;
- Regulatory instruments that include a monitoring requirement for the VC;
- Appropriate strategy (for example, adaptive management) to apply if predicted effects and mitigation effectiveness are not as expected. This includes reference to further mitigation, involvement of key stakeholders, government agencies and any other measures deemed necessary to manage the issue; and
- Mechanisms to disseminate follow-up results among interested parties.

6 Environmental Effects Assessment

This section includes the effects assessments for each VC identified.

A high-level overview of the biophysical and socio-economic environmental settings is provided here to bring context to the assessment environment for the proposed Project. Detailed environmental conditions are provided in the respective VC sections.

6.1 Environmental Setting

The Project is located on the southeastern end of the Burin Peninsula, which is surrounded by a rugged coastal landscape characterized by low-relief, rocky topography typical of the St. Lawrence Lowlands. Elevations range from approximately 50 to 150 meters above sea level, with shallow granite and rhyolite hills containing fluorspar veins. The terrain is interspersed with wetlands and peat bogs that cover roughly 30% of the area. Small streams and brooks form subtle valleys throughout the area, and coastal exposure results in rocky barrens and outcrops.

Soils are shallow, stony, and acidic (pH 4.0–5.0), with thin sandy-loam layers over bedrock and limited organic material typical of Newfoundland's maritime barrens (GNL 2025). The area is agriculturally classified as non-arable land. Low-lying areas contain thicker peat deposits in bogs and fens. Drainage ranges from rapid on ridges to very poor in low lying areas. Surface water features include numerous ponds, wetlands, and perennial streams influenced by glacial topography and bog systems. Hydrogeological conditions are defined by shallow groundwater in glacial till and secondary permeability in fractured bedrock, resulting in groundwater levels near surface elevations in many areas.

Historical and baseline water quality data indicate generally non-acid generating mine materials; however, elevated concentrations of certain metals and fluoride have been observed in surface water and groundwater, reflecting both natural conditions and legacy mining influences. These conditions inform the need for careful water segregation, treatment, and monitoring.

The Peninsula has a long history of mineral exploration and extraction dating back to the late 19th century. Approximately 20–30% of the area has been affected by past mining activities as it is the land is municipally zoned for mining as outlined in the Town of St. Lawrence Municipal Plan (Town of St. Lawrence 2012). The geology and topography are favourable for open-pit mining, with minimal overburden (5–10 meters) providing access to shallow fluorite deposits. Some rural and agricultural activities, such as grazing and fishing along Route 220, account for approximately 10% of the land use. The closest town is St. Lawrence with an approximate population of 1,100 accessible by road networks and provides access to power infrastructure.

The Peninsula supports small commercial and local businesses, with a focus on mining, fishing, recreation, and tourism, reflecting a mix of industrial and community use. The critical role of community approval to operate is recognised by CFI. Community acceptance from a close-knit community such as St Lawrence with a long-standing relationship with the existing mine is necessary for timely EA approval and release.

6.2 Air Quality

The following subsections include the assessment of the Air Quality, which was selected as a VC as air contaminant and greenhouse gas (GHG) emissions are expected from the Construction, Operation and Closure phases of the Project and may cause adverse effects.

Air quality studies are required to be completed to evaluate compliance with the applicable provincial air regulations.

Global greenhouse gas (GHG) emissions contribute to rising atmospheric concentrations over time, driving climate change (IPCC, 2023). At the provincial level, governments regulate industrial GHG emissions and have introduced climate action initiatives and reduction targets to align with international strategies and legislation. While emissions from the Construction and Operation of a single project typically have minimal or negligible impacts on global climate change, they can be assessed in relation to provincial and national emission levels and reduction targets to determine their relative significance.

The following subsections present for the VC the:

- Scoping of the VC assessment including study boundaries;
- Existing conditions of the VC;
- Project components or activities that may interact with the VC and the potential effects related to the interactions;
- Proposed mitigation and management measures to manage the identified potential effect;
- Characterization of identified residual adverse effects of the Project;
- Summary of potential cumulative effects; and
- Description of relevant follow-up programs related to the long-term monitoring and management of potential effects on this VC.

6.2.1 VC Scoping

This section provides the assessment boundaries. Public and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EA Registration Document (EARD).

6.2.1.1 Assessment Boundaries

The assessment boundaries for the VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.2.1.1.1 Temporal Boundaries

The temporal boundaries for the Air Quality VC effects assessment included:

- Construction: 6 months
- Operations: 18 months
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.2.1.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.2-1.

- **Local Study Area (LSA)**

  The LSA is set at 1.5km from the proposed project footprint, including the South Ridge Pit, overburden stockpiles, and haul route. This LSA will encompass all new air emission sources and existing emission sources impacted by this project as well as most impacted receptors.

- **Regional Study Area (RSA)**

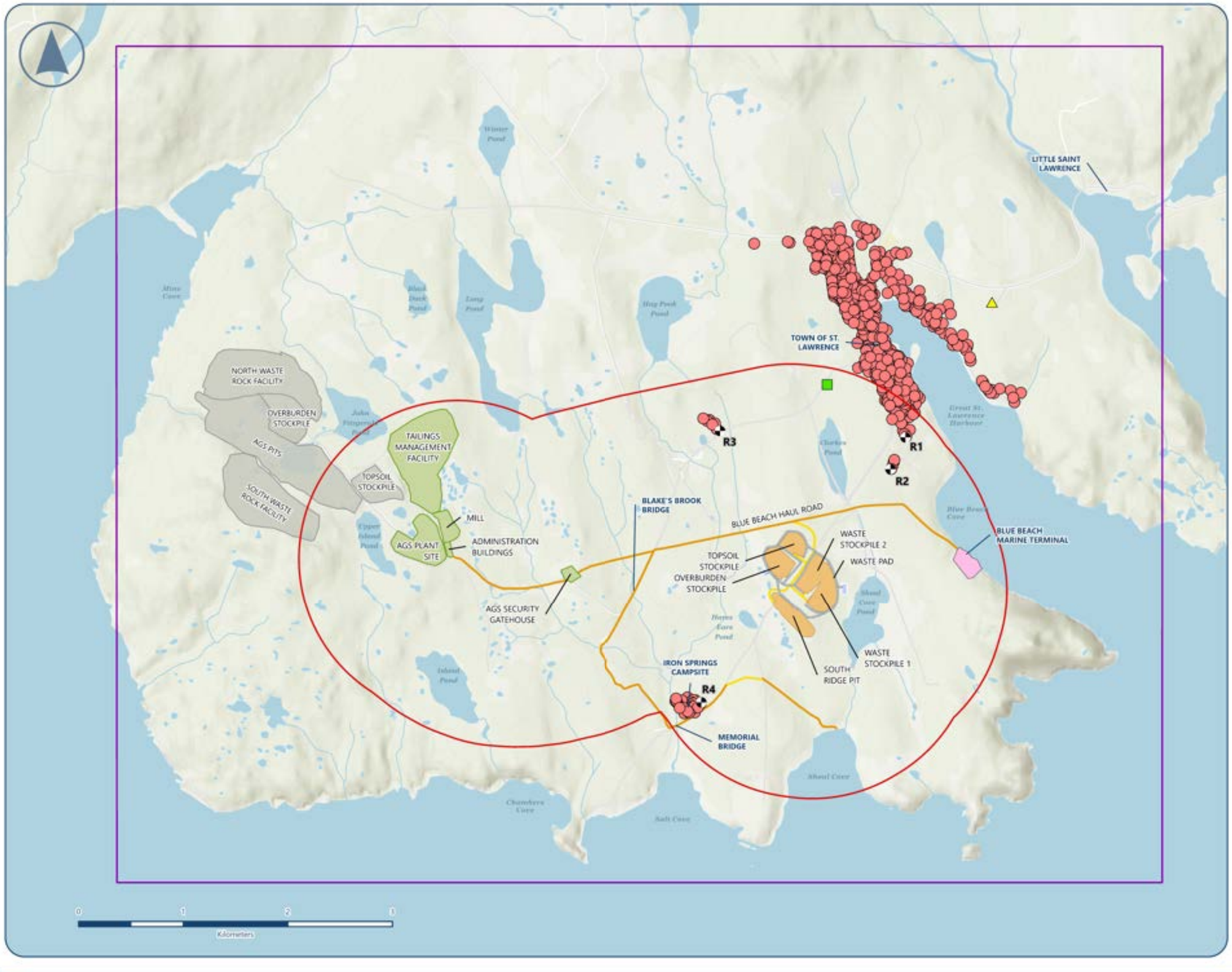
  The RSA used in this assessment is expanded from the RSA for the original EA to encompass the full extent of the LSA as defined above. This approach also ensures that any potential cumulative effects from the proposed project are considered across a broader region, capturing not only regional context but also the more localized impacts within 2 km of the Project footprint. The resulting RSA is approximately 10 km by 8 km and is shown in Figure 6.2-1.

CFI
CANADA FLUORSPAR INC.

SOUTH RIDGE MINE

FIGURE 6.2-1
AIR QUALITY LOCAL AND REGIONAL STUDY AREAS

MARCH, 2026



- Air Quality Assessment Locations
- Existing Residential
- CFI Ambient Air Monitoring Station
- ECCC Ambient Air Monitoring Station

PROJECT FOOTPRINT

- Surface Drainage Ditch
- Proposed Sedimentation Pond
- Blue Beach Marine Terminal
- Local Study Area
- Regional Study Area
- Proposed New Road
- Existing Road Upgrades
- Proposed Project Infrastructure

EXISTING MINE COMPONENTS

- Shared AGS Mine Infrastructure

Scale: 1:35,000
when printed on 11 by 17 inch paper

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6.2.1.2 Regulatory Context for the Management of the VC

The following legislation, regulations, and guidance documents were considered in the effects assessment for the Air Quality/VC:

Provincial Regulations and Guidelines

- ***Environmental Protection Act (SNL2002 Chapter E-14.2)*** (Government of Newfoundland and Labrador, 2023): The Environmental Protection Act is the primary legislation governing the protection of the environment and regulation of pollutants in Newfoundland and Labrador. It establishes a legal framework to prevent and control contamination of water and land, while promoting sustainable use of natural resources. The Act applies to industrial and commercial operations, including mining activities, and sets requirements for permits, approvals, and environmental standards to manage emissions, discharges, and waste. It provides regulatory oversight to ensure that large-scale operations comply with environmental limits and implement mitigation measures. This Act is relevant when conducting an emission inventory for a large mine in Newfoundland and Labrador, as it outlines the legal obligations for reporting, monitoring, and controlling pollutant releases from mining and related industrial activities. Compliance with the Act helps ensure that emissions data are complete and consistent with provincial environmental standards.
  - ***Environmental Assessment Regulations, 2003 (NLR 54/03)*** (Government of Newfoundland and Labrador, 2003): NLR 54/03 sets out classes of undertakings that require assessment and is enabled by the *Environmental Protection Act*, which requires assessment of all environmental effects including air quality and GHG.
  - ***Air Pollution Control Regulations, 2022* (*NLR 11/22*)** (Government of Newfoundland and Labrador, 2022): This provincial regulation establishes air quality standards, sets limits for emissions from equipment like incineration and pyrometric systems, and requires the use of the best available control technology for new or modified emission sources.
    - ***Ambient Air Monitoring Guidelines (GD-PPD-065)*** (Government of Newfoundland and Labrador, 2010)**:** This document establishes the guidelines that must be adhered to when performing ambient air quality monitoring in Newfoundland and Labrador. This ensures that all collected and reported data from various monitoring stations are thorough and uniform, utilizing the most up-to-date technology.
    - ***Determination of Compliance with the Ambient Air Quality Standards (GD-PPD-009.4)*** (Government of Newfoundland and Labrador, 2012a): This guidance outlines how the Department of Environment, Conservation and Climate Change assess compliance with ambient air quality standards when significant influences affect an air zone. As environmental standards and related practices continue to advance, the document will be reviewed and updated periodically to reflect new developments.

- ***Guidance for Plume Dispersion Modelling (GD-PPD-019.2)*** (Government of Newfoundland and Labrador, 2012b): This guidance document, published by the Government of Newfoundland and Labrador, provides standardized methods for conducting atmospheric dispersion modelling to estimate the movement and concentration of pollutants released from industrial and commercial sources. It specifies acceptable modelling approaches, input data requirements such as emissions, meteorology, and terrain, and procedures for assessing impacts on ambient air quality. The guidance applies to operations including mining and related industrial activities and ensures consistency and reliability in regulatory and environmental assessments. Following this guidance supports accurate evaluation of pollutant dispersion and alignment with provincial air quality standards.

– ***Management of Greenhouse Gas Act (SNL2016 Chapter M-1.001)*** (Government of Newfoundland and Labrador, 2018a): The Management of Greenhouse Gas Act, establishes a regulatory framework for the reporting, monitoring, and management of greenhouse gas emissions from large industrial and commercial facilities. It sets thresholds for mandatory reporting, defines calculation methods for emissions, and enables the government to set reduction targets for specific sectors, including mining and related industrial activities. The Act also provides enforcement tools to ensure compliance and supports the use of emissions data for regulatory oversight. Following this Act helps ensure that greenhouse gas inventories are complete, consistent, and aligned with provincial requirements.

  - ***Management of Greenhouse Gas Regulations (NLR 116/18)*** (Government of Newfoundland and Labrador, 2018b): The Management of Greenhouse Gas Regulations, established under the Management of Greenhouse Gas Act in Newfoundland and Labrador, provide detailed requirements for measuring, calculating, and reporting greenhouse gas emissions from large industrial and commercial facilities. They specify methods for determining baseline emissions, setting performance benchmarks, and tracking annual reductions for sectors including mining and related industrial activities. The regulations also outline compliance and reporting procedures. Following these regulations ensures that greenhouse gas data are accurate, consistent, and aligned with provincial reporting and reduction requirements.

Federal Regulations and Guidelines

- ***Canadian Environmental Protection Act, 1999*** (Government of Canada, 2025): The primary federal legislation for protecting the environment and human health from pollution. Under CEPA, the federal government regulates environmental contaminants.
  – ***Base Level Industrial Emission Requirements (BLIERs):*** BLIERs are emission requirements aimed at major industrial sectors or equipment types to

ensure that significant industrial sources maintain a consistent level of performance nationwide. BLIERs are implemented using a mix of regulatory and non-regulatory instruments.

  - ***Multi-Sector Air Pollutants Regulations (SOR/2016-151)*** (Government of Canada, 2026)***:*** These federal regulations, established under the Canadian *Environmental Protection Act*, 1999, set national standards for limiting emissions of air pollutants from specific industrial sources. They define emission limits and reporting requirements for nitrogen oxides and sulfur dioxide from facilities such as gaseous-fired boilers and cement manufacturing operations. While the regulations provide important guidance on controlling emissions from covered sources, they generally do not apply directly to mining operations unless a mine operates equipment that falls under the regulated categories. Following the regulations ensures that emissions from applicable sources are measured, reported, and managed consistently with federal air quality standards.
  - ***Codes of Practice, Pollution Prevention Planning Notice, Guidelines, Performance Agreements*** (Government of Canada, 2023)***:*** These tools, used under the Canadian *Environmental Protection Act*, 1999, guide industrial and commercial facilities in reducing environmental impacts. They provide recommended practices for pollution prevention, including measures for controlling emissions, managing waste, and monitoring environmental performance. The instruments include sector or pollutant specific guidance that can be applied to mining and related industrial activities when relevant. Following them supports consistent and reliable implementation of pollution prevention measures and helps ensure emissions data and management practices align with federal and provincial expectations.

- ***National Pollutant Release Inventory (NPRI):*** Canada's public database of pollutant releases, disposals, and transfers reported annually by industrial and commercial facilities. It supports transparency, informs policy and research, and helps track progress toward national air quality goals.
- ***Greenhouse Gas Reporting Program (GHGRP)***: Canada's Greenhouse Gas Reporting Program (GHGRP) collects information on greenhouse gas (GHG) emissions annually from facilities across Canada. It is a mandatory program for those who meet the requirements.

- ***Canadian Ambient Air Quality Standards* (*CAAQS*)** (Canadian Council of Ministers of the Environment, 2025): These are health and environment-based objectives set by the Canadian Council of Ministers of the Environment (CCME) that drive air quality improvement efforts across all Canadian jurisdictions. Newfoundland and Labrador has adopted the CAAQS for sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) under the Air Pollution Control Regulations. The CAAQS for fine particulate matter ($PM_{2.5}$) and ozone (O_3) have not been adopted by the province as they are not as stringent as the current legislation.

6.2.2 Existing Conditions

This section describes the methods that established the existing conditions of the Air Quality VC and the description of the existing conditions.

6.2.2.1 Methods

6.2.2.1.1 Data Sources

Background information and data to inform the existing conditions for the Air Quality VC included:

- Emissions Inventory for the AGS Mine completed as part of 2015 Environmental Assessment (Canada Fluorspar Inc, 2015a) submission;
- Historical ambient monitoring data;
- BACT (Golder Associates, 2017b) analysis completed for the existing AGS operations;
- Fugitive dust management plan (Golder Associates, 2017a) for the existing AGS operations; and
- Available valid historical complaint records relating to air quality.

6.2.2.1.2 Desktop Analysis

The existing conditions study consisted of desktop analysis, specifically a review of the air emissions inventory completed in support of CFI's original AGS EA in 2015 (Canada Fluorspar Inc, 2015a) in combination with information collected and studies completed after the release of the AGS EA. This information included the historical ambient monitoring data, BACT analysis (Golder Associates, 2017b) and fugitive dust management plan (Golder Associates, 2017a) and associated records for the existing operations.

The desktop analysis encompassed a comprehensive evaluation of various factors related to ambient air quality impacts. Specifically, it:

- Identified the significant contributors and sources of ambient air quality impacts associated with the AGS project. The Project will utilize much of the same infrastructure as the AGS project, as well as performing similar operations in a new location (the South Ridge Pit area). As such, the baseline assessment pinpointed the primary activities and operations within the AGS project that had the most substantial effects on air emissions, providing a clear understanding of the main contaminants and their origins. The emissions source and contaminant profile for the Project is expected to be very similar to AGS.
- Determined the effectiveness of applying the existing air emissions control technologies and dust management practices at the AGS project and identify their applicability to the Project. This step assessed how well current measures are performing in mitigating air contaminant impacts and controlling dust emissions, ensuring that the most effective technologies and practices are being utilized to maintain air quality standards.
- Evaluated if there were any air quality impacts on the surrounding communities from the existing operations to date. This involved a thorough review of air quality monitoring data and community feedback to ascertain whether AGS project

operations have had any adverse effects on the air quality in nearby residential areas, thereby ensuring that community health and well-being are safeguarded.

6.2.2.1.3 Data or Information Limitations

The key limitation with respect to baseline air quality data is the lack of an air dispersion modelling assessment for the existing AGS project. As such, the full spatial distribution of air contaminants associated with emissions from the AGS project is not currently known. However, this gap is partially mitigated by the ambient air monitoring program currently in place which includes collection of data for NO_2, TSP and $PM_{2.5}$ between AGS operations and Town of St. Lawrence.

6.2.2.2 Description of Existing Conditions

6.2.2.2.1 Baseline Air Quality

An air emission inventory was developed for the original EA for the AGS Mine in 2015 (Canada Fluorspar Inc, 2015a), which includes air emissions for the Construction and Operation phases of the AGS Mine (2015 emission inventory). An annual baseline air emission inventory was developed for this study based on the 2015 emission inventory for the AGS operation phase and updated to reflect actual operations as appropriate. This baseline air emission inventory represents the estimated annual emissions totals for each air contaminant under the EA-approved AGS project and forms the reference point for assessing air emissions associated with the Project. It provides the baseline values for key contaminants, which will be used to evaluate potential changes in emissions resulting from the various activities from the Project.

In addition, a BACT analysis (Golder Associates, 2017b) and Fugitive Dust Best Management Practices Plan (FDMP) (Golder Associates, 2017a) were also developed for the site as part of the original AGS EA. A review of these documents confirms that (1) emissions of TSP, PM_{10}, $PM_{2.5}$, and NOx are expected from the site operations, in particular, blasting, crushing, material transfer and vehicle movement on unpaved roads; and (2) BACT and fugitive dust management practices have been applied to minimize the potential air quality impacts from these AGS sources. Similar BACT and fugitive dust management practices are expected to be applied to the Project.

CFI operates an ambient air monitoring station located 1.5 km northeast of the proposed Project location (Figure 6.2-1). The station continuously monitors TSP, $PM_{2.5}$, and NO_2, as these are the contaminants that the original AGS EA indicated would be most like to be impacted by facility operations. The monitoring results from recent years (2022-2024) shows that ambient concentrations of TSP, $PM_{2.5}$, and NO_2 remain below the provincial air quality standards. This data shows that the AGS operations' current BACT and fugitive dust management practices have been effective to minimize offsite air quality impacts.

Details of the baseline emission inventory, BACT analysis and FDMP review and ambient monitoring data review are presented in Appendix 6.2-1.

6.2.2.2.2 Baseline GHG Emission Inventory

A GHG emission inventory was developed for the original AGS EA in 2015 (Canada Fluorspar Inc, 2015a). This inventory included GHG emissions for both the Construction and Operation phases of the AGS Mine. As part of the current assessment, an annual baseline GHG emission inventory was developed for the AGS Operation phase based on

the 2015 GHG emission inventory for the AGS Mine, updated to reflect actual operations as appropriate. This emission inventory includes annual Scope 1 and Scope 2 GHG emissions.

Details of the baseline GHG assessment can be found in Appendix 6.2-1, Attachment 4.

6.2.3 Effects Assessment

The effects assessment was conducted according to the approach outlined in Section 5 of this EARD.

A stepwise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as follows:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects;
- Identification of potential cumulative effects; and
- Follow-up commitments and monitoring programs.

6.2.3.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the VCs within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). Table 6.2-1 identifies all Project-VC interactions and briefly identifies the nature of the potential effect that may result from the identified interaction.

Potential Project-related effects on VCs will be determined by comparing baseline conditions to those expected to result from the Construction, Operation, and Closure phases of the Project. Potential effects will be described for each VC, including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another valued component).

Table 6.2-1: Identification of Project-VC Interactions and Associated Potential Effects with the Discipline/VC

	Project Activities	Effect Pathway
Construction		
Construction of Community Access Roads	• Strip, clear, fill, gravel, and grade to accommodate vehicle traffic • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use • Upgrades to Memorial Bridge and Blake's Brook Bridge	Direct: • Dust generated from earth moving activities. Potential temporary (weeks) nuisance impact on nearby residences. • Combustion gas and GHG emissions generated by road construction equipment. Potential temporary (weeks) air quality impacts on nearby residences.

	Project Activities	Effect Pathway
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded, and berms will be built up to support larger equipment traffic • Strip, clear, fill	Direct: • Dust generated from earth moving activities. Potential temporary (weeks) nuisance impact on nearby residences. • Combustion gas and GHG emissions generated by road construction equipment. Potential temporary (weeks) air quality impacts on nearby residences.
Pit Haul Roads	• Strip, fill, gravel, and grade.	Direct: • Dust generated from earth moving activities. Potential temporary (weeks) nuisance impact on nearby residences. • Combustion gas and GHG emissions generated by road construction equipment. Potential temporary (weeks) air quality impacts on nearby residences.
Power Infrastructure upgrades	• Transmission line re-routing and raising along the Blue Beach Haul Road to allow Cat 777s to travel to the project area. • Powerline that follows Iron Springs Road will be re-routed around the pit and extended to provide power to dewatering pumps • The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	Direct: • Combustion gas and GHG emissions generated by road and transmission line construction equipment. Potential temporary (weeks) air quality impacts on nearby residences.
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	• Pit dewatering activities are not expected to result in significant air/GHG emissions.

	Project Activities	Effect Pathway
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	Direct: • Dust generated from earth moving activities. Potential temporary (weeks) nuisance impact on nearby residences. • Combustion gas and GHG emissions generated by excavators, loaders, graders, and other earth moving equipment. Potential temporary (weeks) air quality impacts on nearby residences.
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	Direct • Dust generated from earth moving activities. Potential temporary (weeks) nuisance impact on nearby residences. • Combustion gas and GHG emissions generated by fuel fired earth moving equipment. Potential temporary (weeks) air quality impacts on nearby residences.
Stockpile Development	• Strip, clear and preparing stockpile areas for topsoil, overburden, and waste rock stockpiles	Direct • Dust emissions generated from material handling and vehicle movement. Potential temporary (weeks) nuisance impact on nearby residences. • Combustion gas and GHG emissions generated by fuel fired earth moving equipment. Potential temporary (weeks) air quality impacts on nearby residences.
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	Direct: • Dust generated from earth moving activities. Potential temporary (weeks) nuisance impact on nearby residences. • Combustion gas and GHG emissions generated by fuel fired construction equipment. Potential temporary (weeks) air quality impacts on nearby residences.

	Project Activities	Effect Pathway
Operations		
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	Direct: • Dust, combustion gas, and GHG emissions are generated from the blasting, material handling, and vehicle movement. This source has the potential to result in measurable impacts to local air quality. • The potential effects are expected to occur throughout the Project Operations (18 months). • Dust, combustion gas and GHG emissions are generated from the blasting operations. • This source has the potential to result in measurable impacts to local air quality, with each separate blast event producing short-term elevations in emissions. • The potential effects are expected to occur throughout the project (18 months).
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	Direct: • Dust, combustion gas and GHG emissions generated by haul trucks and continuous road works. • This source has the potential to result in measurable impacts to local air quality. The potential effects are expected to occur throughout the project (18 months).
Stockpiling	• As mining progresses waste rock will be deposited in the waste stockpiles.	Direct: • Dust generated from material handling, processing, and vehicle movement. • Combustion gas and GHG emissions generated by fuel fired earth moving equipment. • This source has the potential to result in measurable impacts to local air quality. The potential effects are expected to occur throughout the project, and 6 months beyond (24 months).

	Project Activities	Effect Pathway
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	Direct: • Dust, combustion gas and GHG emissions generated by the aggregate crushing operations. • This source has the potential to result in measurable impacts to local air quality. The potential effects are expected to occur throughout the project, and 6 months beyond (24 months).
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, then re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure.	Direct: • Dust, combustion gas and GHG emissions generated by fuel fired earth moving equipment. • Dust, combustion gas and GHG emissions from road decommissioning may have temporary (weeks) impact air quality impacts on nearby residences., with small ongoing emissions associated with remaining access roads.
Waste Rock Stockpiles	• Waste rock will be processed into saleable aggregate and transported to Blue Beach Marine Terminal for shipment. • Closure to be completed 1 year following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	Direct: • Dust emissions generated from material processing and material handling. • Combustion gas and GHG emissions generated by fuel fired earth moving equipment. • Dust, combustion gas and GHG emissions from waste rock decommissioning may have short-term (months) air quality impacts on nearby residences, with no ongoing emissions expected after decommissioning.
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	Direct: • Dust emissions generated from material handling, shipping, vehicle movement, and wind erosion. • Combustion gas emissions generated by fuel fired earth moving equipment. • Dust, combustion gas and GHG emissions from overburden and topsoil decommissioning may have short-term (months) air quality impacts on nearby residences, with no ongoing emissions expected after decommissioning.

	Project Activities	Effect Pathway
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).	No ongoing emissions expected.
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required. • Access roads will be maintained to facilitate post-closure monitoring	Monitoring and maintenance activities are not expected to result in significant air/GHG emissions.

** Includes general maintenance (e.g., grading, erosion control, quarrying, borrow pits), seasonal maintenance (e.g., snow clearing, bridge and culvert maintenance), and special maintenance (e.g., slope failures, road settlements, break-up).*

6.2.3.2 Project Air Emission Inventory

Construction activities will take place during the first six months of the Project. The Operation phase will commence as early as in Month 2, ramp up to reach peak production by the end of Year 1 and last for a total duration of approximately 18 months. The Closure phase will take place for up to 24 months at the end of the Operation phase.

Out of the three phases of the Project, the Construction and Operation phases are expected to have potentially adverse impacts on local air quality. The Closure phase is expected to have similar air emissions sources to the Construction phase; however, given the reduced number and areas of activities that will occur during this phase, the magnitude of the emissions will be less than those discussed above in the Construction phase. It is also expected that the revegetation of disturbed areas will reduce fugitive dust emissions from wind erosion across the Project area.

An air emission inventory was developed based on Year 1 of the Project when the highest annual emissions are expected, as detailed in Appendix 6.2-1. Emissions that were considered for Year 1 are as follows:

- Dust emissions (suspended particulate matter, PM_{10}, $PM_{2.5}$) from various material handling activities including bulldozing, transfer, wind erosion of stockpiles, drilling, blasting, and trucks on haul roads;

- Metals present in dust generated from waste rock and ore handling and processing, and trucks on haul roads; and
- Combustion emissions (nitrogen oxides, carbon monoxide, sulphur dioxide, and diesel particulate matter) from various equipment/activities including explosives detonation and diesel-powered mobile equipment and generators.

This inventory includes all CFI operations within the study area (e.g. The Project, AGS mill, Blue Beach Marine Terminal, material shipping between the different operating areas) and evaluates air emissions of particulate (TSP, PM_{10}, $PM_{2.5}$), NO_x, SO_2, CO, and trace metals. The significant emission sources for both the Construction and Operation phases have been identified as follows:

- Vehicle movement on unpaved roads for fugitive particulate; and
- Diesel mining equipment and marine engines for $PM_{2.5}$, NO_x, SO_2, and CO.

A comparison analysis was completed for this emission inventory relative to the AGS project baseline air emission inventory as detailed in Appendix 6.2-1.

For Year 1 of the Project, reduction in emissions relative to the AGS operations baseline is expected for fugitive particulates (TPM and PM_{10}) due to lower material extraction and processing rates relative to the baseline. A slight increase in emissions is expected for combustion gases including $PM_{2.5}$, CO, NO_x, and SO_2 as a result of additional diesel fired mobile equipment planned for the Project.

6.2.3.3 Air Modelling Assessment

Since the sources within/near the South Ridge Pit and Blue Beach Haul Road between the South Ridge Pit and the AGS mill will be located closer to the surrounding sensitive residential receptors, an air dispersion modelling study was completed for the key contaminants (TPM, PM_{10}, $PM_{2.5}$, NO_2, SO_2, CO) to assess potential ambient air quality effects of the Project and the extent of air mitigation and management programs required, if any. The air modelling study report is presented in Appendix 6.2-2.

The air modelling study was based on a worst-case scenario for each activity throughout the life span of the Project. The key assumptions are summarized below:

- All processes are occurring at once even if this is not feasible in reality (e.g. topsoil removal occurring at the same time as ore removal);
- No dust suppression on the roads, stockpiles, and pit at any point in time;
- Equipment operating at 100% load, 100% of the time; and
- Wind erosion occurs starting with winds at 5.1 m/s (not 5.4 m/s).

Modelling was performed using the CALMET/CALPUFF modelling package to predict ground level concentrations of the key contaminants resulting from the Project. The production scenario used in the assessment was conservatively based on uncontrolled emissions from the maximum expected activity rates during the lifespan of the Project.

A meteorological data set was generated for the period 2022 to 2024 using the Weather Research and Forecasting Non-Hydrostatic Mesoscale Model (WRF-NMM) run on a grid having a horizontal resolution of four kilometres (km). The outputs from WRF-NMM were used to generate hourly surface data (wind speed, wind direction, temperature, cloud cover, etc.) as well as upper air profiles for seventeen (17) “pseudo” station locations

within the CALMET modelling domain. The resulting “pseudo” observations were used to run the CALMET model for a 20 km by 20 km domain having a horizontal grid spacing of 200 m. The CALMET model was then used to run CALPUFF following DECCC guidance (DOEC, 2012a). A nested receptor grid encompassing the entire RSA of 8 km x 10 km and four closest residential sensitive receptors and CFI’s ambient monitoring station are included in the CALPUFF model.

With the exception of 24-hour TPM and 24-hour PM_{10} under extraordinary circumstances (detailed below), the maximum contaminant concentrations are all predicted to be well below their respective provincial Air Quality Standards (AQS) at the closest sensitive receptors. For TPM and PM_{10}, the 24-hour AQS may be sporadically exceeded at the sensitive receptors if winds are strong, the roads, stockpiles and pit are extremely dry, and production is at a maximum.

6.2.3.4 GHG emission inventory

An annual GHG emission inventory was developed for the following assessment scenarios:

- Year 1: Construction Phase + Operation Phase; and
- Year 2: Operation Phase (1 Year)

including both Scope 1 and Scope 2 project emissions as detailed in Appendix 6.2-1, Attachment 4.

The emissions estimation methods used to quantify annual GHG releases follow generally accepted practices for conducting EAs in Canada and, where applicable, the Government of Canada's GHG Emissions Reporting Program guidance document.

A comparison analysis of the project GHG emission inventory with the baseline GHG emissions was completed for both project years, along with a break down of the GHG emissions from each source category.

The total GHG emissions for Year 1 are estimated at 10,504 t CO_2e, reflecting emissions from Construction and Operational activities. This represents a decrease of approximately 63% in emissions relative to baseline AGS operation emissions, primarily due to decreased usage of on-site transportation equipment and elimination of stationary combustion for underground heating. When assessed against a 5% materiality threshold, the change is considered material in magnitude; but the change in projected emissions in Year 1 does not represent a significant adverse effect on climate change.

The total GHG emissions for Year 2 are estimated at 7,568 t CO_2e, which are approximately 74% lower than baseline annual AGS operational emissions. When assessed against a 5% materiality threshold, this change represents a material reduction in total emissions and does not indicate a significant adverse effect on climate change.

The Year 1 and Year 2 GHG emissions from the Project are also compared to the latest publicly available annual GHG emissions for Newfoundland-Labrador, Canada and globally was also completed. The contribution from the project GHG emissions to the provincial, Canada-wide, and global GHG emissions are very minor (i.e. less than 0.2%, 0.002%, 0.00003% respectively).

Based on the magnitude of change and the results of the materiality assessment, no significant climate change effects are anticipated, and additional GHG-specific mitigation measures are not required beyond standard best management practices.

6.2.4 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design measures described in Section 2.12. VC specific additional recommended mitigation measures are described below.

The potential effects identified and summarized in Table 6.2-1 above were used to inform the design and implementation of Project mitigation measures. The identified mitigation measures for the identified effects are outlined in more detail in the following sections including a discussion of the effectiveness and confidence related to the success of the mitigation in avoiding, minimizing, or restoring the VC to avoid residual effects. This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and proposed mitigations are effective. Additional detail on how the predicted effectiveness of the mitigation measures were assessed, please see Appendix 6.2-3 Technical Memorandum: Dust Mitigation Measures for South Ridge Project.

6.2.4.1 Potential Effect – Fugitive Dust (TPM, PM_{10})

As described in section 6.2.3, ambient air monitoring has not detected any exceedances of provincial standards for existing AGS operations, which suggests that the use of BACT (Golder Associates, 2017b) and FDMP (Golder Associates, 2017a) for the current operations are effective. Examples of air mitigation measures from these programs include the use of physical barriers, dust collectors, watering, dust suppressants.

The results of the modelling study shows that the potential effects from the Project are expected to be primarily fugitive dust from the Project construction activities, extraction including blasting, drilling, material handling, stockpiling and vehicle movement inside the South Ridge Pit and unpaved haul roads including the public road segment connecting the South Ridge Pit and the AGS mill. Specifically, the 24-hour AQS for TPM and PM_{10} may be sporadically exceeded under high wind and dry conditions without effective dust management practices during full production.

It is also worth noting that:

- Given the short life span of the project (18 months), potential air quality impacts, if any, are expected to be temporary and reversible;
- The scale of the Project is relatively small in comparison to the development of a new mine extraction and processing site;
- The majority of the sources are of fugitive nature, the potential impacts of which, if any, are expected to be localized as supported by the modelling study (i.e. not beyond 1 km);
- The local meteorological review indicates that the closest receptors (R1-R4) are only downwind of the project location for a small portion of the time (i.e. 3% to 10% annually); and

- The modelling study using very conservative assumptions shows that potential exceedances of the 24-hour AQS for TPM and PM_{10} are very infrequent and only under high wind and dry conditions.

An air mitigation modelling exercise was also completed to incorporate the dust management practices and controls. As summarized in the Dust Mitigation Measure Memorandum (Appendix 6.2-3), modelled ambient concentrations of all contaminants are below the AQSs at all nearby sensitive receptors.

Based on the above, fugitive sources can be effectively managed/mitigated through a combined dust management/ambient monitoring program (i.e. ambient monitoring to trigger dust management response actions). The existing FDMP (Golder Associates, 2017a) can be expanded to encompass activities throughout the various phases of the project. An expansion of the existing AGS ambient monitoring program will be implemented to install particulate monitoring equipment at sensitive receptor locations of R3 and R4 shown in Figure 6.2-1.

Most importantly, a trigger action response plan which outlines the mitigation actions required based on monitoring data and weather predictions should be implemented to ensure timely prevention of offsite air quality impact. At a high level this plan should consist of the monitoring and forecasting review of weather conditions (e.g. wind speed/direction and precipitation), site conditions (e.g. visible plumes from stockpiles and roads) and the ambient monitoring data. The plan will also set threshold conditions based on these monitored parameters to trigger a series of escalated response actions. The actions may include; continue to monitor, apply water/dust suppressant, reduce operations, and cease operations.

6.2.4.2 Potential Effect – Combustion Gases ($PM_{2.5}$, NO_2, SO_2, CO) and GHGs

The management of potential effects of combustion gases and GHGs from the use of fuel fired equipment and vehicles throughout all phases of the Project can be achieved through a combination of the following practices:

- Use US EPA Tier 3+ certified equipment and vehicles;
- Implement no idling policies on site; and
- On an annual basis, evaluate and if necessary, report and verify site-wide GHG emissions in accordance with the federal and provincial regulations.

The management of potential effects of combustion gases and GHGs from blasting during the construction and operation phases of the Project can be achieved through a combination of the following practices:

- Limit blast to once per day; and
- On an annual basis, evaluate and if necessary, report and verify site-wide GHG emissions in accordance with the federal and provincial regulations.

6.2.4.3 Summary of Mitigation Measures

Table 6.2-2 summarizes all proposed mitigation measures and identifies whether after implementation a residual effect will remain, as well as identifies if a follow up program is recommended. Identified Follow Up Programs are summarized in Section 6.2.7.

Table 6.2-2: Summary of Proposed Mitigation Measures

Potential Effect	Proposed Mitigation	Potential Residual Effect? (Y/N)
Construction		
Dust from Construction Activities	• Implement practices in the existing FDMP as applicable (e.g. watering, dust suppressants). Incorporate weather forecast review as part of the FDMP for this phase and plan activities and necessary mitigation (e.g. wind fences, tarps, watering) based on weather conditions. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations. • Depending on the locations of the construction activities, temporarily install particulate monitoring equipment at sensitive receptor locations of R3 and R4.	Y
Dust from Material Stockpiles	• Implement practices in the existing FDMP as applicable (e.g. watering, dust suppressants, tarping). Incorporate weather forecast review as part of the FDMP for this phase and plan necessary mitigation (e.g. watering) based on weather conditions. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations.	Y
Dust from Unpaved Road	• Implement practices in the existing FDMP as applicable (e.g. watering, dust suppressants). Incorporate weather forecast review as part of the FDMP for this phase and plan necessary mitigation (e.g. watering) based on weather conditions. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations.	Y
Combustion and GHG gases from Construction Activities and Shipping	• Use US EPA Tier 3+ certified fuel fired equipment to minimize combustion emissions. • Implement no idling policy for fuel fired mobile equipment. • On an annual basis, evaluate and if necessary, report and verify site-wide GHG emissions in accordance with the federal and provincial regulations.	Y
Operations		
Dust from Mining Activities in South Ridge Pit (Drilling, Blasting, Material Transfer, and Handling)	• Limit blast to once per day. • Implement practices in the existing FDMP as applicable (e.g. watering). Incorporate weather forecast review as part of the FDMP for this phase and plan activities and necessary mitigation (e.g. watering) based on weather conditions. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations. • Temporarily install particulate monitoring equipment at sensitive receptor locations of R3 and R4.	Y

Potential Effect	Proposed Mitigation	Potential Residual Effect? (Y/N)
Dust from Material Stockpiles	• Implement practices in the existing FDMP as applicable (e.g. watering, dust suppressants, tarping). Incorporate weather forecast review as part of the FDMP for this phase and plan necessary mitigation (e.g. watering) based on weather conditions. • Temporarily install particulate monitoring equipment at sensitive receptor locations of R3 and R4. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations.	Y
Dust from Unpaved Road	• Implement practices in the existing FDMP as applicable (e.g. watering, dust suppressants). Incorporate weather forecast review as part of the FDMP for this phase and plan necessary mitigation (e.g. watering) based on weather conditions. • Temporarily install particulate monitoring equipment at sensitive receptor locations of R3 and R4. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations.	Y
Dust from Aggregate Crushing	• Implement practices in the existing FDMP as applicable (e.g. watering). Incorporate weather forecast review as part of the FDMP for this phase and plan necessary mitigation (e.g. watering) based on weather conditions. • Temporarily install particulate monitoring equipment at sensitive receptor locations of R3 and R4. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations.	Y
Combustion and GHG gases from blasting	• Limit blast to once per day. • On an annual basis, evaluate and if necessary, report and verify site-wide GHG emissions in accordance with the federal and provincial regulations.	Y
Combustion and GHG gases from Mining Equipment, Shipping and Aggregate Crushing	• Use US EPA Tier 3+ certified fuel fired equipment to minimize combustion emissions. • Implement no idling policy for fuel fired mobile equipment. • On an annual basis, evaluate and if necessary, report and verify site-wide GHG emissions in accordance with the federal and provincial regulations.	Y

Potential Effect	Proposed Mitigation	Potential Residual Effect? (Y/N)
Closure		
Dust from Decommissioning Activities including Material Movement and Handling, and Decommissioning of Waste Rock Stockpiles	• Implement practices in the existing FDMP as applicable (e.g. watering, dust suppressants, tarping). Incorporate weather forecast review as part of the FDMP for this phase and plan activities and necessary mitigation (e.g. wind fences, tarps, watering) based on weather conditions. • Develop a trigger action response plan which includes the review of ambient air monitoring data and outlines the corresponding corrective mitigations. • Depending on the locations of the decommissioning activities, temporarily install particulate monitoring equipment at sensitive receptor locations of R3 and R4.	Y
Combustion and GHG gases from Construction and Mobile Equipment	• Use US EPA Tier 3+ certified fuel fired equipment to minimize combustion emissions. • Implement no idling policy for fuel fired mobile equipment. • On an annual basis, evaluate and if necessary, report and verify site-wide GHG emissions in accordance with the federal and provincial regulations.	Y

6.2.5 Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table 6.2-3, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.2-4.

Table 6.2-3: Residual Effects Characterization Criteria

Characterization Criteria	Description
Magnitude	The expected size or severity of the residual effect. When evaluating the magnitude of the residual effect, relevant factors to consider include the proportion of the VC affected within the spatial boundaries and the relative effect (e.g., relative to natural annual variation in the magnitude of the VC or other relevant characteristic)
Extent	The spatial scale over which the residual effect is expected to occur. Typically, a residual effect may be described as site-specific, local, sub-regional, regional, or greater in extent. As the spatial scale of each VC varies, too may the definitions of the VC-specific spatial scales of the residual effect. That is, the scale of a “local” or “regional” effect may be different for different VCs. Thus, it is important to define each scale used for each VC. It may also be useful to state the extent of the residual effect in relation to the distribution of the VC, to clarify the scale of the residual effect

Characterization Criteria	Description
Duration and Frequency	For the effect describe the: • Duration is the period of time over which the effect will be present between the start and end of an activity or stressor. Duration would be characterized for each effect as short-term, medium-term, long-term, or permanent, based on the specific VC. • Frequency is how often the residual effect occurs and is usually closely related to the frequency of the physical work or causal disturbance resulting in the residual effect
Reversibility	Whether or not the residual effect on the VC can be reversed once the physical work or activity causing the disturbance ceases. A residual effect may be fully reversible, partially reversible, or irreversible. In this regard, reversibility is closely linked with duration: an irreversible residual effect is of permanent duration, while the length of time required for the VC to fully or partially revert to its pre-effect condition or functionality may vary.
Likelihood/Confidence	The chance for the residual adverse effect will occur. Factoring in confidence of the predicted effect including confidence in proposed mitigations. The EA Registration will summarize the process and methodology used to evaluate the levels of confidence associated with residual effects predictions and in particular, how any identified uncertainty may affect either the likelihood or the significance of the predicted residual effect. The EA Registration will also describe any measures to reduce uncertainty through monitoring, adaptive management, or other follow-up programs.
Significance	A significant adverse effect to air quality is defined to be ongoing exceedance of provincial air quality standards due to emissions from the Project. Short-term transient exceedances of AQS are considered to be non-significant adverse effects.

6.2.5.1 Residual Effect: Fugitive Dust (TPM, PM_{10})

Exceedances of provincial or federal air quality objectives, guidelines or standards are not expected as a result of project-related air emissions combined with existing background concentrations in consideration of the planned mitigation. However, this will be evaluated further via on-going ambient air monitoring upon commencement of construction and throughout the life span of the Project. If the air monitoring indicates provincial or federal objectives maybe exceeded at any sensitive receptors, additional mitigation would be developed to manage the environmental effects. For example, increased dust management practices and/or controls could be developed to mitigate specific air contaminant sources if needed.

Table 6.2-4: Summary of Residual Effect Characterization Related to Fugitive Dust

Criteria	Rating	Rationale
Magnitude	Low	The scale of the Project is relatively small in comparison with the development of a new mining/processing site.
Extent	Local	Fugitive dust settles quickly and close to the sources. The potential area of impact is limited to less than 2km radius from the Project and existing operating area.
Duration	Short-term	Less than 3 years for the duration of the Project.
Frequency	Low	Sensitive receptors can be downwind of the fugitive sources for a small percentage of the time.
Reversibility	Reversible	Local air quality can recover to pre-project conditions shortly after the Project activities end.
Likelihood	Likely	Sensitive receptors can be downwind of the fugitive sources for a small percentage of the time.
Significance	Minor	Based on the evaluation above.

6.2.5.2 Residual Effect: Combustion Gases ($PM_{2.5}$, NO_2, SO_2, CO)

Exceedances of provincial or federal air quality objectives, guidelines or standards are not expected as a result of project-related air emissions based on the results of the air modelling study and in consideration of the planned mitigation.

Table 6.2-5: Summary of Residual Effect Characterization Related to Combustion Gases

Criteria	Rating	Rationale
Magnitude	Low	The scale of the Project is relatively small in comparison with the development of a new mining/processing site.
Extent	Local	The potential area of impact is limited to less than 500m radius from the Project and existing operating area. No residences are within the impact area.
Duration	Short-term	Less than 3 years for the duration of the Project.
Frequency	Low	Sensitive receptors can be downwind of the fugitive sources for a small percentage of the time.
Reversibility	Reversible	Local air quality can recover to pre-project conditions shortly after the Project activities end.
Likelihood	Likely	Sensitive receptors can be downwind of the fugitive sources for a small percentage of the time.
Significance	Minor	Based on the evaluation above.

6.2.5.3 Residual Effect: GHGs

The Project is expected to generate GHG emissions throughout all three phases of the Project. Based on the Project GHG Emission Inventory, the contribution from the project

GHG emissions to the provincial, Canada-wide, and global GHG emissions are very minor in consideration of the existing and planned GHG-specific mitigation measures.

Table 6.2-6: Summary of Residual Effect Characterization Related to GHG

Criteria	Rating	Rationale
Magnitude	Low	The GHG emissions from the Project is relatively small in comparison to the GHG emissions from the development the AGS Mine. The contribution from the Project to the provincial, Canada-wide, and global totals are very minor.
Extent	Global	The GHG emissions from the Project contributes to the Global total and climate change.
Duration	Short-term	Less than 3 years for the duration of the Project.
Frequency	High	GHG emissions will be produced whenever equipment burning petroleum fuels are in operation.
Reversibility	Reversible	The contribution of project related GHG emission are reversible, through reversal depends on chemical degradation of pollutants in the atmosphere (methane, nitrous oxide) or natural sequestration (carbon dioxide).
Likelihood	Likely	GHG emissions are likely to contribute to increasing global atmospheric GHG totals.
Significance	Minor	Based on the evaluation above.

6.2.6 Potential Cumulative Effects

Since the existing AGS Mine and the Project share common air emissions generating activities, potential cumulative effects of fugitive dust and combustion gas emissions on nearby sensitive receptors may occur if AGS mining operations are conducted in parallel with the Project activities. With respect to GHG emissions, the Project will contribute to the overall site-wide GHG emissions.

However, as discussed above, these cumulative effects are expected to be low in magnitude, local in extent, short term in duration, infrequent, reversible, and minor in significance.

6.2.7 Follow-up and Monitoring Programs

Follow-up and monitoring programs, when required, were identified in Section 6.2.4.1 to effectiveness of the mitigation measures. The need for a follow-up program is determined by the results of the assessment and consultation with the public and interested stakeholders and provincial and federal regulators, as relevant.

The combined dust management/ambient monitoring program described in Section 6.2.4.1 will be implemented not only as a mitigation strategy, but also to track the negligibility of the impacts.

6.3 Noise and Vibration

The following section provides a comprehensive assessment of the Noise and Vibration Valued Component (VC) as it relates to the proposed Project. Noise and vibration are critical environmental factors that can influence the well-being of human populations, wildlife, and the overall acoustic environment. The assessment is intended to evaluate the extent to which Project activities may alter existing noise and vibration levels, and to determine the significance of any resulting effects.

The regulatory context for this VC includes relevant federal, provincial, and municipal guidelines and standards that establish acceptable thresholds for noise and vibration levels. These thresholds are designed to protect both human health and ecological integrity, ensuring that environmental noise and vibration remain within acceptable limits throughout the life of the Project.

The assessment concludes by characterizing the residual effects of the Project on the Noise and Vibration VC, taking into account the effectiveness of proposed mitigation measures. Where significant residual effects remain, recommendations for additional monitoring or follow-up actions are provided to ensure that the VC is adequately protected throughout the Project lifecycle.

6.3.1 VC Scoping

This section provides the scope of the VC, which frames the assessment, including the identification of indicators, pathway of effects, and assessment boundaries. Public and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EA Registration Document (EARD).

6.3.1.1 Indicators

Indicators are metrics that will be used to measure and report on the condition of a VC to demonstrate change from existing conditions to expected conditions as a result of Project activities. Table 6.3-1 presents the indicators that will be used to predict potential changes for the Noise and Vibration assessment, including definition and rationale for selection. The VCs are used to identify sensitive receptors used in the evaluation of indicators. Sensitive receptors are human occupied locations that may be impacted by noise and vibration, and for this project are occupied residential dwellings.

Table 6.3-1: Indicators, Definition, and Rationale for Selection for the Noise and Vibration Assessment

Valued Component	Proposed Indicator	Definition and Rationale for Selection of the Indicator
Noise	Day-night sound level (Ldn)	**Definition:** A 24-hour equivalent continuous sound level where a 10 dB penalty is added to nighttime noise (22:00–07:00) to account for increased sensitivity during sleeping hours. **Rationale:** Ldn is the primary metric recommended by Health Canada to characterize community noise exposure. It is the required input for calculating the change in Percent Highly Annoyed (%HA).
	Percent highly annoyed (%HA)	**Definition:** A calculated prediction of the percentage of the receptor population that will be highly annoyed by long-term noise exposure. **Rationale:** Health Canada guidance explicitly requires assessing the change in %HA (comparing existing sound levels to cumulative project scenarios). It is the primary indicator for measuring the human health impact of noise on well-being and quality of life.
	Nighttime sound level (Ln)	**Definition:** A calculated prediction of the percentage of the population that will be awakened or have sleep cycles disturbed by cumulative nighttime noise levels Ln. **Rationale:** Required by Health Canada for any project operating during nighttime hours (22:00–07:00). It aligns with World Health Organization (WHO) Guidelines for Community Noise to assess potential health effects related to sleep deprivation.
	Overpressure (dBL)	**Definition:** The maximum air pressure level generated by a blast, measured in Linear decibels (dBL) to capture low-frequency concussion effects. **Rationale:** Assessing linear peak levels is standard practice to predict the annoyance blast frequency. This aligns with standard practice in federal EAs to ensure impulse noise does not cause adverse community reaction. Guidance is provided by Health Canada and Ontario's NPC-119.
Vibration	Peak Particle Velocity (PPV)	**Definition:** The maximum instantaneous velocity of a ground particle during the passage of a vibration wave, measured in mm/s. **Rationale:** PPV is the industry standard for assessing potential damage and human perception of vibration. NPC-119 is selected as the relevant standard as it provides established quantitative limits (12.5 mm/s) specifically designed to prevent structural damage and minimize human annoyance in residential areas. Assessing PPV against perception thresholds (typically 0.5 mm/s for onset of perception and 1.0 mm/s for distinct perception) is the standard industry practice for characterizing transient blasting impacts.

6.3.1.2 Assessment Boundaries

The assessment boundaries for the VC were selected based on geographic and temporal extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries established for the VC assessment and rationale for each boundary type, as relevant to the VC.

6.3.1.2.1 Temporal Boundaries

The temporal boundaries for the Noise and Vibration VC effects assessment included:

- Construction: 6 months
- Operations: 18 months
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.3.1.2.2 Spatial Boundaries

The spatial boundaries for the Noise and Vibration assessment are defined below and are shown in Figure 6.3-1**.**

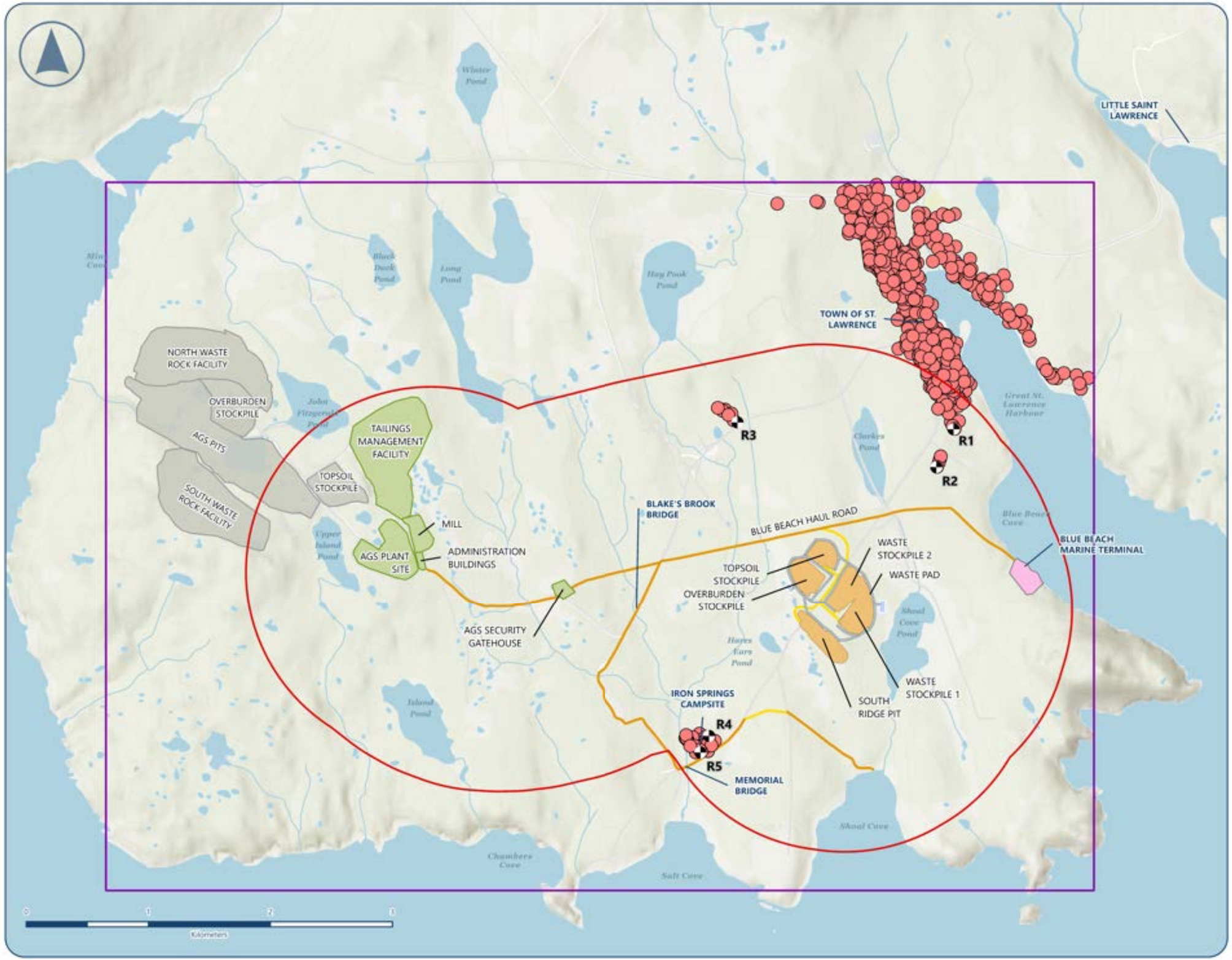
- Local Study Area (LSA):
  - The LSA is set at 1.5 km from the proposed project footprint, including the South Ridge Pit, overburden stockpiles, and haul route, to identify potentially impacted residences. This distance aligns with the Alberta Energy Regulator's Directive 038 – Noise Control (AER, 2024) guidance for noise impact assessments around large mines and open oil sand mines in identifying potential sensitive receptors (occupied residential dwellings). The LSA is used to identify the sensitive receptors to be assessed for the proposed indicators.
- Regional Study Area (RSA):
  - The RSA is based on the RSA identified in the mines original EA but has been expanded to encompass the full extent of the LSA as defined above. This approach ensures that any potential cumulative effects from the proposed Project are considered across a broader region, capturing not only regional context but also the more localized impacts within 1.5 km of the Project footprint. The resulting RSA is approximately 9 km x 6.5 km and is shown in Figure 6.3-1.

CFI
CANADA FLUORSPAR INC.

SOUTH RIDGE MINE

FIGURE 6.3-1
LOCAL AND REGIONAL STUDY AREAS FOR NOISE AND VIBRATIONS

MARCH, 2026



- Noise Assessment Locations
- Existing Residential

PROJECT FOOTPRINT

- Surface Drainage Ditch
- Proposed Sedimentation Pond
- Blue Beach Marine Terminal
- Local Study Area
- Regional Study Area
- Proposed New Road
- Existing Road Upgrades
- Proposed Project Infrastructure

EXISTING MINE COMPONENTS

- Shared AGS Mine Infrastructure
- Existing AGS Mine Infrastructure

Scale: 1:30,000
when printed on 11 by 17 inch paper

FALKIRK

This map and associated spatial data were prepared by Falkirk Environmental Consultant Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Falkirk Environmental Consultant Ltd. Data featured in this map has been derived from a variety of digital sources and as such, FEC does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: EA_Figures_20260304.aprx, Published to pdf on 2026-03-04 12:40 PM by AndrewBrazeau

6.3.1.3 Regulatory Context for the Management of the VC

The following legislation, regulations, and guidance documents were reviewed and considered in the effects assessment for the Noise and Vibration VC.

6.3.1.3.1 Local Guidelines

The Town of St. Lawrence Noise and Nuisance Regulations, effective March 1, 2019, establish standards to protect residents from excessive noise and nuisances within the community. The regulations prohibit unreasonably loud or excessive sounds that disturb the peace, health, or safety of others, with specific restrictions on activities such as the use of air guns, fireworks, loud machinery, defective vehicle mufflers, and barking dogs. Quiet hours are enforced between 11:00 p.m. and 7:00 a.m.

6.3.1.3.2 Provincial Guidelines

The Province does not have a single, comprehensive noise regulation, but noise is typically managed through a combination of municipal by-laws, guidance from the Department of Environment, Conservation and Climate Change, and project-specific requirements set out in environmental assessments. For major projects, noise management must comply with any conditions set by the provincial government as part of the environmental assessment process. In addition, local municipalities may have their own noise by-laws or ordinances that set acceptable noise levels and time restrictions to minimize disturbance to residents and sensitive receptors.

Proponents are also expected to reference standards and technical guidance from Health Canada, the World Health Organization (WHO), and the Canadian Standards Association to ensure that noise impacts are properly assessed using nationally and internationally recognized benchmarks.

6.3.1.3.3 Federal Regulatory Guidelines – Community Noise

Health Canada's Guidance for Evaluating Human Health Effects in Impact Assessments (Health Canada, 2023) outlines noise targets related to annoyance, sleep disturbance, and low-frequency noise effects. The methodology for noise assessment follows international standards and technical publications.

Health Canada Noise Guidance quantifies noise effects for community annoyance using day (Ld), night (Ln), and adjusted day-night (Ldn) sound levels, as well as percent highly annoyed (%HA), for activities over 12 months. Ld averages noise from 7:00 a.m. to 10:00 p.m., and Ln from 10:00 p.m. to 7:00 a.m.; Ldn adds a 10 dB penalty to nighttime hours to account for annoyance sensitivity during standard sleeping hours.

Based on the Health Canada Noise Guidance, the noise target for the maximum acceptable change in %HA is 6.5% above existing sound levels. Tonal characteristics of source noise are factored into %HA calculations because their presence can elevate annoyance. If the change in %HA exceeds this threshold, effects are considered to be of concern and may require mitigation.

In addition, for rural or quiet locations, there is an expectation of lower ambient noise levels and a greater sensitivity to noise increases; therefore, a +10 dB rural adjustment is typically applied to account for the heightened expectation of quiet, as recommended in Health Canada's guidance. This adjustment ensures that noise assessments more

accurately reflect the community's expectations and the potential for increased annoyance in rural environments.

Health Canada's Noise Guidance draws on the WHO recommendations for community and nighttime noise, emphasizing sleep disturbance thresholds. WHO advises an indoor sound level of no more than 30 dBA Leq (equivalent continuous sound level) during sleep, with outdoor-to-indoor transmission losses estimated at 15 dBA for partially open windows and 27 dBA for closed windows; this sets outdoor targets at 45 dBA and 57 dBA, respectively.

Health Canada also provides guidance on blasting overpressure (dBL) based on blast frequency. Recommended limits range from 125 dBL for a single daily blast to 105 dBL for up to 100 blasts per day.

6.3.1.3.4 Provincial Guideline - Blasting

For blasting noise and vibration, Ontario's NPC-119 provides limits for vibration and overpressure at receptor locations depending on whether the effects are predicted or monitored. The guideline specifies a vibration limit of 12.5 mm/s PPV (with a cautionary limit of 10 mm/s PPV) to prevent structural damage and minimize annoyance. NPC-119 also specifies an overpressure limit of 128 dBL (with a cautionary limit of 120 dBL).

6.3.1.3.5 International Standards – Vibration Perception

The California Department of Transportation (CALTRANS, 2020) provides guidance on human perception thresholds for vibration, indicating that vibration may be perceptible at 0.5 mm/s PPV, with distinct perception at 2.5 mm/s PPV. These thresholds are widely referenced to evaluate blasting-related vibration effects.

6.3.1.3.6 Applicable Regulatory and Guidance Summary

Table 6.3-2 summarizes the parameters and limits used in the assessment of noise and vibration for the Project. In addition to outlining the applicable limits and thresholds, the table also reflects the integration of various Canadian and international standards to ensure comprehensive coverage of community health and safety considerations with respect to noise and vibration. This integrated approach ensures that Project assessments remain aligned with best-practice standards and regulatory expectations.

Table 6.3-2: Summary of Applicable Limits and Threshold Used for Assessing the Noise and Vibration VC

Guidance/Standard	Parameter	Limit/Threshold
Health Canada Noise Guidance (2023)	Change in % Highly Annoyed (%HA)	6.5% above existing sound levels
	Nighttime Sound Level (Ln) Sleep Disturbance. Outdoor Sound Level (partially open windows)	≤45 dBA
	Nighttime Sound Level (Ln) Sleep Disturbance. Outdoor Sound Level (closed windows)	≤57 dBA
	Blasting Overpressure	125 dB (single daily blast)

Guidance/Standard	Parameter	Limit/Threshold
Ontario NPC-119	Blasting Vibration	Limit: 12.5 mm/s PPV Cautionary Limit: 10 mm/s
	Blasting Overpressure	Limit: 128 dBL Cautionary Limit: 120 dBL
CALTRANS (2020)	Vibration Perception	Human response: 0.5 mm/s PPV Distinctly perceptible: 2.5 mm/s PPV

6.3.2 Existing Conditions

This section describes the methods used to establish the existing conditions of the Noise and Vibration VC and the description of the existing conditions.

6.3.2.1 Methods

This section outlines the methods used to form the existing conditions for the ambient noise environment.

6.3.2.1.1 Data Sources

Background information and data used to inform the existing conditions for the Noise and Vibration VC include:

- Health Canada Guidance for Evaluating Human Health Effects in Impact Assessment: Noise (Health Canada, 2023).
- Previous Environmental Assessment for the for the AGS Mine (CFI, 2015a).

6.3.2.1.2 Desktop Analysis

Health Canada (Health Canada, 2023) provides estimates for existing ambient conditions for various locations and community types based on existing population densities. The identified receptors for the Project are typical of quiet rural communities ranging from quiet rural to quiet rural-suburban areas within the Town of St. Lawrence (the Town). The LSA was used to identify the sensitive receptors, and in the case of dense communities the potentially greatest impacted location was assessed (described in detail in Table 6.3-4).

Health Canada references a nighttime sound level (Ln) of 35 dBA for rural communities, as described in AER Directive 038, which establishes daytime existing sound levels (Ld) as approximately 10 dB greater, resulting in a total Ldn of 45 dBA. Within the Town, anthropogenic sound contributions are expected, resulting in greater sound levels than quiet rural communities, which is accounted for by the 3 dB increase in assumed ambient sound levels.

Generally, the estimates provided are representative of summertime conditions, reflecting periods when windows are likely open. A summary of the estimated existing sound levels for the identified receptors is provided below in Table 6.3-3 and include the calculation of the overall Ldn sound level following Health Canada requirements.

Table 6.3-3: Health Canada Guidance on Estimating Existing Noise Levels

Community Type	Qualitative Description	Average Census Tract Population Density, Number of People per Square km	Estimated Existing Sound Level (dBA)		
			Ld	Ln	Ldn
Quiet Rural	dwelling units more than 500 m from heavily travelled roads and/or rail lines and not subject to frequent aircraft flyovers	28	45	35	45
Quiet Suburban Residential	remote from large cities, industrial activity, and trucking	249	48	38	48

The assumptions from Health Canada for estimating existing sound levels are consistent with the AGS Fluorspar Preliminary Noise Assessment (Golder, 2015), which estimated ambient sound levels in the range of 35 dBA to 45 dBA. The estimates for Ld and Ln taken from the Health Canada and AER guidance are representative and conservative for rural locations, and account for the variations of existing sound over the entire period over daytime and nighttime hours.

Ambient vibration levels are considered to be below the perceptible thresholds. It is assumed that current vibration levels experienced at receptors are primarily the result of localized sources, rather than activities associated with the existing mine.

6.3.2.1.2.1 Existing Facility Contributions

For the assessment of existing conditions, the existing processing plant and AGS Mine were not included. This approach was taken because the significant separation distance, being greater than 3 km to the nearest receptors, is sufficient to preclude any cumulative contributions from these facilities to existing sound or vibration levels.

6.3.2.1.3 Field Study

Existing ambient sound level surveys are not available for the identified noise-sensitive receptors. As part of the Effects Management section (Section 6.3.4) and to support the estimates provided by Health Canada and the AER, an ambient sound level survey is recommended prior to the commencement of Project construction.

Monitoring is recommended prior to Project commencement to establish existing conditions. Monitoring should be conducted continuously over 48 hours, capturing two full daytime and nighttime periods representative of existing conditions. Monitoring should occur during late spring to early fall to represent typical summertime periods.

Current vibration and overpressure monitoring is not recommended, as existing levels are assumed to be below Health Canada and NPC-119 thresholds. Further, the separation distances between residences and existing significant vibration sources are sufficient to attenuate vibration levels below recommended thresholds.

6.3.2.1.4 Data or Information Limitations

It is important to note that the use of estimated background sound levels has inherent limitations. While the estimates provided by Health Canada are considered conservative and representative of the identified receptors, they may not fully capture local variations or the specific expectations for quiet in rural settings. To address this, a +10 dB rural adjustment has been applied in the assessment, as recommended by Health Canada, to better reflect the community's expected acoustic environment.

6.3.2.2 Sensitive Receptors and Description of Existing Conditions

Table 6.3-4 lists the receptors, descriptions, and locations used in the noise and vibration VC assessment and includes the assumed existing sound levels as provided by Health Canada and listed in Table 6.3-3. Receptor R1, although located in a more populated area of the Town of St. Lawrence, has conservatively been assigned the quiet rural community existing sound level to ensure a precautionary approach.

Table 6.3-4: Identification of Receptor Locations and Descriptions, with Assumed Ambient Sound Levels

Receptor	Description	Location (m) NAD 83 UTM 21N		Modelled Height (m)	Assumed Existing Sound Levels[1] (dBA)		
		X (m)	Y (m)		Ld	Ln	Ldn
R1	Closest home within Town of St. Lawrence. Located at Corporation Place.	622544	5196268	1.5	45	35	45
R2	Closest residential structure northwest of the Project on road south of Pollux Crescent.	622404	5195957	1.5	45	35	45
R3	Closest home north of the Project. Located on Salt Cove Brook.	620776	5196324	1.5	45	35	45
R4	Closest residential structure to the Project found within the Iron Springs Campsite located north of Iron Springs Road.	620543	5193752	1.5	45	35	45
R5[2]	Closest residential structure to the Memorial Bridge found within the Iron Springs Campsite located north of Iron Springs Road.	620472	5193616	1.5	45	35	45

Notes: 1 - Assumed existing conditions follow the conservative guidance from Health Canada (Health Canada, 2023).
2 - Receptor R5 has been included for the potential noise effects from the Memorial Bridge Construction.

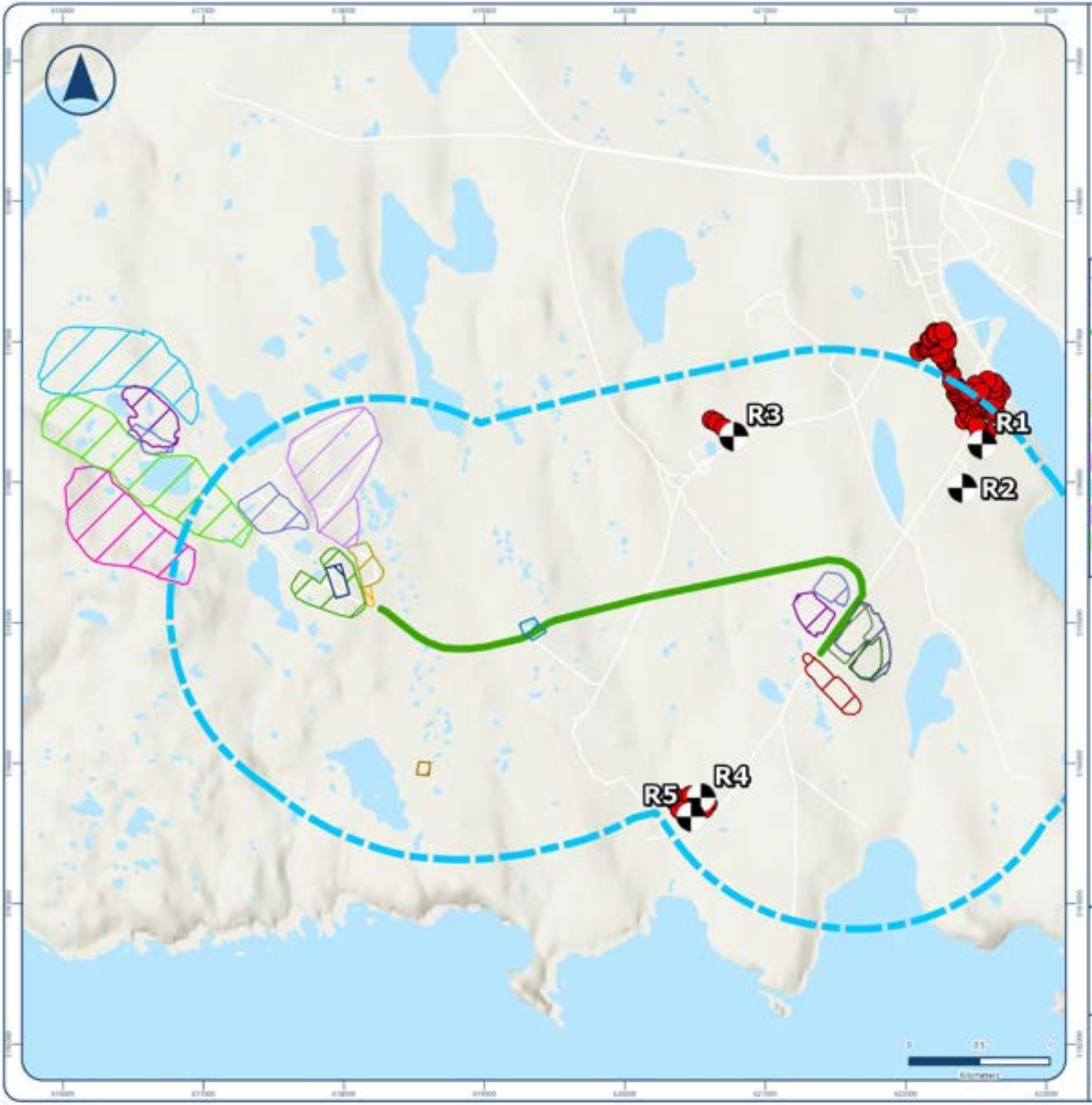


FIGURE 6.3-2

LOCATIONS OF MOST IMPACTED SENSITIVE RECEPTORS

CFI FLUOROSPAR MINE EXPANSION
ST. LAWRENCE, NEWFOUNDLAND

FEBRUARY 2026

- Assessment Locations
- Existing Residential
- Proposed Haul Route
- LSA 1.5 km Boundary
- Administration Building
- Mill
- Tailings Management Facility
- South Waste Rock Facility
- North Waste Rock Facility
- Overburden Stockpile
- ASS Pits
- Crusher
- ROM
- Explosive Magazines
- South Ridge Pit
- Gate House
- Topsoil Stockpile
- Waste Pad
- Waste Stockpile 1
- Waste Stockpile 2

Scale: 1:31,000
when printed on 8 1/2 by 11 inch paper

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6.3.3 Effects Assessment

The effects assessment was conducted according to the approach outlined in Section 5 of this EARD.

A stepwise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as follows:

- Identification of Project-VC interactions and potential effects.
- Selection of mitigation measures.
- Identification and characterization of residual effects.
- Identification of potential cumulative effects.
- Follow-up commitments and monitoring programs.

6.3.3.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the VCs within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). Table 6.3-5 identifies all Project-VC interactions and briefly identifies the nature of the potential effect that may result from the identified interaction.

Potential Project-related effects on VCs will be determined by comparing existing conditions to those expected to result from the construction, operation, and closure phases of the Project. Potential effects will be described including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another valued component).

This section identifies potential Project-related effect, including any predictive modelling that was done to inform characterization of the potential effect. This assessment step informs effects management and mitigation approaches for CFI. Effects Management is discussed in Section 6.3.4.

Table 6.3-5: Project-VC Interactions with Noise and Vibrations

Project Activities		Effect Pathway
Construction		
Community Access Roads	• Strip, fill, gravel, and grade to accommodate vehicle traffic. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use. • Upgrades to Memorial Bridge and Blake's Brook Bridge	Direct: Noise generated from earthmoving equipment and construction activities may cause temporary disturbance to nearby residents, particularly if work occurs close to residential receptors or during nighttime hours. Advance notification and restricting work to daytime are recommended to minimize complaints and sleep disturbance.

Project Activities		Effect Pathway
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded and berms will be built up to support larger equipment traffic • Strip, clear, fill	Direct: Noise from heavy equipment operation and road construction. Potential for sleep disturbance if activities occur at night and are close to residences. Mitigation includes use of broadband backup beepers and limiting nighttime work.
Pit Haul Roads	• Strip, fill, gravel, and grade.	
Infrastructure upgrades	• Transmission line re-routing along the blue beach haul road lines will be lifted to allow Cat 777s to travel to the Project area. • Powerline that follows Iron Springs Road will be re-routed around the pit and extended to provide power to dewatering pumps	
	• The transmission line that currently follows Iron Springs Road will be rerouted around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	
Strip Pit construction	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	
Access to Upper Benches	• Constructing berms in advance of blasting.	
Stockpile Development	• Strip, clear, and prepare stockpile areas for topsoil, overburden, and waste rock stockpiles.	Direct: • Noise from heavy equipment operation and road construction. Potential for sleep disturbance if activities occur at night and are close to residences. Mitigation includes use of broadband backup beepers and limiting nighttime work.

Project Activities		Effect Pathway
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	Direct: Noise from heavy equipment operation and road construction. Potential for sleep disturbance if activities occur at night and are close to residences. Mitigation includes use of broadband backup beepers and limiting nighttime work.
Operations		
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored.	Indirect: • Noise from water collection is not expected to be significant.
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	Direct: • Continuous operational noise from mining and hauling equipment. Modern backup alarms and noise monitoring recommended; restrict nighttime operations near residential areas unless mitigations in place.
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	
Stockpiling	• As mining progresses, waste rock will be deposited in the waste stockpiles.	

Project Activities		Effect Pathway
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, then re-seeding for vegetation regrowth.	Direct: • Noise from heavy equipment operation and road construction. Potential for sleep disturbance if activities occur at night and are close to residences. Mitigation includes use of broadband backup beepers and limiting nighttime work.
	• Recreation access roads will remain in place and open for continued public use following site closure. • Access roads will be maintained to facilitate post-closure monitoring	
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	
	• Closure to be completed 2 year following the completion of saleable aggregate transport.	
	• Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	
Overburden & Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	

Project Activities		Effect Pathway
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).	
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required.	Indirect: • Monitoring and maintenance activities are not expected to result in significant noise or vibration levels.

6.3.3.2 Environmental Noise Modelling

The acoustical model for the Project was developed using the environmental sound prediction software Cadna/A, published by Datakustik GmbH. The program implements the ISO 9613 environmental sound propagation algorithms to predict sound pressure levels generated by project activities.

The model considers multiple factors that influence outdoor sound propagation, including source sound levels and directivity, distance attenuation, source–receptor geometry, the barrier effects of buildings and topography, and ground and atmospheric attenuation. Model setup information is included in Table 6.3-6.

Table 6.3-6: ISO 9613 Model Input Parameters

Parameter	Value
G (ground absorption) Outside Project / Mining and Stockpiles / Open Water	0.8 / 0.4 / 0.0
Reflection Order (From Project Buildings)	2
Receptor / Grid Height	1.5 m
Meteorology	ISO 9613 default wind parameters, temperature and humidity averages: (10 C / 70% R.H. / ~3 km/h avg. wind speed)

The Project Construction phases and Operation phases noise emissions were established using the following information sources:

- Equipment lists, operational locations, and design data provided by CFI mine staff.
- Equipment specifications and referenced sound powers from acoustic literature (BSI, 2014 - BS 5228-1:2009+A1:2014).

6.3.3.2.1 Conservative Assumptions

Equipment modelling of for noise sources have implemented conservative assumptions across all considered scenarios. Operating times have been modelled using a continuous 83% duty cycle, meaning that during a 15-hour daytime period, equipment is assumed to operate continuously for 12.5 hours, and during a 9-hour nighttime period equipment is assumed to operate continuously for 7.5 hours.

For equipment expected to have frequent backup movements, a +5 dB tonal penalty has been applied in accordance with Health Canada noise guidance to account for the tonal characteristics of standard backup alarms.

6.3.3.3 Construction

Based on information provided by CFI, construction of the South Ridge mining area and upgrades to the road have been proposed for the Project. Three construction scenarios have been selected for the assessment based on information provided by CFI. The selection of the assessment scenarios was based on the various activities, equipment, and proximity to sensitive receptors.

6.3.3.3.1 Mine Construction Noise

Modelling focused on the earthmoving equipment at locations with the greatest potential impacts at identified receptors, with the closest locations being the topsoil stockpile and the waste pad. CFI has indicated that construction activities will primarily occur during daytime hours but may have nighttime operations or may occasionally extend into nighttime hours if required.

Table 6.3-7 lists the equipment modelled for the mine construction phase, including quantities, locations, and duty cycles or movements per hour. All equipment during this phase is expected to have multiple backup movements and therefore has a +5 dB tonal penalty applied per Health Canada guidance. Overall sound power levels are provided in the table, with octave-band reference data included in Appendix 6.3-2.

Table 6.3-7: Mine Construction – Modelled Mine Construction Equipment

Equipment	Qty	Operational Location	Duty Cycle or Number of Events		Speed of Haul/ Transport Trucks (km/h)	Reference Sound Power (dBA)	+5 dB Tonal Penalty (Yes / No)
			Daytime (07:00 - 22:00)	Nighttime (22:00 - 07:00)			
CAT 395 - Tracked Excavator	2	Topsoil Stockpile Waste Stockpile	83%	83%	NA	115	Yes

Equipment	Qty	Operational Location	Duty Cycle or Number of Events		Speed of Haul/ Transport Trucks (km/h)	Reference Sound Power (dBA)	+5 dB Tonal Penalty (Yes / No)
			Daytime (07:00 - 22:00)	Nighttime (22:00 - 07:00)			
CAT D9 - Dozer	2	Topsoil Stockpile Waste Stockpile	83%	83%	NA	113	Yes
CAT 16 Grader	1	Topsoil Stockpile	83%	83%	NA	115	Yes
Articulated Dump Truck	4	Between the Stockpiles	35/hour	35/hour	40	109	Yes

Table 6.3-8 shows the predicted noise results for the mine construction phase for both daytime-only operations and combined daytime and nighttime operations. For daytime-only operations, the change in %HA is below the 6.5% Health Canada threshold, indicating a low potential for annoyance.

For scenarios including nighttime construction, predicted increases in nighttime noise result in higher %HA values, particularly at R2, where the proximity to stockpile activities results in elevated noise exposures. Predicted Ld noise contours are shown in Figure 6.3-3.

Table 6.3-8: Mine Construction - Assessment of Change in %HA

Receptor	Assumed Existing Conditions		Project Contribution				Cumulative Sound Level (Existing + Project)		Change in %HA
	LdnAdjust. (dBA)	%HA	Ld (dBA)	Ln (dBA)	Ldn (dBA)	LdnAdjust. (dBA)	LdnAdjust. (dBA)	%HA	
Daytime Only									
R1	55	4.1	40.9	0	38.9	48.9	55.9	4.7	0.5
R2	55	4.1	46.6	0	44.6	54.6	57.8	5.9	1.7
R3	55	4.1	43.3	0	41.3	51.3	56.5	5.0	0.9
R4	55	4.1	36.3	0	34.3	44.3	55.4	4.3	0.2
R5	55	4.1	35.6	0	33.6	43.6	55.3	4.3	0.2
Daytime and Nighttime									
R1	55	4.1	40.9	40.9	47.3	57.3	59.3	7.1	3.0
R2	55	4.1	46.6	46.6	53.0	63.0	63.6	11.9	7.8

Receptor	Assumed Existing Conditions		Project Contribution				Cumulative Sound Level (Existing + Project)		Change in %HA
	LdnAdjust. (dBA)	%HA	Ld (dBA)	Ln (dBA)	Ldn (dBA)	LdnAdjust. (dBA)	LdnAdjust. (dBA)	%HA	
R3	55	4.1	43.3	43.3	49.7	59.7	61.0	8.7	4.5
R4	55	4.1	36.3	36.3	42.7	52.7	57.0	5.3	1.2
R5	55	4.1	35.6	35.6	42.0	52.0	56.8	5.2	1.0

Note: LdnAdjust. includes a +10 dB adjustment to the standard Ldn calculation to account for the greater expectations placed on peace and quiet, resulting in greater change to the %HA per Health Canada guidance (HC, 2023).

Table 6.3-9 presents the assessment for nighttime sleep disturbance during mine construction when activities are concentrated in the most impactful locations. The results indicate a potential for sleep disturbance at R2 if nighttime mine construction occurs.

This potential exceedance can be reduced by implementing broadband (non-tonal) backup alarms on earthmoving equipment, which would remove the +5 dB tonal penalty and result in approximately a 5 dB reduction at R2. This reduction would be sufficient to meet the Health Canada nighttime cumulative sound level of 45 dBA for partially open windows.

Noise monitoring is recommended for this stage of construction at R2, as it is the most impacted receptor.

Table 6.3-9: Mine Construction - Assessment of Sleep Disturbance

Receptor	Assumed Nighttime Ambient Sound Level (dBA)	Ln - Nighttime Project Contribution (dBA)	Cumulative Nighttime Sound Level (dBA)	Health Canada Sleep Disturbance for partially Opened Window (dBA)
R1	35	40.9	42	45
R2	35	46.6	47	45
R3	35	43.3	44	45
R4	35	36.3	39	45
R5	35	35.6	38	45

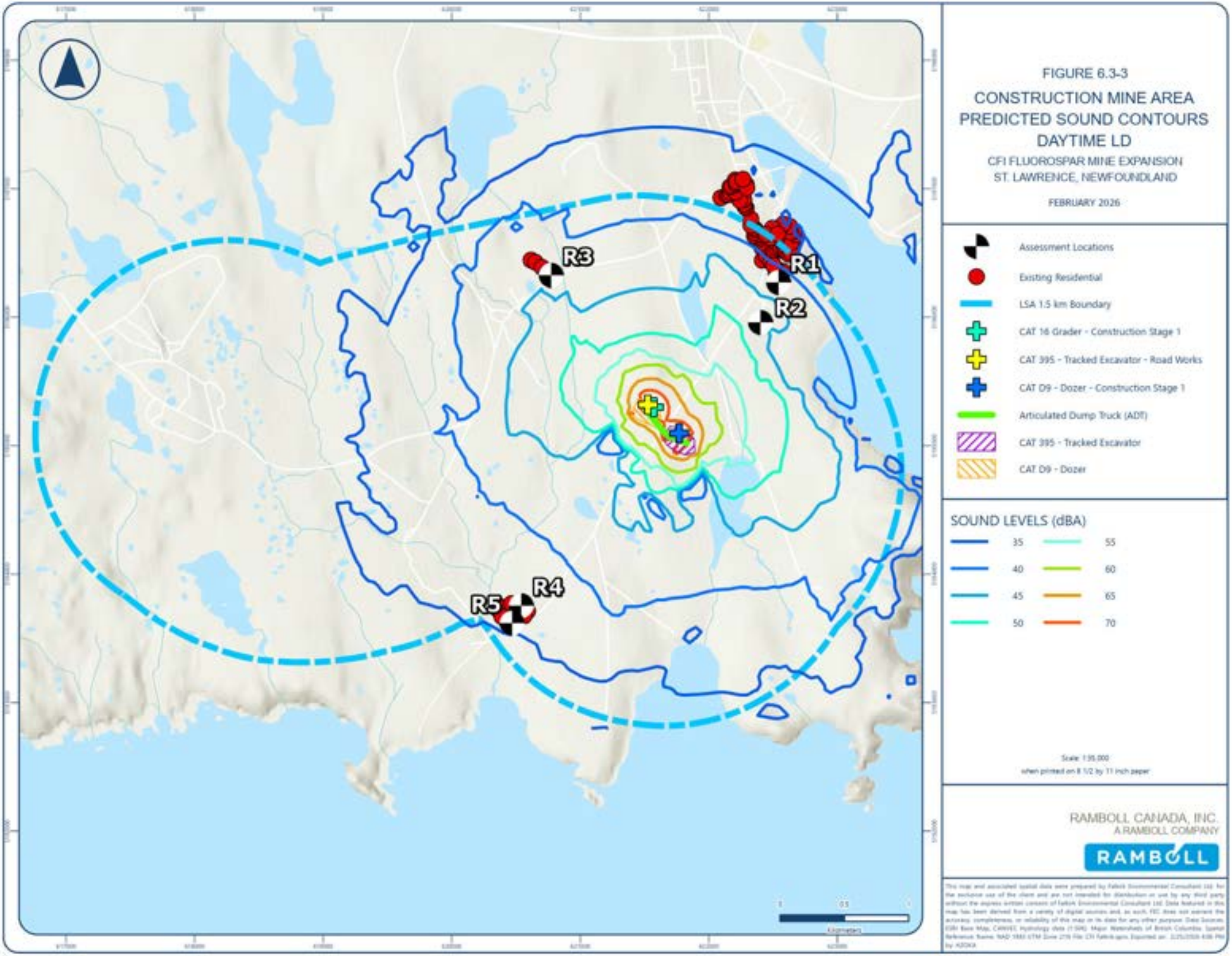

FIGURE 6.3-3

CONSTRUCTION MINE AREA PREDICTED SOUND CONTOURS DAYTIME LD

CFI FLUOROSPAR MINE EXPANSION
ST. LAWRENCE, NEWFOUNDLAND

FEBRUARY 2026

- Assessment Locations
- Existing Residential
- LSA 1.5 km Boundary
- CAT 16 Grader - Construction Stage 1
- CAT 395 - Tracked Excavator - Road Works
- CAT D9 - Dozer - Construction Stage 1
- Articulated Dump Truck (ADT)
- CAT 395 - Tracked Excavator
- CAT D9 - Dozer

SOUND LEVELS (dBA)

35	55
40	60
45	65
50	70

Scale: 1:35,000
when printed on 8 1/2 by 11 inch paper

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6.3.3.3.2 Road Construction Noise

Road construction is expected to occur along Director Drive to accommodate the transport tipper trucks from the stockpiles and the proposed pit to the existing processing plant. A single 750 m length of Director Drive was considered for the road construction scenario, representing a typical construction length based on the equipment estimates provided by CFI. CFI has indicated that construction activities will primarily occur during daytime hours but may have nighttime operations or may occasionally extend into nighttime hours if required.

Table 6.3-10 lists the equipment modelled for the road construction phase, the quantities, location, and duty cycles or movements per hour. All equipment during this phase is expected to have multiple backup movements and therefore has a +5 dB tonal penalty applied per the Health Canda guidance. Overall sound power levels are provided, with reference octave bands listed in Appendix 6.3-2.

Table 6.3-10: Road Construction – Modelled Sound Earthmoving Equipment

Equipment	Qty	Operational Location	Duty Cycle or Number of Events		Speed of Haul/ Transport Trucks (km/h)	Reference Sound Power (dBA)	+5 dB Tonal Penalty (Yes / No)
			Day time (07:00 - 22:00)	Night time (22:00 - 07:00)			
CAT 395 - Tracked Excavator	1	Director Drive	83%	83%	NA	115	Yes
CAT D9 - Dozer	1	Director Drive	83%	83%	NA	113	Yes
CAT 16 Grader	1	Director Drive	83%	83%	NA	109	Yes

Table 6.3-11 shows the predicted noise results for a typical section of road construction along Director Drive.

For daytime operations, the change in %HA is below the 6.5% Health Canada threshold, indicating a low potential for annoyance. For daytime and nighttime operations, the change in %HA is below the 6.5% guidance form Health Canada, indicating a low potential for annoyance.

For combined daytime and nighttime operations, the change in %HA also remains below the 6.5% Health Canada threshold, indicating a low potential for annoyance.

Table 6.3-11: Road Construction - Assessment of Change in %HA

Receptor	Assumed Existing Conditions		Project Contribution (dBA)				Cumulative Sound Level (Exisiting + Project)		Change in %HA
	LdnAdjust. (dBA)	%HA	Ld (dBA)	Ln (dBA)	Ldn (dBA)	LdnAdjust. (dBA)	LdnAdjust. (dBA)	%HA	
Daytime Only									
R1	55	4.1	36.2	0	34.2	44.2	55.3	4.3	0.2
R2	55	4.1	40.8	0	38.8	48.8	55.9	4.7	0.5
R3	55	4.1	43.5	0	41.5	51.5	56.6	5.1	0.9
R4	55	4.1	34.3	0	32.3	42.3	55.2	4.3	0.1
R5	55	4.1	33.3	0	31.3	41.3	55.2	4.2	0.1
Daytime and Nighttime									
R1	55	4.1	36.2	36.2	42.6	52.6	57.0	5.3	1.2
R2	55	4.1	40.8	40.8	47.2	57.2	59.3	7.1	2.9
R3	55	4.1	43.5	43.5	49.9	59.9	61.1	8.9	4.7
R4	55	4.1	34.3	34.3	40.7	50.7	56.4	4.9	0.8
R5	55	4.1	33.3	33.3	39.7	49.7	56.1	4.8	0.6

Note: LdnAdjust. includes a +10 dB adjustment to the standard Ldn calculation to account for the greater expectations placed on peace and quiet, resulting in greater change to the %HA per Health Canada guidance (HC, 2023).

Table 6.3-12 presents the assessment for sleep disturbance during road construction. The results indicate that predicted cumulative nighttime sound levels will remain below the 45 dBA Health Canada guideline for partially opened windows.

Table 6.3-12: Road Construction - Assessment of Sleep Disturbance

Receptor	Assumed Nighttime Ambient Sound Level (dBA)	Ln - Nighttime Project Contribution (dBA)	Cumulative Nighttime Sound Level (dBA)	Health Canada Sleep Disturbance for partially Opened Window (dBA)
R1	35	36.2	39	45
R2	35	40.8	42	45
R3	35	43.5	44	45
R4	35	34.3	38	45
R5	35	33.3	37	45

This assessment considers only a single road construction location, and impacts will vary depending on setback distances. To meet the nighttime sound level guideline of 45 dBA, road construction activities typically need to maintain a setback of at least 1,125 m from residential receptors. This consideration applies particularly to receptors R4 and R5, which are located near Iron Springs Road. Monitoring is recommended at R4 when road construction is near the Iron Springs Campsite.

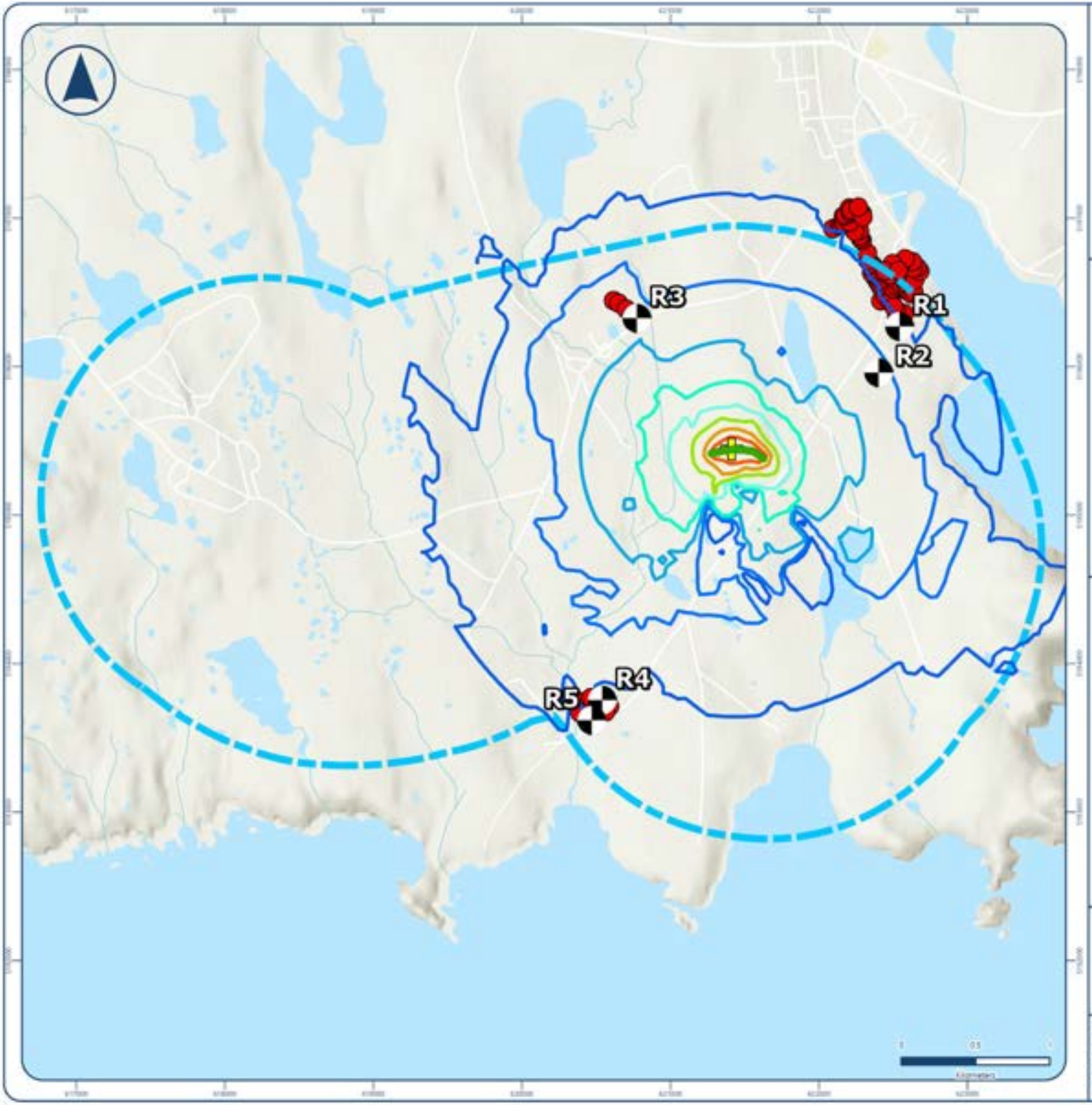

FIGURE 6.3-4

ROAD CONSTRUCTION PREDICTED NOISE CONTOURS LD DAYTIME

CFI FLUOROSPAR MINE EXPANSION
ST. LAWRENCE, NEWFOUNDLAND

FEBRUARY 2026

- Assessment Locations
- Existing Residential
- LSA 1.5 km Boundary
- CAT D9 - Dozer - Road Works
- Articulated Dump Truck (ADT) - Road Work
- CAT 395 - Tracked Excavator - Road Works

SOUND LEVELS (dBA)

35	55
40	60
45	65
50	70

Scale: 1:35,000
when printed on 8 1/2 by 11 inch paper

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6.3.3.3.3 Memorial Bridge Construction Noise

Part of the road works and upgrade program includes improvements to the Memorial Bridge on Iron Springs Road to provide access to the Iron Springs Campsite as well as the various nature trails and coves. The upgrades to the Memorial Bridge are required to provide access to Iron Springs Road, which will be closed as it traverses the proposed pit and stockpiles of the mine expansion.

The upgrade to the Memorial Bridge benefits both the Project and the community, allowing the Project and community members to retain access to existing resources and uses.

Table 6.3-13 lists the equipment modelled for the Memorial Bridge construction, the quantities, location, duty cycles, or movements per hour. Overall sound power levels are provided, with reference octave bands listed in Appendix 6.3-2.

Table 6.3-13: Memorial Bridge Construction – Modelled Sound Equipment

Equipment	Qty	Operational Location	Duty Cycle or Number of Events		Speed of Haul/ Transport Trucks (km/h)	Reference Sound Power (dBA)	+5 dB Tonal Penalty (Yes / No)
			Daytime (07:00 - 22:00)	Nighttime (22:00 - 07:00)			
Mobile Crane	1	Memorial Bridge	83%	83%	NA	99	No
CAT 395 - Tracked Excavator	1	Memorial Bridge	83%	83%	NA	115	No
Articulated Dump Truck (ADT)	1	Memorial Bridge	83%	83%	NA	109	No

The construction is expected to be short in duration compared to the overall expansion project but occurs in close proximity to the Iron Springs Campsite.

Table 6.3-14 shows the potential change in %HA from the Memorial Bridge construction for daytime and combined daytime and nighttime construction. Due to the proximity of the bridge to the Iron Springs Campsite, the potential for annoyance is present, with changes in %HA exceeding the 6.5% threshold.

As with the other phases of the Project, the use of non-tonal backup alarms is recommended. Due to the short duration of construction and the separation distance between the source and receptors, fixed physical noise barriers are not recommended, as the construction equipment is continuously mobile and would frequently move outside the effective zone of any barrier.

Best practices should therefore be implemented to reduce potential noise complaints. Residents in the Iron Springs Campsite should be informed prior to the start of construction, with work restricted to daytime hours only.

Figure 6.3-5 shows the predicted noise contours for Ld due to the Memorial Bridge construction.

Table 6.3-14: Memorial Bridge Construction - Assessment of Change in %HA

Receptor	Assumed Existing Conditions		Project Contribution (dBA)				Cumulative Sound Level (Existing + Project)		Change in %HA
	LdnAdjust. (dBA)	%HA	Ld (dBA)	Ln (dBA)	Ldn (dBA)	LdnAdjust. (dBA)	LdnAdjust. (dBA)	%HA	
Daytime Only									
R1	55	4.1	19.9	0	18.1	28.1	55.0	4.2	0.0
R2	55	4.1	21.5	0	19.6	29.6	55.0	4.2	0.0
R3	55	4.1	22.8	0	20.9	30.9	55.0	4.2	0.0
R4	55	4.1	47.7	0	45.7	55.7	58.4	6.3	2.2
R5	55	4.1	57.7	0	55.7	65.7	66.0	15.6	11.5
Daytime and Nighttime									
R1	55	4.1	19.9	19.9	26.3	36.3	55.1	4.2	0.0
R2	55	4.1	21.5	21.5	27.9	37.9	55.1	4.2	0.0
R3	55	4.1	22.8	22.8	29.2	39.2	55.1	4.2	0.1
R4	55	4.1	47.7	47.7	54.1	64.1	64.6	13.3	9.2
R5	55	4.1	57.7	57.7	64.1	74.1	74.2	35.2	31.0

Note: LdnAdjust. includes a +10 dB adjustment to the standard Ldn calculation to account for the greater expectations placed on peace and quiet, resulting in greater change to the %HA per Health Canada guidance (HC, 2023).

Table 6.3-15 shows the predicted nighttime cumulative sound levels. The results indicate that sound levels can potentially exceed Health Canada guidance of 45 dBA at night. Nighttime construction activities near to the Iron Springs Campsite on Iron Springs Rd should be limited to daytime hours alone.

Table 6.3-15: Memorial Bridge Construction - Assessment of Sleep Disturbance

Receptor	Assumed Nighttime Ambient Sound Level (dBA)	Ln - Nighttime Project Contribution (dBA)	Cumulative Nighttime Sound Level (dBA)	Health Canada Sleep Disturbance for partially Opened Window (dBA)
R1	35	19.9	35	45
R2	35	21.5	35	45
R3	35	22.8	35	45
R4	35	47.7	48	45
R5	35	57.7	58	45

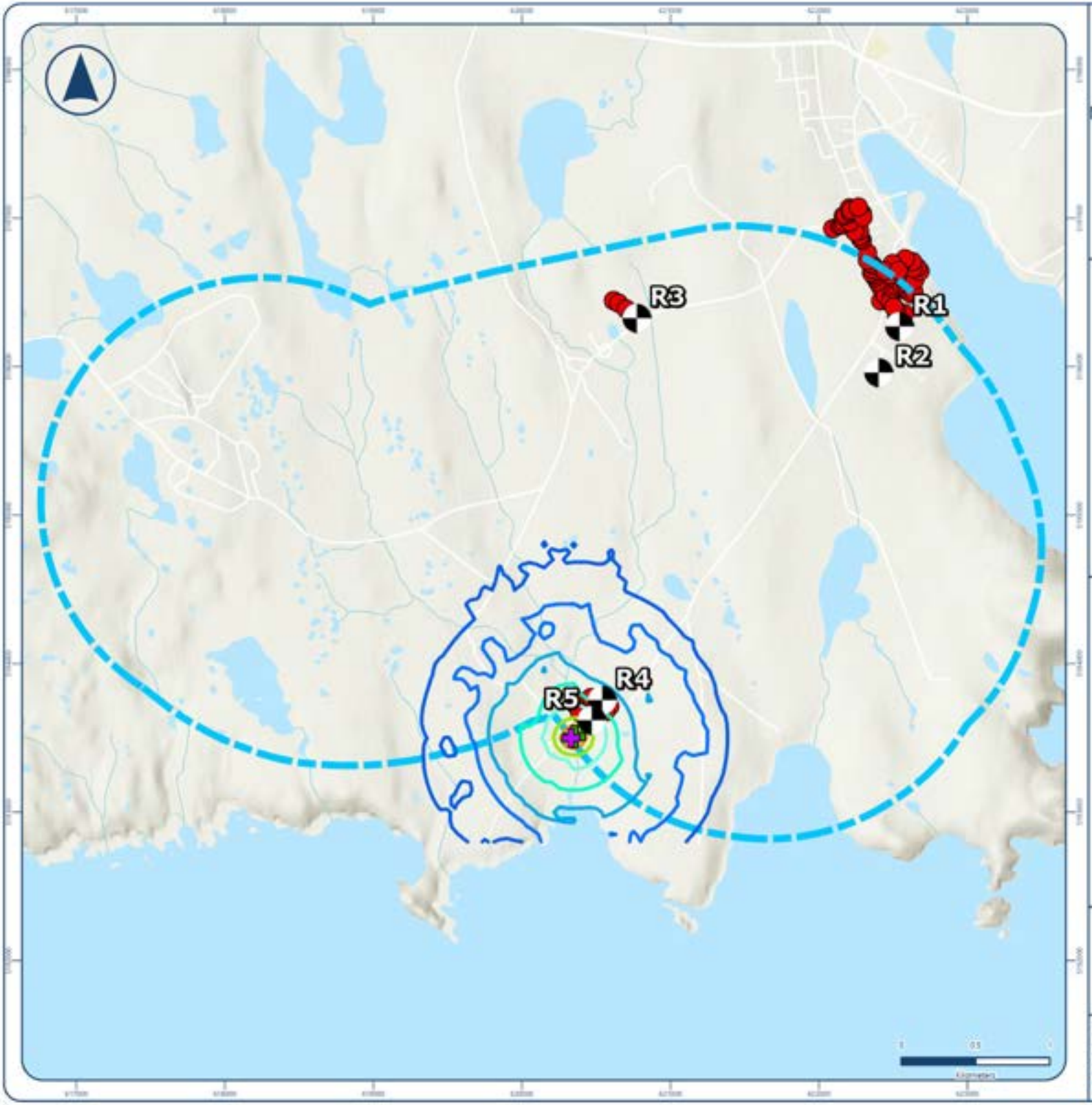

FIGURE 6.3-5

MEMORIAL BRIDGE CONSTRUCTION PREDICTED NOISE CONTOURS DAYTIME LD

CFI FLUOROSPAR MINE EXPANSION
ST. LAWRENCE, NEWFOUNDLAND

FEBRUARY 2026

- Assessment Locations
- Existing Residential
- LSA 1.5 km Boundary
- CAT 395 - Tracked Excavator - Memorial B
- Mobile Crane - Memorial Bridge
- Articulated Dump Truck (ADT) - Road Work

SOUND LEVELS (dBA)

35	55
40	60
45	65
50	70

Scale: 1:35,000
when printed on 8 1/2 by 11 inch paper

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6.3.3.4 *Operations*

The operation phase of the Project is expected to begin during the second half of year 1 of the Project and will continue for 18 months until operations end. Modelling of sources and locations is based on information provided by CFI.

Table 6.3-16 lists the modelled equipment for the operational phase of the mine. The table provides the equipment locations, modelled duty cycles, number of events for transport trucks, pass-by speeds, and overall reference sound powers.

Generally, materials will be hauled from the pit by CAT 777 haul trucks to the stockpiles or to a loading area where they will be transferred to the Kenworth tipper trucks for transport to the existing processing plant. CFI has indicated that the Kenworth tipper trucks will operate during daytime hours only, with an expected 17 trips per day.

Earthmoving equipment associated with the various stockpiles has been modelled in these locations. Equipment expected to have frequent reversing movements has been assigned a +5 dB tonal penalty as per Health Canada noise guidance.

Table 6.3-16: Operation Equipment Modelled, Locations, Duty Cycles, and Overall Sound Powers

Equipment	Qty	Operational Location	Duty Cycle or Number of Events		Speed of Haul / Transport Trucks (km/h)	Reference Sound Power (dBA)	+5 dB Tonal Penalty (Yes / No)
			Daytime (07:00 - 22:00)	Nighttime (22:00 - 07:00)			
CAT 777 (Haul Truck)	1	Ore Stockpile	7.3/hour	7.3/hour	40	117	Yes
CAT 988 - Loader	1	Ore Stockpile	83%	83%	NA	118	Yes
CAT MD6200 (Blast Drill)	1	Main Pit	83%	83%	NA	121	No
CAT 992 - Loader	1	Main Pit	83%	83%	NA	118	Yes
CAT 395 - Tracked Excavator	1	Main Pit	83%	83%	NA	115	Yes
CAT 777 (Haul Truck)	1	Waste Rock Stockpile	7.3/hour	7.3/hour	40	117	Yes
CAT D9 - Dozer	1	Waste Rock Stockpile	83%	83%	NA	113	Yes
Kenworth C500 Tipper Truck	1	Haul Route	2.3/hour	NA	40	114	No
CAT 16 Grader	1	Haul Route	0.5/hour	0.5/hour	40	115	No
CAT 725 (Water Truck)	1	Haul Route	0.2/hour	0.2/hour	40	109	No

Table 6.3-17 presents the assessment for Project operations and the resulting change in %HA. As with the construction assessment, a +10 dB rural adjustment has been applied to Ldn levels to represent the expectation of quiet in rural environments.

The predicted results indicate that the change in %HA is less than the recommended 6.5% at all receptor locations, indicating a low potential for complaints.

Table 6.3-17: Project Operations - Assessment of Change in %HA

Receptor	Assumed Existing Conditions		Project Contribution				Cumulative Sound Level (Existing + Project)		Change in %HA
	LdnAdjust. (dBA)	%HA	Ld (dBA)	Ln (dBA)	Ldn (dBA)	LdnAdjust. (dBA)	LdnAdjust. (dBA)	%HA	
R1	55	4.1	38.1	38.1	44.5	54.5	57.8	5.9	1.7
R2	55	4.1	45.1	45.0	51.4	61.4	62.3	10.2	6.1
R3	55	4.1	40.7	40.5	46.9	56.9	59.1	6.9	2.8
R4	55	4.1	43.1	43.1	49.5	59.5	60.8	8.5	4.4
R5	55	4.1	42.3	42.3	48.7	58.7	60.2	8.0	3.8

Note: LdnAdjust. includes a +10 dB adjustment to the standard Ldn calculation to account for the greater expectations placed on peace and quiet, resulting in greater change to the %HA per Health Canada guidance (HC, 2023).

Predicted noise contours from project alone have been included for Ld, Ln, and overall Ldn, and are summarized below:

- Figure 6.3-6: Project Operations – Predicted Noise Contours – Daytime Ld
- Figure 6.3-7: Project Operations – Predicted Noise Contours – Nighttime Ln
- Figure 6.3-8: Project Operations – Predicted Noise Contours – Overall Ldn

Table 6.3-18 presents the results for nighttime sound levels from expected operations, assessing compliance with the 45 dBA nighttime sound level for partially open windows (HC guidance). The results incorporate assumed ambient sound levels to determine cumulative nighttime levels.

As previously noted, the modelling conservatively applies a +5 dB tonal penalty to equipment expected to make frequent reversing movements.

The results indicate that cumulative nighttime sound levels will be less than or equal to the recommended Health Canada guidance at all receptors. A potential exceedance may occur at R2, which can be mitigated by using non-tonal backup alarms.

Noise monitoring at R2 during the operational phase is recommended to verify modelling results and confirm mitigation effectiveness. Monitoring should occur:

- at the commencement of pit mining, and
- halfway through the operational life of the pit.

Table 6.3-18: Project Operations - Assessment of Sleep Disturbance

Receptor	Assumed Nighttime Ambient Sound Level (dBA)	Ln - Nighttime Project Contribution (dBA)	Cumulative Nighttime Sound Level (dBA)	HC Sleep Disturbance for partially Opened Window (dBA)
R1	35	38.1	40	45
R2	35	45.0	45	45
R3	35	40.5	42	45
R4	35	43.1	44	45
R5	35	42.3	43	45

FIGURE 6.3-6

PROJECT OPERATIONS PREDICTED NOISE CONTOURS DAYTIME LD

CFI FLUORSPAR MINE EXPANSION
ST. LAWRENCE, NEWFOUNDLAND

FEBRUARY 2026

- Assessment Locations
- Existing Residential
- LSA 1.5 km Boundary
- CAT MD6200 (Blast Drill) - Operations
- CAT 16 Grader
- CAT 725 (Water Truck)
- CAT 777 (Haul Truck) Ore Stockpile
- CAT 777 (Haul Truck) Waste Rock Stockpil
- Kenteworth C500 + Tipper Truck
- CAT 385 - Tracked Excavator
- CAT 988 - Loader
- CAT 992 - Loader
- CAT D9 - Dozer

SOUND LEVELS (dBA)

35	55
40	60
45	65
50	70

Scale: 1:35,000
when printed on 8 1/2 by 11 inch paper

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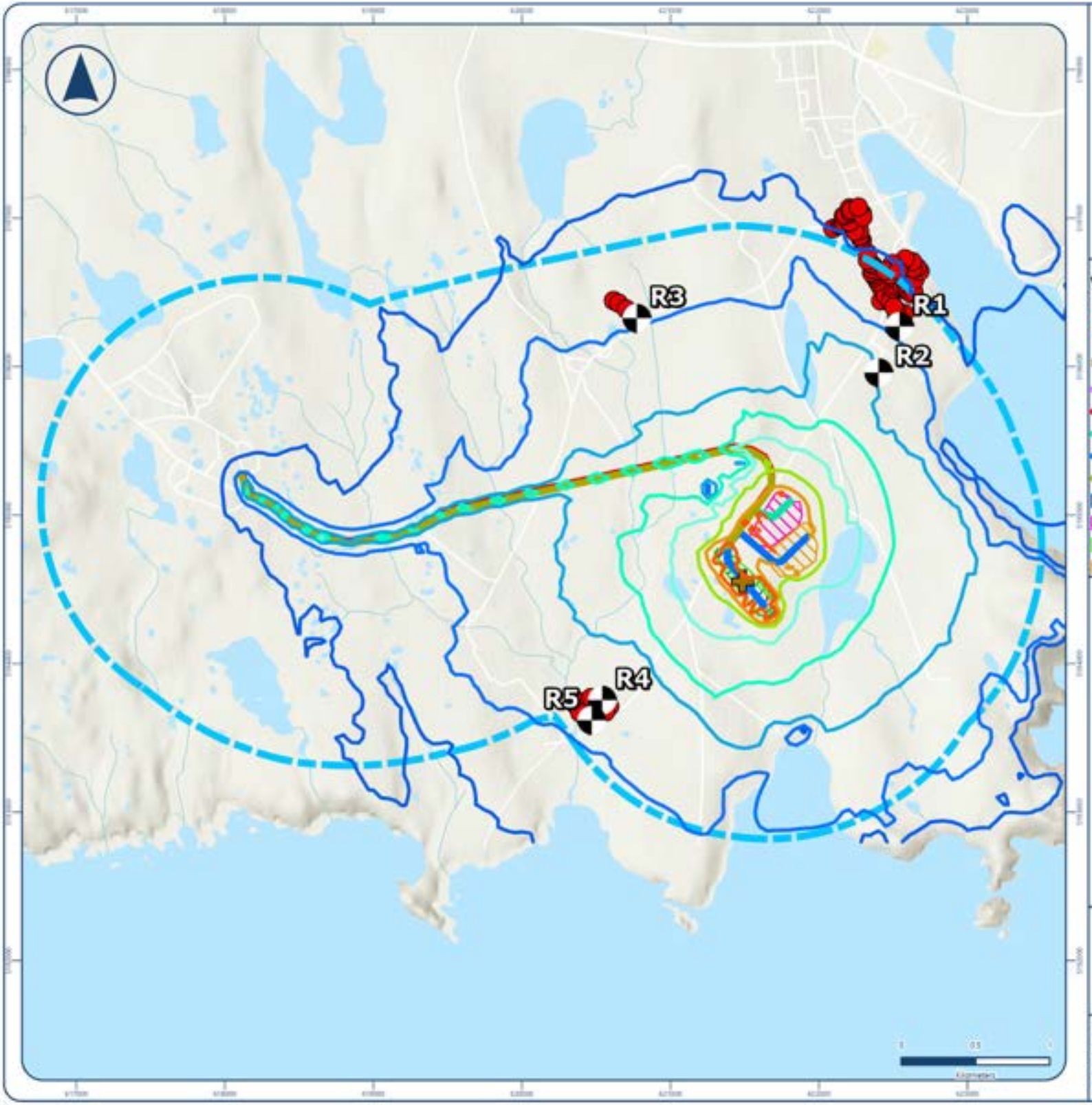

FIGURE 6.3-7

PROJECT OPERATIONS PREDICTED NOISE CONTOURS NIGHTTIME LN

CFI FLUOROSPAR MINE EXPANSION
ST. LAWRENCE, NEWFOUNDLAND

FEBRUARY 2026

- Assessment Locations
- Existing Residential
- LSA 1.5 km Boundary
- CAT MD6200 (Blast Drill) - Operations
- CAT 16 Grader
- CAT 725 (Water Truck)
- CAT 777 (Haul Truck) Ore Stockpile
- CAT 777 (Haul Truck) Waste Rock Stockpil
- Kenworth C500 + Tipper Truck
- CAT 385 - Tracked Excavator
- CAT 988 - Loader
- CAT 992 - Loader
- CAT D9 - Dozer

SOUND LEVELS (dBA)

35	55
40	60
45	65
50	70

Scale: 1:35,000
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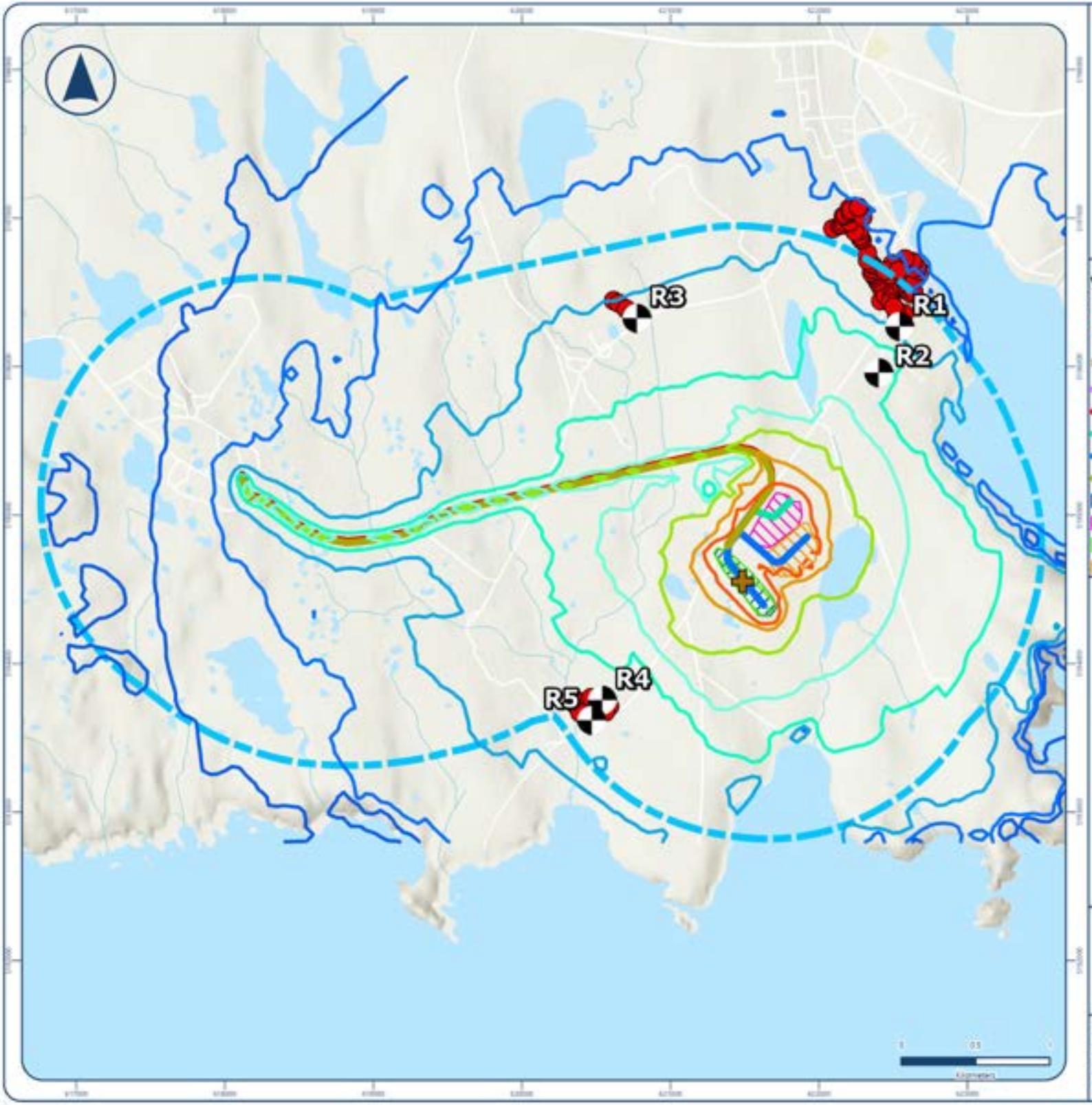

FIGURE 6.3-8

PROJECT OPERATIONS PREDICTED NOISE CONTOURS OVERALL LDN

CFI FLUOROSPAR MINE EXPANSION
ST. LAWRENCE, NEWFOUNDLAND

FEBRUARY 2026

- Assessment Locations
- Existing Residential
- LSA 1.5 km Boundary
- CAT MD6200 (Blast Drill) - Operations
- CAT 16 Grader
- CAT 725 (Water Truck)
- CAT 777 (Haul Truck) Ore Stockpile
- CAT 777 (Haul Truck) Waste Rock Stockpil
- Kenworth C500 + Tipper Truck
- CAT 385 - Tracked Excavator
- CAT 988 - Loader
- CAT 992 - Loader
- CAT D9 - Dozer

SOUND LEVELS (dBA)

	35		55
	40		60
	45		65
	50		70

Scale: 1:35,000
when printed on 8 1/2 by 11 inch paper

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6.3.3.4.1 Blasting

Blasting during the operations phase is expected to occur at the ore pit. Assessment of potential impacts from vibration and overpressure was assessed based on the separation distance from the pit to the identified receptors. The methodology found in the ISEE Blasters Handbook (ISEE, 2011) was used to estimate the potential impacts based on the charge weights and blasting methods provided by CFI.

- Industry:
  - Vibration: Coal Mines
  - Overpressure: Quarry Face
- Charge Weights per minimum 8 ms Delay:
  - Waste Rock: 232 kg TNT equivalent (Emulsion 193 kg)
  - Ore Rock: 118 kg TNT equivalent (Emulsion 98 kg)

Appendix 6.3-3 provides the calculation pages for the results presented below. The calculation procedures assumes that each blast of the provided charge weight be separated by at least 8 ms between each blast. CFI has indicated that electronic detonation timers are currently implemented at the site. Additionally, CFI has indicated that no more than a single blast will occur per day.

Table 6.3-19 presents the summary of the vibration analysis from blasting based on the separation distance from the pit to the identified sensitive receptors. The results indicate that vibrations will be below the guidance limits found in NPC-119, and damage to structures is not expected.

Vibrations from blasting are expected to be perceivable at residential locations.

Table 6.3-19: Project Operations Blasting - Assessment of Vibrations

Receptor	Predicted PPV (mm/s)		Guidance Limit - PPV (mm/s)	
	Waste Blast Hole	Ore Blast Hole	NPC-119 (Upper Limit / Cautionary)	Perception (CALTRANS)
R1	0.16	0.09	12.5 / 10.0	0.5 – 2.5
R2	0.73	0.44		
R3	0.70	0.42		
R4	1.19	0.71		

Table 6.3-20 presents the summary of the overpressure analysis based on separation distance to receptors. All predicted overpressure levels are below the upper limit of 128 dB in NPC-119 and the 125 dB limit for a single blast per day under Health Canada guidelines.

At receptor R4, predicted overpressure from waste blasting slightly exceeds the NPC-119 cautionary limit of 120 dB, but remains below the regulatory upper limit. Verification

overpressure monitoring at R4 is recommended at the start of blasting to confirm predicted levels.

Although the predicted overpressure levels remain within regulatory limits, they are significant enough to potentially cause sleep disturbance for nearby residents. Therefore, it is recommended that blasting activities be restricted to daytime hours and avoided during nighttime periods to minimise impacts on community well-being.

Table 6.3-20: Project Operations Blasting - Assessment of Overpressure

Receptor	Overpressure (dB)		Guidance Limit (dB)	
	Waste Blast Hole	Ore Blast Hole	NPC-119 (Upper Limit / Cautionary)	Health Canada - Single Blast per Day
R1	117	115	128 / 120	125
R2	119	117		
R3	118	116		
R4	121	119		

6.3.3.5 Closure and Decommissioning

The noise impacts associated with closure and decommissioning activities are anticipated to be similar to those predicted for the mine construction scenario, as outlined in Section 6.3, because the same equipment and equipment locations will be utilized.

Annoyance is not expected at residential receptors under these conditions; however, cumulative nighttime sound levels may exceed the 45 dBA Health Canada criteria for sleep disturbance. To ensure compliance, the removal of tonal backup alarms and the potential restriction of nighttime activities are recommended mitigation measures.

6.3.4 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and described throughout section 6.3.3 were used to inform the design and implementation of Project mitigation measures. The identified mitigation measures are outlined in more detail in the following sections, including a discussion of their effectiveness and confidence related to avoiding, minimizing, or restoring the VC to prevent residual effects.

This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and the proposed mitigations effective.

6.3.4.1 Noise

The management of noise effects during both construction and operational phases can be achieved through a combination of project design features, established mitigation practices, and additional targeted measures, as outlined in Section 6.3.3.

- **Limiting Nighttime Construction and Closure Operations:** Construction activities **within 1,125 m of residential areas** should be restricted during nighttime hours to minimize sleep disturbance to local residents.
- **Blasting:** Any blasting required should be **limited to daytime hours only**, as overpressure levels are likely to result in sleep disturbance of residences.
- **Advance Notification to Residents and Locals:** Residents or locals in close proximity to construction activities should be notified in advance of upcoming works. Particularly the locals at the Iron Springs campsite near the Memorial Bridge, should be notified prior to work. Communication will include details regarding the timing and duration of construction to allow affected individuals to make any necessary arrangements and to foster transparency.
- **Monitoring:** Noise monitoring at various stages of the Project should be conducted to assess existing sound levels, verify modelling results, and assess operational times and mitigation effectiveness. Nighttime sound levels (Ln) to be less than 45 dBA.
- **Broadband (Non-Tonal) Backup Beepers:** All earthmoving equipment is **recommended** to be equipped with broadband (non-tonal) backup alarms as opposed to conventional tonal alarms. This measure is recognized as a best practice for reducing the intrusive tonal quality of construction noise, making it less disruptive to nearby communities. The assessment has included a + 5 dB penalty to sources expected to make frequent backup movements. In general, utilizing modern backup alarms will reduce predicted sound levels up to 5 dB.

Collectively, these mitigation measures and best practices are expected to substantially reduce noise impacts during construction and operation. Where these measures are fully implemented, noise effects are anticipated to be reduced to negligible levels for most receptors. In locations where some uncertainty remains—such as during particularly intensive construction activities—the need for ongoing monitoring and follow-up will be assessed to ensure mitigation effectiveness.

6.3.4.2 Blasting – Overpressure and Vibration

Potential vibration effects, primarily associated with blasting activities, will be managed through a suite of mitigation measures designed to minimize ground vibration transmission and ensure community awareness.

- **Blasting Hours**: Limiting blast to one per day, **during daytime hours alone.**
- **Electronic Detonators and Blast Separation**: The use of electronic detonators will be employed to precisely control blast timing, ensuring that individual blasts are separated by at least 8 milliseconds. This technique reduces the cumulative effect of ground vibrations, thereby decreasing the potential for structural impacts and perceptible vibration at sensitive receptors.
- **Advance Notification to Community**: Residents, including those in the community of St. Lawrence, will be informed prior to each blasting event. This

notification will provide details on the expected timing and duration of blasts, allowing residents and sensitive facilities to prepare accordingly and reducing the potential for alarm.

- **Monitoring**: Overpressure monitoring at R4 is recommended to verify overpressure predictions.

These measures are expected to be highly effective in managing vibration effects, particularly when combined with ongoing monitoring and adaptive management. Where the measures are implemented as described, the effect of vibration is anticipated to be minimized to a level that is not expected to result in significant adverse effects. Any residual vibration effects will be monitored, and further mitigation or community engagement measures will be considered if warranted by monitoring results.

6.3.4.3 Summary of Mitigation Measures

Table 6.3-21 summarizes all proposed mitigation measures and identifies whether after implementation a residual effect will remain, as well as identifies if a follow up program is recommended. Identified Follow Up Programs are summarized in Section 6.3.7.

Table 6.3-21: Summary of Proposed Mitigation Measures

Potential Effect	Proposed Mitigation / Best Practices	Potential Residual Effect? (Y/N)
Construction / Closure		
Increase in overall sound levels: Annoyance (%HA)	Recommended use Broad band backup alerts instead of tonal backup beepers.	Y
	Advanced notification to residences when construction activities occur within 1,000 m.	
	Monitoring for modelling verification and compliance records.	
Increase in nighttime sound Levels: Sleep Disturbance (Ln)	Recommended use Broad band backup alerts instead of tonal backup beepers.	Y
	Limit nighttime activities when within 1,125 m of occupied residential areas.	
	Monitoring for modelling verification and compliance records.	
Operations		
Increase in overall sound levels: Annoyance (%HA)	Use Broad band backup alerts instead of tonal backup beepers.	Y
Increase in nighttime sound Levels: Sleep Disturbance (Ln)	Use Broad band backup alerts instead of tonal backup beepers.	Y
	Monitoring for modelling verification and compliance records.	

Potential Effect	Proposed Mitigation / Best Practices	Potential Residual Effect? (Y/N)
Blasting		
Vibration and Overpressure	The use of electronic detonators ensures that individual blasts are separated by at least 8 milliseconds.	Y
	Limiting blast to one per day, **during daytime hours alone.**	
	Advance notification to community of blasting events.	
	Monitoring for modelling verification and compliance records.	
Closure (Similar to Mine Construction Phase)		
Increase in overall sound levels: Annoyance (%HA)	Use Broad band backup alerts instead of tonal backup beepers.	Y
	Advanced notification to residences when closure construction activities will occur within 1,000 m.	
	Monitoring for modelling verification and compliance records.	
Increase in nighttime sound Levels: Sleep Disturbance (Ln)	Use Broad band backup alerts instead of tonal backup beepers.	Y
	Advanced notification to residences when closure construction activities will occur within 1,000 m.	
	Monitoring for modelling verification and compliance records.	

6.3.5 Identification and Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table 6.3-22, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.3-25 and Table 6.3-27.

Table 6.3-22: Residual Effects Characterization Criteria

Characterization Criteria	Description
Magnitude	The expected size or severity of the residual effect. When evaluating the magnitude of the residual effect, relevant factors to consider include the proportion of the VC affected within the spatial boundaries and the relative effect (e.g., relative to natural annual variation in the magnitude of the VC or other relevant characteristic).

Characterization Criteria	Description
Extent	The spatial scale over which the residual effect is expected to occur. Typically, a residual effect may be described as site-specific, local, sub-regional, regional, or greater in extent. As the spatial scale of each VC varies, too may the definitions of the VC-specific spatial scales of the residual effect. That is, the scale of a "local" or "regional" effect may be different for different VCs. Thus, it is important to define each scale used for each VC. It may also be useful to state the extent of the residual effect in relation to the distribution of the VC, to clarify the scale of the residual effect.
Duration and Frequency	For the effect describe the: • Duration is the period of time over which the effect will be present between the start and end of an activity or stressor. Duration would be characterized for each effect as short-term, medium-term, long-term, or permanent, based on the specific VC. • Frequency is how often the residual effect occurs and is usually closely related to the frequency of the physical work or causal disturbance resulting in the residual effect.
Reversibility	Whether or not the residual effect on the VC can be reversed once the physical work or activity causing the disturbance ceases. A residual effect may be fully reversible, partially reversible, or irreversible. In this regard, reversibility is closely linked with duration: an irreversible residual effect is of permanent duration, while the length of time required for the VC to fully or partially revert to its pre-effect condition or functionality may vary.
Likelihood/Confidence	The chance for the residual adverse effect will occur. Factoring in confidence of the predicted effect including confidence in proposed mitigations. The EA Registration will summarize the process and methodology used to evaluate the levels of confidence associated with residual effects predictions and in particular, how any identified uncertainty may affect either the likelihood or the significance of the predicted residual effect. The EA Registration will also describe any measures to reduce uncertainty through monitoring, adaptive management, or other follow-up programs.
Significance	**Negligible:** No measurable or perceptible change in the acoustic environment **Low:** A small change that may be perceivable but does not cause annoyance or sleep disturbance. **Moderate:** A noticeable change that may cause annoyance or complaints but remains below regulatory limits. **High:** A prominent change that exceeds regulatory limits or causes widespread annoyance/sleep disturbance.

6.3.5.1 Construction

6.3.5.1.1 Residual Effect: Increase in Overall Sound Levels: Annoyance (%HA)

Following the implementation of mitigation measures residual effects will result as an increase in ambient sound levels (Ld, Ln, and Ldn) within proximity to noise sources and at nearby points of reception. While compliance with applicable guidelines is achievable, the Project will introduce audible industrial noise sources into the acoustic environment. This residual increase may result in a change in the percentage of the population that is highly annoyed (%HA) especially if nighttime operations near residents are conducted.

The residual noise effect is considered to be low to moderate, as mitigation measures such as limiting nighttime operating hours and adding non-tonal backup beepers will substantially reduce sound levels. However, some increase above existing noise is expected, especially during peak construction and operational activities. The effect is primarily local, affecting areas immediately adjacent to the Project site, such as neighbouring residences and sensitive receptors. The duration is characterized as short- to medium-term, depending on the activity schedule.

Noise will be infrequent during active Construction, as the impacts are dependant on equipment location as the various construction activities are completed.

Table 6.3-23: Summary of Residual Effect Characterization Related to: Increase in overall sound levels: Annoyance (%HA) - Construction

Criteria	Rating	Rationale
Magnitude	Low to Moderate	Noise below thresholds for most phases but may be audible. Construction (Memorial Bridge) near residences have a greater likelihood of complaints.
Extent	Local	Effect limited to areas near the Project site.
Duration	Long-term	Present during construction, operations, and closure.
Frequency	Infrequent (construction and closure).	Infrequent during construction and closure, based on the location of equipment.
Reversibility	Reversible	Noise returns to existing sound levels after activities cease.
Likelihood	High	Predictions supported by modelling.
Significance	Not Significant	Levels below regulatory thresholds: impacts mitigated with controls and mitigations.

6.3.5.1.2 Residual Effect: Sleep Disturbance Nighttime Sound Levels (Ln) - Construction

Following the implementation of mitigation measures residual effects will result as an increase in nighttime sound levels (Ln) within proximity to noise sources and at nearby points of reception, which may result in sleep disturbance. While compliance with applicable nighttime guidelines is achievable, the Project will introduce audible industrial noise sources into the acoustic environment. This residual increase may result in a potential sleep disturbance if nighttime operations near residents are conducted.

The residual noise effect is considered to be low to moderate, as mitigation measures such as limiting nighttime operating hours and adding non-tonal backup beepers will substantially reduce or eliminate sound levels. However, some increase above existing noise is expected, especially during peak construction and operational activities. The effect is primarily local, affecting areas immediately adjacent to the Project site, such as neighbouring residences and sensitive receptors. The duration is characterized as short- to medium-term, depending on the activity schedule.

Table 6.3-24: Summary of Residual Effect Characterization Related to: Increase in nighttime sound levels: Sleep Disturbance - Construction

Criteria	Rating	Rationale
Magnitude	Low to Moderate	Noise below thresholds for most phases but may be audible. Construction (Memorial Bridge) near residences have a greater likelihood of complaints.
Extent	Local	Effect limited to areas near the Project site.
Duration	Long-term	Present during construction and closure.
Frequency	Infrequent (construction and closure).	Infrequent during construction and closure, based on the location of equipment.
Reversibility	Reversible	Noise returns to existing sound levels after activities cease.
Likelihood	High	Predictions supported by modelling.
Significance	Not Significant	Levels below regulatory thresholds: impacts mitigated with controls and mitigations.

6.3.5.2 Operations

6.3.5.2.1 Residual Effect: Increase in overall sound levels: Annoyance (%HA)

Following the implementation of mitigation measures residual effects will result as an increase in ambient sound levels (Ld, Ln, and Ldn) within proximity to noise sources and at nearby points of reception. While compliance with applicable guidelines is achievable, the Project will introduce audible industrial noise sources into the acoustic environment. This residual increase may result in a change in the percentage of the population that is highly annoyed (%HA) especially as nighttime operations are expected.

The residual noise effect is considered to be low to moderate, as conservative modelling shows levels below applicable guidelines. Applying mitigation measures such as adding non-tonal backup beepers will substantially reduce sound levels. However, some increase above existing noise is expected. The effect is primarily local, affecting areas immediately adjacent to the Project site, such as neighbouring residences and sensitive receptors. The duration is characterized as long-term, occurring during the duration of the Project mine.

Noise will be continuous during the main Operations phase, as equipment are predicted to remain in confined areas and activities. The residual noise effect is considered reversible, as noise levels will return to existing sound levels once construction and major operational activities cease.

There is high confidence in the residual effect predictions due to conservative noise modelling and well-established mitigation techniques. Remaining uncertainty can be addressed through ongoing monitoring and adaptive management.

Based on assessed regulatory guidance and the recommended mitigation measures, the residual noise effect is not considered significant. Levels are anticipated to remain below

guidance thresholds for adverse impacts on human health and well-being in the context of the Project's existing environment.

Table 6.3-25: Summary of Residual Effect Characterization Related to: Increase in overall sound levels: Annoyance (%HA) - Operations

Criteria	Rating	Rationale
Magnitude	Low to Moderate	Noise below thresholds but may be audible.
Extent	Local	Effect limited to areas near the Project site.
Duration	Long-term	Present during operations.
Frequency	Continuous (operations)	Continuous during operations phase.
Reversibility	Reversible	Noise returns to existing sound levels after activities cease.
Likelihood	High	Predictions supported by modelling.
Significance	Not Significant	Levels below regulatory thresholds: impacts mitigated with operational controls and mitigations.

6.3.5.2.2 Residual Effect: Sleep Disturbance Nighttime Sound Levels (Ln) - Operations

Following the implementation of mitigation measures residual effects will result as an increase in nighttime sound levels (Ln) within proximity to noise sources and at nearby points of reception as Operations nighttime work is expected. While compliance with applicable guidelines is achievable, the Project will introduce audible industrial noise sources into the acoustic environment. This residual increase may result in a potential sleep disturbance as operations near residents are conducted.

The residual noise effect is considered to be low to moderate, as conservative modelling shows levels below applicable guidelines. Applying mitigation measures such as adding non-tonal backup beepers will substantially reduce sound levels. However, some increase above existing noise is expected. The effect is primarily local, affecting areas immediately adjacent to the Project site, such as neighbouring residences and sensitive receptors. The duration is characterized as long-term, occurring during the duration of the Project mine.

Noise will be continuous during the main Operations phase, as equipment are predicted to remain in confined areas and activities during nighttime hours. The residual noise effect is considered reversible, as noise levels will return to existing sound levels once construction and major operational activities cease.

There is high confidence in the residual effect predictions due to conservative noise modelling and well-established mitigation techniques. Remaining uncertainty can be addressed through ongoing monitoring and adaptive management.

Based on assessed regulatory guidance and the recommended mitigation measures, the residual noise effect is not considered significant. Levels are anticipated to remain below guidance thresholds for adverse impacts on human health and well-being in the context of the Project's existing environment.

Table 6.3-26: Summary of Residual Effect Characterization Related to: Increase in nighttime sound levels: Sleep Disturbance - Operations

Criteria	Rating	Rationale
Magnitude	Low to High	Noise below thresholds but may be audible.
Extent	Local	Effect limited to areas near the Project site.
Duration	Long-term	Present during operations.
Frequency	Continuous (operations)	Continuous during operations phase.
Reversibility	Reversible	Noise returns to existing sound levels after activities cease.
Likelihood	High	Predictions supported by modelling.
Significance	Not Significant	Levels below regulatory thresholds: impacts mitigated with controls and mitigations.

6.3.5.2.3 Residual Effect: Blasting Overpressure and Vibration

The magnitude of overpressure and vibration effects due to blasting is expected to be low, as blasting best management practices will minimize propagation effects. Sensitive structures are unlikely to experience overpressure or vibration above acceptable levels, but blasts will likely be perceptible. The spatial extent is local, primarily affecting properties and infrastructure adjacent to the Project site.

Overpressure and vibration effects are considered medium-term, occurring only during the operational phase of the mine, when blasting occurs in the proposed pit. Vibration will be infrequent, limited to blasting events that will occur less than one-event per day, and estimated as a maximum 3 times per week. The effect is fully reversible, ceasing immediately after the blasting stops.

High confidence in predictions due to established conservative modelling protocols. Remaining uncertainty will be addressed through selective monitoring and through community notification.

The residual overpressure and vibration effects are not significant, as best-practice measures ensure compliance with regulatory standards, and community notification will alert residents to upcoming events and reducing the likelihood of complaints.

Table 6.3-27: Summary of Residual Effect Characterization Related to Blasting

Criteria	Rating	Rationale
Magnitude	Low to Moderate	Blasts are below thresholds but will be perceivable.
Extent	Overpressure: Sub-regional Vibration: Local	Confined to areas near the Project site.
Duration	Medium-term	Occurring during the operational phase of the mine.
Frequency	Infrequent	Only occurs during blast events.

Criteria	Rating	Rationale
Reversibility	Reversible	Vibration and overpressure cease once blasting stop.
Likelihood	High	Predictions supported by monitoring.
Significance	Not Significant	Mitigation and best practices ensure compliance and reduce potential for annoyance by informing residents of activities.

6.3.6 Potential Cumulative Effects

While existing noise sources may contribute to cumulative effects, these are generally considered insignificant for the proposed Project. Common sources include residential activities such as road traffic, yard work, and music. Increased population density, particularly within the Town of St. Lawrence, could lead to higher residential noise levels. This would be reflected in existing ambient monitoring prior to the start of the Project.

Noise from the current processing plant and AGS Mine might also add to cumulative impacts. However, these sources are mainly localized at a significant distance from sensitive receptors. Due to the distance between these sites and sensitive receptors, any additional noise would be sufficiently attenuated so as not to create significant cumulative effects.

Short-term noise increases may occur during the transportation of refined mine materials from the processing plant to the Blue Beach Marine Terminal. The overall sound impact from truck movements is expected to be minimal since trips are infrequent—specifically, 17 round trips per day during the operations phase—resulting in low and insignificant contributions to predicted sound levels.

6.3.7 Follow-up and Monitoring Programs

Follow-up and monitoring programs, when required, were identified in Sections 6.3.2 (Existing Conditions) and 6.3.3 (Effects Assessment). In Section 6.3.2, existing conditions were estimated based on guidance provided through Health Canada, which should be supported by site specific measurements. 48-hours of continuous sound measurements should be conducted at the four (4) nearest identified receptors. Verification monitoring for the various stages of the Project through Construction, Operations, and Closure, with locations determine based on effect impacts and proximity. Table 6.3-28 presents the locations and phases for existing and modelling verification.

Measurements should be conducted with a Class 1 sound level meter meeting the requirements of International Electrotechnical Commission (IEC) technical document IEC 61672–1 (IEC, 2002).

Table 6.3-28: Noise Monitoring Schedule and Locations

Monitoring Activity	Monitoring Length	Pre-Construction (Existing)	Project Phase and Recommended Monitoring Location				
			Construction (Mine Construction)	Construction (Road Construction)	Construction (Memorial Bridge)	Operation	Closure
Noise	48 Hours	R1, R2, R3, R4	R2	R2	R5	R2	R2

Blast monitoring for overpressure is recommended at receptor R4, when blasting at the proposed pit commences to verify the predicted sound levels. Monitoring should capture a minimum of three (3) blasts and will require a monitor capable of measuring instantaneous overpressure.

6.3.7.1 Adaptive Management – Complaints

CFI will implement a structured approach to address complaints in the Project area. Upon receipt of a complaint, CFI will record all relevant information, including the specific details regarding the nature of the noise, the suspected source, and the exact time the unwanted noise was experienced. This comprehensive documentation will help in accurately identifying potential causes and patterns.

Following the initial recording, CFI will promptly review operational logs and site activity records to determine what activities were occurring at the time of the complaint. Based on this review, CFI will initiate a monitoring action plan, which will include short-term verification measurements lasting at least 20 minutes. These measurements will be conducted in the vicinity of the complaint location to verify the noise levels and assess compliance with applicable guidelines.

Upon completion of the verification measurements, the results will be documented alongside the original complaint details in the Project Complaint Log. If the measured noise levels exceed the applicable guidelines, CFI will initiate corrective actions, which may include adjusting operational procedures or scheduling, implementing additional noise mitigation measures, and communicating with the complainant regarding the steps taken to address the issue. All actions and decisions will be recorded, and follow-up monitoring may be scheduled to ensure the effectiveness of the implemented measures.

If the noise levels are found to be within acceptable limits, CFI will still communicate the findings to the complainant and maintain a record of the complaint and subsequent actions taken. This structured approach ensures transparency, accountability, and continuous improvement in managing noise-related concerns at the site. Table 6.3-29 summarizes the adaptive management procedures and corrective actions from a complaint.

Table 6.3-29: Recommended Adaptive Management Action Plan

Adaptive Action Plan	Primary Actions	Records / Action
1. Complaint Recording & Intake	Upon receipt of a noise complaint, CFI will immediately record the following details in the Project Complaint Log:	• Time & Date: When the noise occurred vs. when the complaint was received. • Location: The complainant's address or location is related to the site. • Noise Character: Description of the sound (e.g., tonal, impulsive/banging, continuous hum, vibration). • Suspected Source: The activity the complainant believes caused the noise
2. Investigation & Verification Monitoring	CFI will review site logs to confirm if Project activities were active at the reported time. If Project activities are the suspected cause, Short-Term Verification Monitoring will be triggered:	• Timing: Monitoring will be conducted within 48 hours (weather permitting) during similar operational conditions. • Method: A spot-check measurement (20 to 60 minutes using an IEC Class 1 or 2 sound level meter) at the receptor location to capture the specific noise source. • Analysis: Measured levels will be compared against Project Noise Limits to confirm non-compliance.
3. Mitigation Determination	If verification monitoring confirms an exceedance or significant nuisance (e.g., strong tonality), CFI will determine and implement the appropriate mitigation:	• Source Controls: Repairing equipment (mufflers/bearings) or swapping specific units. • Path Controls: Utilizing temporary stockpiles or barriers to block the line of sight. • Administrative Controls: Rescheduling the specific activity to less sensitive hours or modifying equipment pathing.
4. Resolution & Closure	Following implementation, a final spot-check measurement will be conducted to verify the reduction.	• Method: A spot-check measurement (20 to 60 minutes) at the receptor location to capture the specific noise source. • Once compliance is restored, the complainant will be notified of the action taken, and the complaint will be marked as "Closed."

6.4 Groundwater Quality and Quantity

The following section provides a comprehensive assessment of the Groundwater Quality and Quantity Valued Component (VC) as it relates to the proposed Project.

Groundwater quality and quantity are critical environmental factors that can influence the health of human populations, wildlife, aquatic life, and the overall environment. The assessment is intended to evaluate the extent to which Project activities may alter existing groundwater characteristics, and to determine the significance of any resulting effects.

The regulatory context for this VC includes relevant federal, provincial, and municipal guidelines and standards that establish acceptable thresholds. These thresholds are

designed to protect both human health and ecological integrity, ensuring that water quality remain within acceptable limits throughout the life of the Project.

The assessment concludes by characterizing the residual effects of the Project on groundwater quality and quantity and evaluating the effectiveness of proposed mitigation measures. Where significant residual effects remain, recommendations for additional monitoring or follow-up actions are provided to ensure that the VC is adequately protected throughout the Project lifecycle.

6.4.1 VC Scoping

Groundwater Quality and Quantity was defined as a VC using the methods described in Section 5. In addition to potentially being a resource for water supply, groundwater can provide baseflow to streams and may discharge to surface water bodies. Groundwater is also a pathway through which potential contaminants of concern can travel from Project sources to environmental receptors. The key indicators for groundwater quantity are groundwater level (also known as potentiometric head), groundwater flow direction and gradient, and groundwater quality as defined by physical and chemical parameters.

6.4.1.1 Assessment Boundaries

This section defines the boundaries selected for the Groundwater Quality and Quantity VC assessment and rationale for the established boundaries, as relevant to the VC.

6.4.1.1.1 Temporal Boundaries

The temporal boundaries for the Groundwater Quality and Quantity VC effects assessment were the same as for the overall Project assessment:

- Construction: Approximately 6 months
- Operations: Approximately 18 months
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.4.1.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and shown in Figure 6.4-1. As the St. Lawrence Peninsula regional groundwater flow is broadly governed by topographic gradients, the study areas for the Groundwater Quality and Quantity VC were selected to be the same as for the Surface Water Quality and Quantity VC:

- Local Study Area (LSA): The LSA encompasses the Salt Cove, Shoal Cove, and Blue Beach Cove watersheds, which may be directly affected by the Project.
- Regional Study Area (RSA): The RSA includes the LSA in addition to the neighbouring Town of St. Lawrence and the AGS mine, including the Grebes Nest, Mine Cove, Northwest Pond, and Upper Island Pond watersheds.

The Project footprint for the proposed South Ridge Pit and associated stockpiles straddle the Salt Cove and Shoal Cove watersheds, while the existing Blue Beach Haul Road extends through the Blue Beach Cove watershed to the Blue Beach Marine Terminal. Although ore processing and tailings disposal will be carried out at the AGS Mine, it was assumed that related effects would be assessed and permitted separately. As such, watersheds related to the AGS Mine were included in the RSA but not the LSA.

6.4.1.1.3 Regulatory Context for the Management of the VC

The following legislation, regulations, and guidance documents were considered in the effects assessment for the Groundwater Quantity and Quality VC:

- Provincial
  - SNL2002 Chapter W-4.01 *Water Resources Act*
  - Newfoundland and Labrador Regulation 63/03. Well Drilling Regulations, 2003 under the *Water Resources Act* (O.C. 2003-221)
  - Newfoundland and Labrador Regulation 65/03. Environmental Control Water and Sewage Regulations, 2003, under the *Water Resources Act* (O.C. 2003-231)
  - Water Resources Act Policy Directives
  - SNL2002 Chapter E-14.2 *Environmental Protection Act*.
  - Guidelines for Drinking Water Quality in Newfoundland & Labrador

Federal

- R.S.C., 1985, c.F-14 *Fisheries Act*
- Canadian Council of Ministers of the Environment (CCME)
- Canadian Environmental Quality Guidelines
- Guidelines for Canadian Drinking Water Quality

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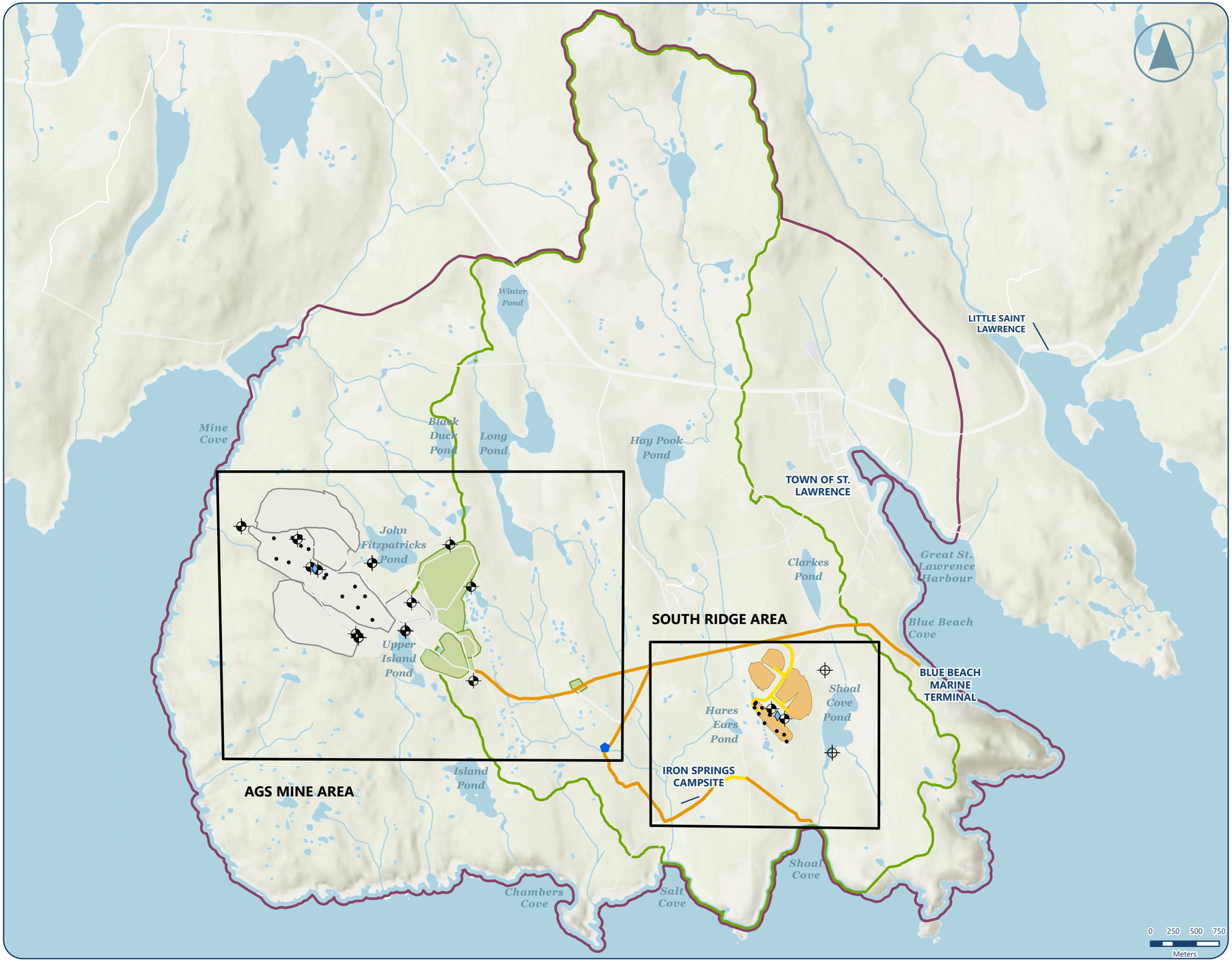
SOUTH RIDGE MINE

FIGURE 6.4-1
REGIONAL AND LOCAL STUDY AREAS

APRIL, 2026



- Proposed New Road
- Existing Road Upgrades
- Local Study Area
- Regional Study Area
- Proposed Project Infrastructure
- Shared AGS Mine Infrastructure
- Existing AGS Mine Infrastructure

Monitoring Locations

- Drillhole
- Intake
- Active Monitoring Well
- Inactive Monitoring Well
- Pumping Well

Scale: 1:40,000
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6.4.2 Existing Conditions

This section describes the methods that established the existing conditions of the Groundwater Quality and Quantity VC.

6.4.2.1 Methods

6.4.2.1.1 Data Sources

Background information and data to inform the existing conditions for the Groundwater Quality and Quantity VC included:

- St. Lawrence Fluorspar Project Pre-Feasibility Study: Hydrological Aspects. Technical Report, October 2009 (Scott Wilson, 2009).
- St. Lawrence Fluorspar Project Mine Development Plan (CFI 2025c).
- Hydrogeology Phase 1 Investigation. Report prepared for Canada Fluorspar Inc. (Golder 2015a).
- Factual Report. Fluorspar Mine Site – Phase 2 Hydrogeology Work (Golder 2015b).
- Environmental Preview Report Pursuant to the Newfoundland and Labrador Environmental Protection Act. AGS Fluorspar Project St. Lawrence, NL, Volume 2, Appendix F – Surface Water and Groundwater Quality Monitoring Program (CFI 2015c).
- Fluorspar Mine Site – Numerical Groundwater Flow Modelling of Groundwater Inflow and Drawdown (Golder 2016).
- St. Lawrence Fluorspar Project – Site-Wide Water Management Plan (Knight Piésold Ltd. 2017).
- Hydrogeological Observations and Results from Phase I and Phase II Geotechnical Drilling Program in the AGS Pit Area and South Ridge (Director Surface) Resource Area (Piran 2024a).
- Water Quality Monitoring Well Relocation (Piran 2024b).
- Hydrogeology Field Investigation Work Plan (Mining One 2025).
- Information and data provided by CFI:
  - Topography
  - Mine designs
  - Geological and structural models
  - Groundwater level and hydrogeological test data
  - Groundwater quality monitoring program maps and data
- Publicly available water resources information and mapping from Newfoundland and Labrador Water Resources Portal (NL 2026).

A detailed description of the information and methods used to characterize the groundwater conceptual model for existing conditions is provided in Appendix 6.4-1 (Mining One 2026) and an analysis of groundwater quality existing conditions for the South Ridge Pit is provided in Appendix 6.4-2 (Falkirk 2026a).

6.4.2.1.2 Desktop Analysis

Desktop analysis to characterize existing conditions included review of available hydrogeology reports, geological information and groundwater level and quality data from AGS Mine, the South Ridge Pit area of the Project, and relevant publicly available information. A gap analysis was conducted to inform the scope of work for field study and numerical modelling, which are described in sub-sections below. Desktop analysis also included compiling and reviewing well completion information, groundwater level measurements, groundwater quality sampling results and conducting statistical analysis of previously conducted hydraulic testing.

Results of the desktop analysis were supplemented with data from field investigations and were used to develop a hydrogeological conceptual model for the Project. The hydrogeological conceptual model presented in Appendix 6.4-1 (Mining One 2026) includes visualizations such as a three-dimensional block model and plan views of interpreted sub-surface hydro-stratigraphy and major structural features; and two-dimensional maps of interpreted groundwater flow directions for the local and regional areas. The hydrogeological conceptual model also includes description of the relevant hydrogeological domain, hydraulic parameters, groundwater flow regime, surface water-groundwater interactions, and implications for groundwater flow into the South Ridge Pit, including considerations for proposed dewatering methods.

6.4.2.1.3 Field Investigations

As described in Appendix 6.4-1 (Mining One 2026), results from historical and recent (2024 and 2026) field investigations were used to evaluate the Groundwater Quality and Quantity VC existing conditions and develop the hydrogeological conceptual model. Data from the field investigations includes groundwater level measurements collected during drilling activities, results of hydraulic testing and groundwater quality sampling programs, and groundwater quality sampling results.

Locations of historical and recently drilled monitoring wells are shown on Figure 6.4-2 for the AGS Mine area and Figure 6.4-3 for the South Ridge area. A summary of well construction information, including screened interval is provided in the groundwater quality existing conditions report (Appendix 6.4-2; Falkirk 2026a).

To strengthen the hydrogeological understanding of the South Ridge area a field investigation was undertaken that comprised of:

- Drilling and constructing a pumping well (PW1) and two observation wells (OBS-01 and OBS-02) and measuring water levels in the immediate area of the proposed South Ridge Pit.
- Conducting a pumping test and monitoring flow rates and water levels to provide input data for the numerical groundwater model used to quantify pit dewatering rates and inform design of water management infrastructure and geotechnical analyses Appendix 6.4-1, Mining One 2026).
- Collecting representative groundwater samples to evaluate groundwater chemistry for existing conditions and to identify potential changes in groundwater chemistry resulting from pumping (Appendix 6.4-2, Falkirk 2026a).

Details for the field investigation drilling and hydraulic testing are provided in Appendix 6.4-1 (Mining One 2026) and details for the groundwater quality sampling and results are provided in Appendix 6.4-2 (Falkirk 2026a).

6.4.2.1.4 Modelling

Numerical hydrogeological modelling was completed to assess potential changes to groundwater flow patterns from pit dewatering. These results were used to evaluate potential Project effects on the Groundwater Quantity and Quality VC and as inputs to modelling that was completed to evaluate potential effects on the Surface Water Quality and Quantity VC (Chapter 6.5 and Falkirk 2026b). The numerical groundwater modelling methods are described in detail within Appendix 6.4-1 (Mining One 2026) and briefly summarized below.

- The numerical groundwater model was developed based on the hydrogeological conceptual model and adopted a simplified representation of the groundwater system that included consideration of spatial variability and preferential groundwater pathways aligned with major structural trends.
- The numerical groundwater model was constructed using FEFLOW version 10.0, applying the finite element method. Fractured rock flow is represented using an Equivalent Porous Medium (EPM) approach.
- The model domain was developed using an approach where it is refined in and around the mining area to ensure sufficient resolution to evaluate groundwater inflows, slope pore pressure response, and dewatering effectiveness, while also extending beyond the immediate mining area to encompass surrounding surface water catchments that are considered potentially relevant to the proposed mining development.
- The model was calibrated to existing conditions, and then predictive groundwater modelling was undertaken to evaluate potential groundwater behaviour and dewatering performance under various scenarios described in the effects assessment presented in Section 6.4.3.
- Particle tracking analysis was conducted to visualize the flow path of solutes from mining constituent sources and to estimate travel times assuming advective transport.

6.4.2.1.5 Data or Information Limitations

There was limited hydrogeological information available for the area of the proposed South Ridge Pit, and it was uncertain whether test results from AGS Mine could be reliably applied to the South Ridge area, a hydrogeological field program was undertaken in 2026 to characterize existing conditions in the South Ridge area and validate the conceptual and numerical groundwater models. Groundwater flow and quality information for the South Ridge area represents one point in time and a targeted groundwater monitoring program will be implemented prior to and during mining operations to verify model predictions and support adaptive groundwater management.

Limitations and uncertainty within the numerical groundwater model are described in Appendix 6.4-1 (Mining One 2026).

Key limitations of the numerical hydrogeological model include:

- Calibration data constraints, as model calibration is primarily based on snapshot groundwater level measurements collected during drilling programs rather than long-term continuous groundwater monitoring records. This limits the ability to fully constrain transient system behaviour.
- Scale of hydraulic testing data, with hydraulic properties informed mainly by interval-scale packer testing and a short-term pumping test.
- Conceptual representation of dewatering, whereby active dewatering scenarios adopt indicative well configurations and pumping rates for screening-level modelling purposes only. These configurations do not represent an optimised or engineered dewatering system design.
- Simplified representation of geological and structural features, consistent with pre-feasibility study (PFS)-level modelling objectives, which may not fully capture small-scale heterogeneity or the detailed hydraulic behaviour of individual faults and fracture zones.
- Waste dumps and other mining infrastructure were not explicitly represented in the model, as they are not expected to directly influence the saturated groundwater system. These features are primarily surface or near-surface structures that mainly affect surface runoff or infiltration processes within the unsaturated zone. Since the groundwater model focuses on the behaviour of the saturated aquifer and regional groundwater flow, the presence of these facilities is considered unlikely to significantly alter groundwater levels or flow patterns within the saturated domain.
- The groundwater model was developed in a data-constrained environment where no long-term gauging stations are located directly within the primary creeks or smaller ponds hydraulically connected to the site. Due to this limitation, river and pond stage elevations could not be defined using continuous observed hydrographs and instead, surface water levels were approximated.

Uncertainty in the numerical hydrogeological model predictions arises primarily from natural variability in fractured bedrock hydraulic properties and from assumptions required to represent complex groundwater processes within a numerical modelling framework. These uncertainties were explicitly evaluated through a structured sensitivity analysis focusing on key fractured bedrock parameters. The numerical groundwater model is considered suitable for PFS-level evaluation of groundwater behaviour and dewatering performance and to inform the EA. Model outputs should be interpreted as indicative estimates rather than definitive predictions, providing a robust technical basis for mine planning and groundwater risk assessment, with further refinement anticipated as additional site-specific hydrogeological data are collected.

Potential groundwater quality effects were evaluated using the particle tracking feature within the numerical groundwater model, which visualizes the flow path of a solute and allows an estimation of travel times using advective transport. This is recommended as the first step in a phased approach for assessing contaminant transport and potential water quality impacts for natural resource projects as it is a conservative approach (Wels, Mackie, and Scibek 2012). Solute transport modelling would be advised if this conservative approach to developing inputs for surface water modelling results in constituent concentrations of concern in the receiving environment.

The groundwater quality existing conditions assessment was developed using a data set that is limited spatially to the immediate vicinity of the South Ridge Pit and temporally to the beginning and end of a 72-hr pumping test conducted in February 2026. While results are generally consistent with historical groundwater quality data from the AGS mine area limited conclusions can be made regarding temporal or spatial patterns in the data. For some parameters (hexavalent chromium, cobalt, copper, mercury, and selenium), laboratory Reporting Detection Limits were greater than or equal to the water quality guidelines, and detection limits were too high to determine whether concentrations met or exceeded CCME long-term chronic surface water quality guidelines. Re-sampling using analytical methods with lower RDLs would be required to determine whether sample concentrations exceeded the CCME long-term chronic surface water quality guidelines.

6.4.2.2 Description of Existing Conditions

6.4.2.2.1 Hydrogeological Setting

The groundwater system within the South Ridge Project area is characterised by fractured bedrock aquifers with limited primary porosity. Groundwater occurrence and movement are predominantly controlled by the density, orientation, and connectivity of fracture networks within the bedrock, rather than by laterally continuous porous media aquifers. Overburden cover is generally thin and discontinuous till and alluvium, resulting in a groundwater system that responds locally to recharge and where groundwater flow direction and gradient is a subdued reflection of topography.

Recharge to the groundwater system occurs primarily through direct infiltration of precipitation at higher elevations, while discharge is generally toward local surface water features and topographic lows. As a result, groundwater conditions exhibit spatial variability over relatively short distances, consistent with fractured bedrock hydrogeological environments typical of the St. Lawrence peninsula.

Baseline hydrogeological understanding is informed by regional studies completed for the AGS Mine area, site-specific drilling and testing programs, and numerical groundwater modelling documented in Appendix 6.4-1 (Mining One 2026). Locations of boreholes and monitoring wells used to develop the Conceptual Site Model for existing conditions are shown on Figure 6.4-2 for the AGS Mine area and Figure 6.4-3 for the South Ridge area.

A preliminary evaluation of Acid Rock Drainage (ARD) and Metal Leaching (ML) risks associated with the exposure of project materials is presented in Chapter 6.5 and Falkirk 2026c.

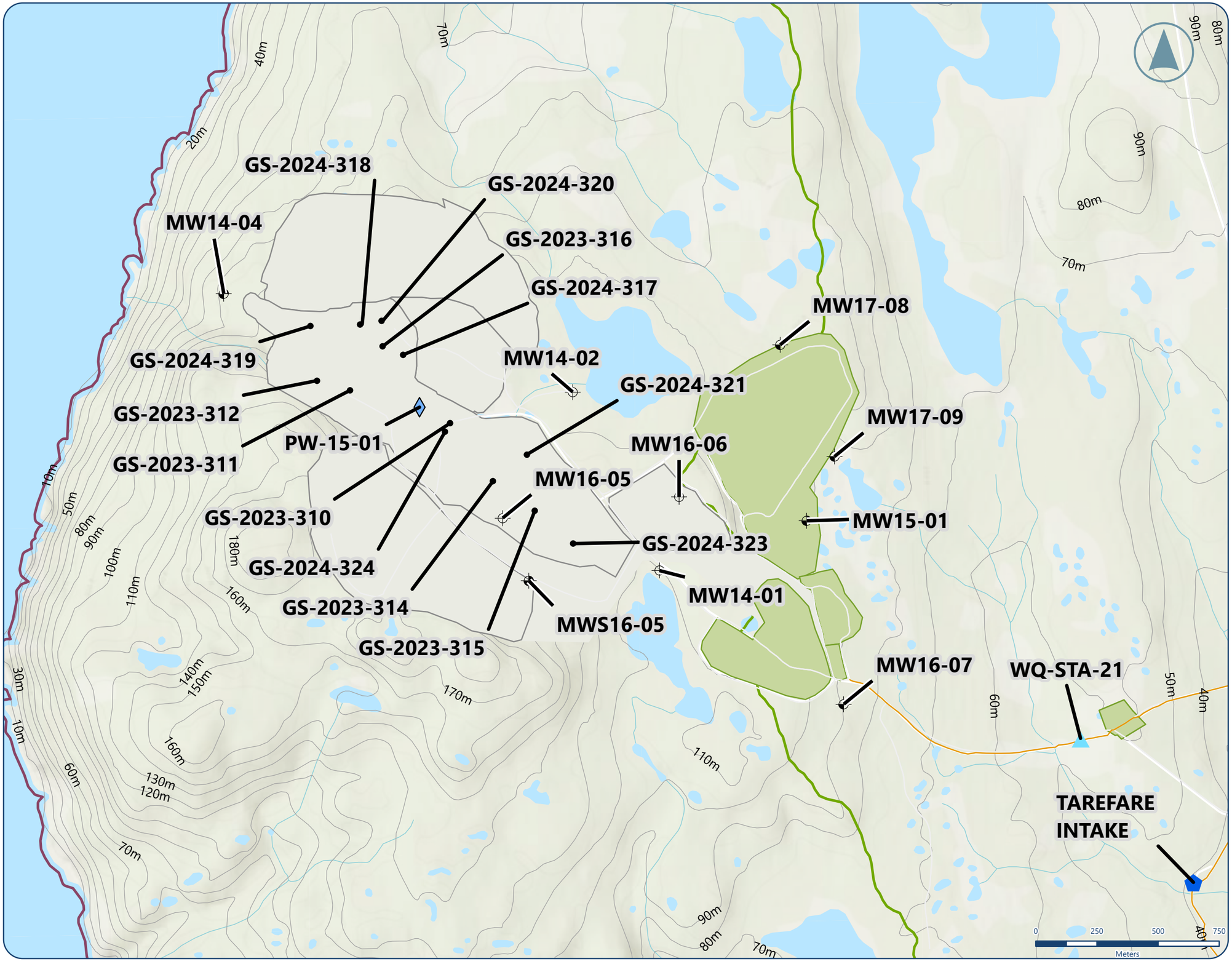
6.4.2.2.2 Groundwater Levels

Existing condition groundwater level information for the South Ridge area is derived primarily from snapshot groundwater level measurements collected during regional investigations and recent geotechnical and hydrogeological drilling programs. Long-term continuous groundwater level monitoring data specific to the South Ridge Pit area are currently limited.

Measured groundwater levels indicate shallow groundwater conditions across much of the Project area, with groundwater elevations broadly reflecting local topographic relief. Groundwater levels are generally within a few metres of ground surface in lower-lying

areas and deepen toward higher elevations. A summary of available baseline groundwater level measurements is presented in Table 6.4-1, and the spatial distribution of groundwater elevations is illustrated in Figure 6.4-4, which shows indicative existing condition groundwater levels and inferred groundwater flow directions in the South Ridge area, interpreted from snapshot groundwater level measurements collected during the 2024 drilling program.

Observed groundwater level variability reflects local structural controls and heterogeneity within the fractured bedrock system, rather than laterally uniform hydraulic gradients.



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SOUTH RIDGE MINE

FIGURE 6.4-2
GROUNDWATER MONITORING LOCATIONS – AGS MINE AREA

APRIL, 2026

- Proposed New Road
- Existing Road Upgrades
- CanVec Contour
- Local Study Area
- Regional Study Area
- Existing AGS Mine Infrastructure
- Shared AGS Mine Infrastructure
- Proposed Project Infrastructure

Monitoring Locations

- Active Monitoring Well
- Inactive Monitoring Well
- Drillhole
- Intake
- Pumping Well
- Water Quality Monitoring Station

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SOUTH RIDGE MINE

FIGURE 6.4-3
GROUNDWATER MONITORING LOCATIONS - SOUTH RIDGE AREA

APRIL, 2026

DS-2024-180
DS-2024-183
BH1
DS-2024-179
DS-2024-181
OBS-01 (DS-2025-234)
PW1 (DS-2025-236)
DS-2024-182
OBS-02 (DS-2025-235)
DS-2024-184
DS-2024-188
DS-2024-185
DS-2024-186
DS-2024-187
BH8
IRON SPRINGS CAMPSITE

- Proposed New Road
- Existing Road Upgrades
- CanVec Contour
- Local Study Area
- Regional Study Area
- Proposed Project Infrastructure

Monitoring Locations

- Drillhole
- Active Monitoring Well
- Inactive Monitoring Well
- Pumping Well

Scale: 1:12,000
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0 250 500 750
Meters

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Table 6.4-1:Summary of Groundwater Level Measurements, South Ridge Area

Hole ID	Easting	Northing	Ground Surface Elevation (masl)	Depth to Groundwater (m)	Groundwater Elevation (masl)	Date Measured Month-Day (2026)
DS-2024-179	621272.7	5194758	31.89	2.05	30.1	Feb-24
DS-2024-180	621282.1	5194772	31.9	0.8	31.2	Feb-24
DS-2024-181	621267.5	5194717	30.93	2.21	29.0	Feb-24
DS-2024-182	621313.2	5194651	29.92	0.73	29.3	Feb-24
DS-2024-183	621344.9	5194712	36.18	8.41	29.1	Feb-24
DS-2024-184	621425.2	5194634	41.34	14.75	29.6	Feb-24
DS-2024-185	621516.9	5194465	41.17	15.24	28.3	Feb-24
DS-2024-186	621585.6	5194420	45.39	6.72	40.3	Feb-24
DS-2024-187	621617.6	5194355	42.75	14.58	30.1	Feb-24
DS-2024-188	621376.9	5194549	30.54	2.44	28.5	Feb-24
DS-2024-180	621282.1	5194772	31.9	0.75	31.3	Feb-26
DS-2024-184	621425.2	5194634	41.34	11.53	32.1	Feb-26
DS-2024-187	621617.6	5194355	42.75	11.6	32.7	Feb-26
DS-2024-188	621376.9	5194549	30.54	1.75	29.1	Feb-26
PW1 (DS-2025-236)	621516.2	5194629	52.02	22.43	29.6	Feb-26
OBS-01 (DS-2025-234)	621451.9	5194705	50.28	10.85	39.4	Feb-26
OBS-02 (DS-2025-235)	621594.5	5194566	52.87	16.75	36.1	Feb-26

6.4.2.2.3 Groundwater Flow Regime

Indicative groundwater flow directions were interpreted based on snapshot groundwater level measurements collected during the 2023–2024 drilling program, supplemented by baseline groundwater levels measured in February 2026. A conceptual piezometric surface was constructed to support visualisation of potential groundwater gradients across the South Ridge area as described in Appendix 6.4-1 (Mining One 2026). These data provide an indicative representation of groundwater flow patterns under existing site conditions.

The interpreted groundwater flow regime suggests a broadly curvilinear flow system influenced by local topography and bedrock structural controls. Groundwater is generally inferred to migrate from higher elevation areas toward lower-lying terrain and nearby surface drainage features. Localised deviations in inferred flow direction are interpreted

to reflect the influence of fracture networks, lithological variability, and the uneven spatial distribution of available groundwater level measurements.

Interpreted piezometric profiles indicate relatively gentle regional hydraulic gradients across the South Ridge area, typically on the order of approximately 0.004 to 0.01, with locally steeper gradients of up to approximately 0.02 observed over shorter distances. These gradients are consistent with groundwater flow within a fractured bedrock aquifer, where local structural features and topographic controls may produce spatial variability in hydraulic gradients. Interpreted baseline groundwater flow directions and representative gradients are illustrated on Figure 6.4-4.

It is emphasised that the interpreted groundwater flow directions and hydraulic gradients represent groundwater conditions at the time of measurement and are indicative in nature. The absence of long-term continuous groundwater level monitoring introduces uncertainty in defining stable hydraulic gradients and seasonal variability. Consequently, the groundwater flow interpretation presented herein should be regarded as conceptual and subject to refinement as additional monitoring data become available.

6.4.2.2.4 Groundwater (Hydraulic) Properties

Hydraulic properties of the groundwater system at South Ridge are inferred from packer testing completed during the 2024 drilling program, the February 2026 pumping test program, and historical pumping and packer test data from the AGS Mine area. These include results from pumping tests, packer tests, slug tests, and estimated from Hazen test which collectively inform estimates of hydraulic conductivity and storativity across the overburden, and fractured bedrock aquifer system.

Hydraulic conductivity values interpreted from packer testing indicate low to moderate permeability typical of fractured igneous and volcaniclastic bedrock. Measured values span several orders of magnitude, reflecting spatial variability in fracture density and connectivity. Representative hydraulic conductivity values are generally on the order of 8.0×10^{-9} m/s to 4.6×10^{-6} m/s, with locally higher permeability inferred where conductive fracture zones are intersected.

The February 2026 pumping test was undertaken at PW1 with monitoring at OBS-01 and OBS-02. Pumping test interpretation indicates low transmissivity, with estimated transmissivity values ranging from 3.6×10^{-6} to 1.4×10^{-5} m²/s. These pumping test parameters were adopted to support the updated conceptualization and groundwater model.

This variability in hydraulic properties contributes to localised groundwater flow pathways and spatially variable hydraulic gradients, consistent with the observed groundwater level distribution and inferred flow regime. The heterogeneous nature of the fractured bedrock aquifer results in groundwater behaviour that is locally responsive to recharge and excavation geometry, rather than exhibiting uniform regional flow characteristics.

Detailed hydraulic testing results, parameter derivation, and uncertainty associated with hydraulic properties are documented in Appendix 6.4-1 (Mining One 2026).

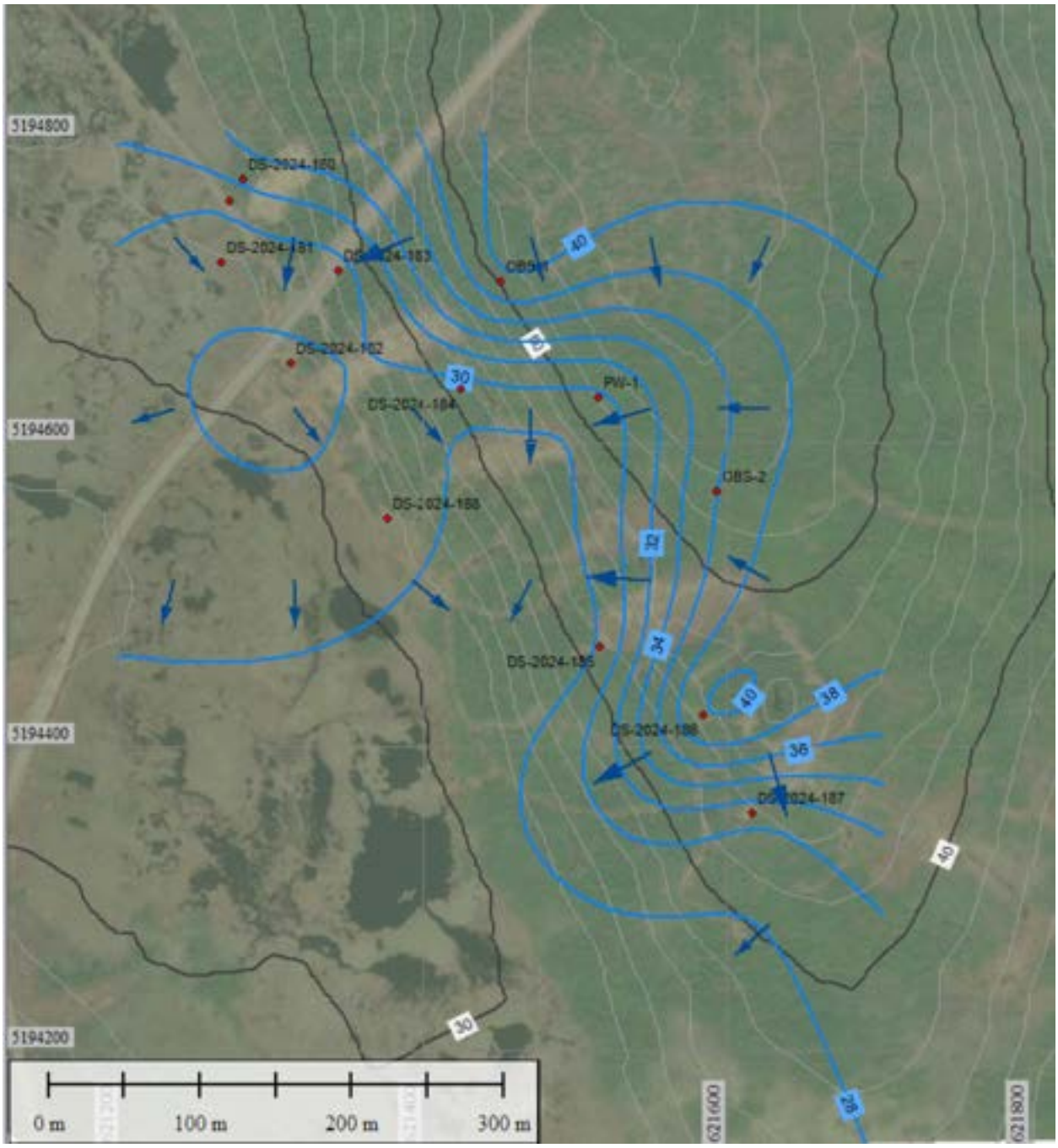


Figure 6.4-4: Indicative Piezometric Surface and Interpreted Groundwater Flow Directions Based on Snapshot Groundwater Level Measurements (Average GW Level from 2024 – 2026 Measurements)

6.4.2.2.5 Groundwater Use

The evaluation of existing conditions included reviewing publicly available records in the RSA (NL 2026) to identify the type and purpose of water use within the LSA and RSA. Results are summarized below and presented in the Groundwater Quality Existing Conditions report (Appendix 6.4-2, Falkirk 2026a).

Within the LSA and RSA, no public water supplies, intakes, or wellheads were identified, and the only water rights licenses identified were for industrial use by CFI or water power rental generation (waterpower) by Newfoundland Power Inc. (NPI). The identified water rights licenses are for surface water sources, except one CFI license for Tarefare intake, which is a groundwater source and is shown on Figure 6.4-2.

CFI indicated there is not currently any water used at the AGS Mine for potable purposes nor will there be for the Project.

6.4.2.2.6 Groundwater Quality

Locations of monitoring wells are shown on Figure 6.4-2 for the AGS Mine area and Figure 6.4-3 for the South Ridge area. As most monitoring wells with groundwater quality information were within the AGS Mine area or in the vicinity of Shoal Cove Pond, which is a Tailings Management Facility for historical mining operations by other operators, a field investigation was undertaken in 2026 to install and collect groundwater quality samples from one pumping well (PW1) and two observation wells (OBS-01 and OBS-02) adjacent to the planned northern extent of the South Ridge Pit. Two groundwater samples from each of the three wells were collected by CFI and submitted for laboratory analysis to evaluate the existing water quality conditions. The samples were collected at the start and end of a 72-hour constant rate pumping test to evaluate potential changes in groundwater quality resulting from pumping.

The groundwater quality existing conditions are presented in Appendix 6.4-2 (Falkirk 2026a) and key points are summarized below.

Groundwater quality samples were compared to the following guidelines:

- Environment and Climate Change Canada (ECCC) Federal Environmental Quality Guidelines (FEQGs; ECCC 2024).
- Canadian Council of Ministers of the Environment (CCME) long-term chronic and short-term acute water quality guideline for the protection of aquatic life (CCME 1999) in the absence of an FEQG.
- Guidelines for Drinking Water Quality in Newfoundland and Labrador (NL 2025) and Guidelines for Canadian Drinking Water Quality, Health Canada (HC 2025) maximum acceptable concentrations.
- Newfoundland and Labrador (NL) Environmental Control Water and Sewage Regulations (ECWSR) 65/03 (NL 2003).
- CFI Certificate of Approval No. AA22-085691 - Effluent Discharge Criteria.

Water quality screening values were calculated for each individual sample using sample-specific exposure and toxicity modifying factors (ETMFs), including dissolved organic carbon (DOC), hardness, pH, and/or temperature, as applicable.

All metals results were compared to guidelines for both total and dissolved metal fractions for the purposes of this assessment. In the absence of an FEQG samples were screened against CCME long-term chronic and short-term acute water quality guideline for the protection of aquatic life since the groundwater dewatered from the pit will be pumped to settling ponds and then discharged to surface water.

Samples were compared to drinking water quality guidelines (NL and HC) as a screening exercise only and it is emphasized that the guidelines do not strictly apply since the samples were not collected from a point of drinking water consumption.

None of the groundwater samples exceeded criteria in the Newfoundland and Labrador (NL) Environmental Control Water and Sewage Regulations (ECWSR) 65/03 (NL 2003) or the CFI Certificate of Approval No. AA22-085691 - Effluent Discharge Criteria. The concentrations of most parameters measured at the wells were below the relevant guidelines, or within the guideline range for pH, except for the parameters and locations noted in Table 6.4-2.

Samples collected from all locations exceeded long-term chronic CCME/FEQG and drinking water guidelines for fluoride. Samples collected from PW1 exceeded CCME/FEQG short-term acute and drinking water guidelines for total and dissolved uranium while samples from the observation wells did not exceed any guidelines for uranium. At least one sample from all locations exceeded drinking water guidelines for manganese and CCME/FEQG long-term chronic guidelines for cadmium. For the observation wells, an exceedance of CCME/FEQG long-term chronic guidelines was observed in at least one sample for total chlorine, WAD cyanide, aluminum, cobalt, copper, iron, manganese, silver, and zinc.

Except for uranium, the South Ridge groundwater chemistry and exceedances are consistent with the groundwater quality monitoring conducted by CFI around the AGS Mine and Tarefare intake in past years.

For total chlorine, hexavalent chromium, cobalt, copper, mercury, and selenium laboratory RDLs were greater than or equal to the water quality guidelines, and detection limits were too high to determine whether concentrations met or exceeded water quality guidelines. Re-sampling using analytical methods with lower RDLs would be required to determine whether sample concentrations exceeded guidelines.

Although no pathway for direct groundwater use has been identified, in consideration that future downgradient use of groundwater as a drinking water source cannot be excluded, the following COPCs are identified for groundwater based on the existing conditions groundwater sampling results which indicated that the following chemical parameters exceeded drinking water guideline maximum acceptable concentrations: fluoride, manganese and uranium.

Table 6.4-2: Summary of South Ridge Groundwater Sampling Locations with Water Quality Guideline Exceedances in February 2026

Parameter	Short-Term Acute (FEQG/CCME)	Long-Term Chronic (FEQG/CCME)	Drinking Water (NL and HC)
Fluoride		PW1, OBS-01, OBS-02	PW1, OBS-01, OBS-02
Total Chlorine		OBS-02	
Cyanide (Weak Acid Dissociable)		OBS-01	
Coliform - fecal			OBS-01, OBS-02
Coliform - total			PW1, OBS-01, OBS-02
Total Aluminum		OBS-01, OBS-02	
Total Cadmium		PW1, OBS-01, OBS-02	
Total Cobalt		OBS-02	
Total Copper		OBS-01	
Total Iron		OBS-01, OBS-02	
Total Manganese		OBS-02	PW1, OBS-01, OBS-02
Total Silver		OBS-01	
Total Uranium	PW1	PW1	PW1
Total Zinc		OBS-01	
Dissolved Aluminum		OBS-01	
Dissolved Cadmium		OBS-01, OBS-02	
Dissolved Manganese		OBS-02	PW1, OBS-02
Dissolved Uranium	PW1	PW1	PW1
Dissolved Zinc		OBS-01	

Comparison plots of key field parameters and parameters exceeding one or more guidelines comparing samples from the three locations are provided in Appendix B to visually assess for potential spatial and temporal patterns.

Field pH, and concentrations of fluoride were similar for all locations. Concentrations of dissolved and total uranium were greater at PW1 than for the observation wells (OBS-01 and OBS-02). For Weak Acid Dissociable (WAD) cyanide and most metals that exceeded long-term chronic guidelines (dissolved and total aluminum, dissolved and total cadmium, dissolved and total copper, total iron and dissolved and total manganese), concentrations tended to be greater in the observation wells than in the pumping well. This is most likely attributed to well development and sampling factors since total suspended solids and turbidity tended to also be greater in the observation wells, which were sampled using a small diameter inertial pump that can entrain fine-grained sediment while the pumping well would have been more developed due to pumping with the submersible pump. No temporal trends were identified.

The limited number of samples and the short duration of the sampling program limit interpretation of temporal variability, seasonal effects, and longer-term groundwater quality trends. The results should be considered representative of existing conditions at the time of sampling rather than definitive characterization of long-term groundwater quality. Additional monitoring would be required to better understand variability over time and to confirm the persistence or magnitude of observed exceedances.

As the focus of the groundwater assessment was on the pit dewatering, the wells were located within the immediate vicinity of the pit. Groundwater quality in the aquifer outside of the pit area will be confirmed by drilling and collecting samples from groundwater monitoring wells installed in the aquifer at various depths at the upgradient and downgradient Project boundaries as part of a targeted groundwater monitoring program implemented prior to and during mining operations to verify groundwater and surface water numerical model predictions and support adaptive groundwater management.

6.4.3 Effects Assessment

This section provides input and results specific to the Groundwater Quality and Quantity VC effects assessment. A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as following:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of potential residual effects;
- Identification of potential cumulative effects; and
- Follow-up commitments and monitoring programs.

6.4.3.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the VCs within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). An interactions table for the Groundwater Quality and Quantity VC is presented in Table 6.4-3.

Table 6.4-3: Identification of Project-VC Interactions and Associated Potential Effects with the Groundwater Quality and Quantity VC

Physical Activity	Description of Activity	Nature of Potential Effect
Construction		
Community Access Roads	• Strip, clear, fill, gravel, and grade to accommodate vehicle traffic. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use • Upgrades to Memorial Bridge and Blake's Brook Bridge	No potential groundwater effects identified.

Physical Activity	Description of Activity	Nature of Potential Effect
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded, and berms will be built up to support larger equipment traffic. • Strip, clear, fill	No potential groundwater effects identified.
Pit Haul Roads	• Strip, fill, gravel, and grade.	No potential groundwater effects identified.
Power Infrastructure Upgrades	• Transmission line re-routing and raising along the Blue Beach Haul Road to allow Cat 777s to travel to the project area. • Powerline that follows Iron Springs Road will be re-routed around the pit and extended to provide power to dewatering pumps	No potential groundwater effects identified.
	• The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	No potential groundwater effects identified.
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	Depressurizing aquifer will result in decrease to groundwater quantity in the aquifer during active pit dewatering.
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	Potential change in rate of precipitation recharge to groundwater. Potential changes to hydraulic head and groundwater flow gradients and direction within fractured rock aquifer.
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	No potential groundwater effects identified.
Stockpile Area Development	• Strip, clear and preparing stockpile areas for topsoil, overburden, and waste rock stockpiles	Potential change in volume, rate, and chemistry of recharge to groundwater. Potential changes to hydraulic head and groundwater flow gradients and direction within fractured rock aquifer. Potential changes to groundwater quality in aquifer.

Physical Activity	Description of Activity	Nature of Potential Effect
Water Management	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	No potential groundwater effects identified.
Operations		
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored.	Changes to hydraulic heads and gradients (depressurization) in surrounding aquifer from pit dewatering.
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	Changes to hydraulic heads and gradients (depressurization) in surrounding aquifer from pit dewatering.
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	No potential groundwater effects identified.
Stockpiling	• As mining progresses waste rock will be deposited in the waste stockpiles.	Potential change in volume, rate and chemistry of precipitation recharging to groundwater. Potential changes to groundwater quality in aquifer.

Physical Activity	Description of Activity	Nature of Potential Effect
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	No potential groundwater effects identified.
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, and re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure and post-closure.	No potential groundwater effects identified.
Waste Rock Stockpile	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export. • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	Infiltration of precipitation into waste rock resulting in changes to chemistry of groundwater recharge. Potential changes to groundwater quality in aquifer.
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	No potential groundwater effects identified.
South Ridge Pit	• South Ridge Pit to be flooded in closure, with safety berms and signage installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).	Potential change in volume, rate and chemistry of precipitation recharging to groundwater. Potential changes to groundwater quality in aquifer.

Physical Activity	Description of Activity	Nature of Potential Effect
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required.	No potential groundwater effects identified.
Access Road Maintenance	• Access roads will be maintained to facilitate post-closure monitoring	No potential groundwater effects identified.

6.4.3.2 Assessment Approach

Potential effects on groundwater quantity associated with the Project are related to groundwater inflows to the South Ridge Pit and localised changes in groundwater levels in the vicinity of the excavation which have the potential to reduce groundwater flow to nearby surface water. The effects of the Project on groundwater quantity were assessed using the numerical hydrogeological model to predict changes in hydraulic head during mining operations and for approximately ten years following cessation of pit dewatering as presented in Appendix 6.4-1 (Mining One 2026). The model was calibrated to existing conditions, and then predictive groundwater modelling was undertaken to evaluate potential groundwater behaviour and dewatering performance under three scenarios. Scenario A represented passive groundwater dewatering by pumping from sumps within the South Ridge Pit, Scenario B represented active groundwater dewatering using drilled wells outside of the Pit, and Scenario C represented a horizontal drain dewatering system. Predictive modelling was also undertaken to simulate groundwater flow paths from mine constituent sources (i.e. pit and waste rock) to key environmental receptors, and to simulate post-mining groundwater recovery. Scenario C (horizontal dewatering) was considered the most effective and defensible dewatering approach for design purposes because it provides a practical means of depressurisation in a low hydraulic conductivity setting, with implementation less sensitive to pumping capacity limitations. The Scenario C results therefore provide the preferred basis for dewatering strategy selection, with Scenario B retained as a sensitivity case representing an optimistic vertical dewatering performance envelope.

Potential effects on groundwater quality associated with the Project could include recharge of mine-affected water containing constituents of potential concern (COPCs) into the subsurface and transport of constituents downgradient of the mine within the fractured bedrock. Potential sources of mine affected recharge are the mine rock stockpile, and infiltration of mine affected surface water, for example downstream of effluent discharge point. Another potential source of mine affected recharge during post-closure is the flooded pit. It is understood that waste rock is planned to be removed completely or partially from the Project site following operations and will not be present in post-closure, but if remaining will be reclaimed to reduce potential for infiltration. Due to the relatively short duration of operations, and because the only applicable groundwater

quality guidelines identified are for drinking water, which is understood to not be a use of groundwater within the LSA and RSA, the groundwater quality assessment consisted of conducting particle path and travel time analyses to illustrate flow paths and timelines for potential changes to groundwater quality rather than predictive groundwater quality modelling. Fluoride concentrations from the groundwater quality existing conditions and numerical groundwater modelling results were used as inputs to the surface water quality prediction modelling and effects assessment to evaluate potential effects on surface water quantity and quality (Chapter 6.5). This is considered an appropriate first step in a phased approach for assessing contaminant transport and potential water quality impacts (Wels, Mackie, and Scibek 2012). As a conservative approach to the effects assessment, groundwater source terms developed for mine rock seepage, pit dewatering and pit decanting in the water quality predictions and assessment and methods report were compared to drinking water quality guidelines. This is considered a conservative approach because it does not consider the potential for dispersion during groundwater transport. Table 6.4-4 presents the parameters for which groundwater source terms exceeded drinking water quality guidelines. Based on this analysis, fluoride, nitrate, nitrite+nitrite, arsenic, lead, and uranium were conservatively identified as COPCs for groundwater. It is acknowledged that groundwater samples collected during the baseline program also exceeded drinking water guidelines for fluoride and there is the potential that the element is naturally elevated in the regional groundwater.

The particle tracking results will be used by CFI to inform drilling and installation of additional monitoring wells and implementing a groundwater quality monitoring program that will provide early indication of potential downstream offsite impacts and identify if additional mitigation measures such as groundwater interception and treatment would be required during the post-closure period. Potential long-term changes to groundwater quality will be evaluated as part of detailed closure planning, which may include solute transport modelling if conservative assumptions identify constituent concentrations of concern in the receiving environment or if drinking water is identified as a use of groundwater in the LSA in the future.

6.4.3.3 Assessment Results

The assessment was based on the completed hydrogeology characterization and is informed by supporting hydrogeological analyses documented in Appendix 6.4-1 (Mining One 2026).

The assessment is presented at a level appropriate for EA purposes and is intended to qualitatively characterise the nature, magnitude, extent, and duration of potential changes to groundwater quality, quantity, and flow paths to support effects management planning. Figures showing results of the groundwater flow particle track analyses completed by Mining One are presented below. Figure 6.4-5 shows flow paths from the Pit Lake in Closure while Figure 6.4-6 shows flow paths from the waste rock storage area for the pre-mining, end of mining (Construction phase) and pit lake (Closure phase) stages of the project.

Table 6.4-4 presents the parameters for which groundwater source terms exceeded drinking water quality guidelines. Based on this analysis, fluoride, nitrate, nitrite+nitrite, arsenic, lead, and uranium were conservatively identified as COPCs for groundwater.

Figure 6.4-5: Groundwater Flow Particle Tracks from Pit Lake in Closure

Figure 6.4-6: Groundwater Flow Particle Tracks from Waste Rock Storage Area for Project Stages

Table 6.4-4: Groundwater Source Term Concentrations for Parameters that Exceeded Drinking Water Guidelines

Parameter			Fluoride	Nitrate	Nitrate + Nitrite	Arsenic	Lead	Uranium
Unit			mg/L	mg-N/L	mg-N/L	mg/L	mg/L	mg/L
Drinking Water Guideline (NL and/or HC)			1.5	10	10	0.01	0.005	0.02
Source Terms*	**Phase**	**Season**	**Source Term Concentration**					
Mine Rock Seepage (AGS Seeps)	All	All-season median	0.58	0.61	0.85	0.002	0.00095	0.0031
Pit Dewatering (WQ-STA-25 + Center Pit + South Ridge Groundwater)	Operation	Fall	**1.8**	**12**	**12**	**0.012**	**0.0078**	**0.021**
		Winter	**1.8**	**11**	**11**	**0.014**	**0.0078**	**0.021**
		Spring	**1.8**	**11**	**11**	**0.014**	**0.0078**	**0.021**
		Summer	**1.8**	**13**	**13**	**0.012**	**0.0078**	**0.021**
Pit Decanting (WQ-STA-25 + Grebes Nest Pit + South Ridge Groundwater)	Post-Closure	Fall	**1.8**	2.3	2.3	**0.012**	**0.0054**	0.013
		Winter	**1.8**	2.3	2.3	**0.014**	**0.0054**	0.013
		Spring	**1.8**	2.3	2.3	**0.014**	**0.0054**	0.013
		Summer	**1.8**	2.3	2.3	**0.012**	**0.0054**	0.013

Concentrations in bold text with grey cell shading exceed the Drinking Water Guidelines (NL and HC).

**See details on source term assumptions in the Water Quality Predictions and Assessment Report Falkirk (2026b)*

6.4.3.3.1 Construction and Operations

During construction and operations phases the potential effects are inferred to be similar, mainly effects on groundwater quantity associated with pit dewatering. The median estimated groundwater inflow from pit dewatering that will be diverted from groundwater and discharged as effluent for Scenario C is approximately 1030 m^3/d.

The numerical groundwater modelling indicated that mine dewatering is expected to significantly alter groundwater flow patterns during operations by increasing groundwater discharge from the system, redistributing storage within the aquifer, and reducing groundwater baseflow to neighboring surface water features (Appendix 6.4-1, Mining One 2026). The estimated decrease in hydraulic heads for the modelled locations at the end of Operations ranged from approximately 19 m (63% decrease from pre-mining) to 55 m (183% decrease from pre-mining). A water budget analysis was completed to estimate the magnitude of effects and provide input data for the surface water effects assessment presented in Section 6.5.

Results of particle path analysis indicate that groundwater from the pit is captured during construction and operations. There is a potential groundwater flow path from the waste rock storage area to the South Ridge Pit, Shoal Cove Pond and Shoal Cove Brook both during existing conditions and during operations, even during maximum pit dewatering at the end of mining. The median travel time from the waste rock storage area to Shoal Cove Pond and Shoal Cove Brook at the end of mining is estimated to be approximately four years which is beyond this phase. The maximum estimated rate of flow to these receptors is 65 m^3/day. The potential effects of the Project on groundwater quality during construction and operations are not expected to be significant since the mine rock seepage source term did not exceed drinking water guidelines.

Effects of groundwater seepage on surface water quality and quality is assessed in section 6.5.

6.4.3.3.2 Closure and post-closure

Following cessation of mining activities, groundwater levels are expected to recover progressively toward baseline conditions as the pit transitions toward a flooded equilibrium state. During the first three years following the end of mining and pit dewatering, groundwater levels increase rapidly across most monitoring points, reflecting the initial response of the aquifer system once dewatering activities cease. Monitoring points located closer to the former pit or areas of greater drawdown exhibit a slower recovery response due to the larger hydraulic deficit and longer time required for pressure equilibration within the aquifer system.

By approximately 4.5 years after the end of mining and pit dewatering, all modelled monitoring points recovered to between 90% and 100% of their pre-mining groundwater levels. Continued recovery occurs between post-closure as regional groundwater gradients gradually re-establish, and recharge and boundary inflows continue to replenish the system. Beyond this point, the model results show minimal additional increases in groundwater levels, with recovery curves flattening significantly. After approximately 6 years after end of mining, the rebound percentages remain essentially unchanged,

indicating that the groundwater system has approached a new hydraulic equilibrium under closure conditions. This stabilization suggests that the regional flow system has fully re-established and that any remaining differences from pre-mining groundwater levels are minor and persistent due to local hydrogeological factors rather than ongoing recovery processes.

The pit lake is predicted to reach its maximum elevation of 30 masl and start decanting approximately 6.5 years after the cessation of mining. Results of particle path analysis indicate that there is a potential flow path from the pit lake with an estimated median travel time of approximately 4.8 years and maximum flow rate of approximately 50 m^3/day. There is also a potential flow path from the waste rock storage area to Shoal Cove Pond and Shoal Cove Brook with an estimated median travel of approximately 4.8 years and a maximum flow rate of 62 m^3/day.

Post-closure groundwater quantity effects are anticipated to be temporary and reversible, with groundwater recovery occurring over time as hydraulic conditions re-equilibrate. Long-term regional groundwater depletion is not anticipated following closure of the Project.

Because there are no identified groundwater users within the modelled downgradient flow path, potential changes to groundwater quality during closure and post-closure were not evaluated quantitatively and will be completed as part of closure planning through installation of monitoring wells and numerical modelling, if required. A qualitative assessment based on comparing groundwater source terms to drinking water quality guidelines indicates the potential for groundwater downgradient of the flooded pit to exceed some drinking water guidelines (Table 6.4-4). Estimated concentrations of parameters for the decanting flooded pit indicated that fluoride concentrations could exceed the drinking water guidelines for fluoride, arsenic, and lead; however, this is again considered conservative since it does not account for dispersion during groundwater transport.

Potential changes to downgradient surface water quality from discharge of mine affected groundwater were assessed as part of the surface water effects assessment (Chapter 6.5).

6.4.4 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs; Project design measures are described in Section 2.12 while VC specific additional recommended mitigation measures are described below.

The potential effects identified and summarized in Table 6.4-3 and Section 6.4.3.3 above were used to inform the design and implementation of Project mitigation measures. The mitigation measures for the identified effects are outlined in more detail in the following sections including a discussion of the inferred effectiveness and confidence related to the success of the mitigation in avoiding, minimizing, or restoring the VC to avoid residual effects.

6.4.4.1 Construction Mitigations

The stripping of topsoil and development of stockpiles during construction have the potential to affect the volume, rate and chemistry of precipitation recharging to groundwater. Mitigation measures for the construction phase are minimizing the rate and duration of dewatering to that necessary for safe mining, diverting run-on water to minimize volume of mine affected water to manage and discharge, and collection and controlled discharge of contact water in lined ditches and sedimentation ponds. Groundwater quality is not expected to change during the relatively short duration of the construction phase.

6.4.4.2 Operation Mitigations

Open pit mining and dewatering, blasting, and stockpiling during operations have the potential to affect the volume and rate of precipitation recharging to groundwater. Mitigation measures for the operation phase are minimizing the rate and duration of dewatering to that necessary for safe mining, diverting run-on water to minimize volume of mine affected water to manage. Pit dewatering flows from the horizontal drains will be directed to sumps, where it will mix with pit wall runoff and be pumped out from the pit and discharged to lined sedimentation ponds. The operation will minimize the volume and duration of stockpiled mine rock through removal and sale of the material as aggregate.

6.4.4.3 Closure Mitigations

Activities during closure and decommissioning include removal of the waste rock stockpile, to the extent possible, reclaiming any remaining stockpiles, and allowing the South Ridge pit to naturally fill with water following cessation of pit dewatering. In post-closure conditions, hydrologic behaviour differs from closure as the pit is allowed to overflow to Hares Ears Pond. Runoff from reclaimed stockpiles is classified as non-contact and conveyed to the West Pond and East Pond.

Mitigation measures for potential effects to groundwater levels include reducing or ceasing dewatering to the extent possible while maintaining safe ground conditions to minimize the area and duration of groundwater depressurization. Mitigation measures to reduce potential impacts to groundwater quality include diverting run-on water to minimize volume of mine affected water to manage and discharge, minimizing the footprint, volume, and duration of stockpiled mine rock, and reclaiming remaining stockpiled mine rock using stockpiled overburden and topsoil and revegetating. This will reduce infiltration and mobilization of constituents into groundwater. Contact water affecting groundwater in the post-closure period is therefore limited to seepage from the pit and remaining mine rock.

A groundwater monitoring program will be designed and implemented to provide early warning of changes in groundwater flow and quality, groundwater monitoring results will be regularly reviewed, and predictive modelling updated as necessary to evaluate potential long-term effects of groundwater chemistry changes and identify appropriate mitigation measures. Although there are no groundwater users identified downgradient of the Project, there are flow paths from sources of mine affected groundwater to receptors in the receiving environment, and changes in groundwater chemistry can be used to evaluate potential changes in downgradient surface water.

6.4.4.4 Summary of Mitigation Measures

Table 6.4-5 summarizes the proposed mitigation measures and identifies whether after implementation a residual effect could remain, as well as identifies if a follow up program is recommended. Identified Follow Up Programs are summarized in Section 6.4.6.

Table 6.4-5: Summary of Proposed Mitigation Measures

Potential Effect	Proposed Mitigation	Potential Residual Effect? (Y/N)
Construction		
Reduced groundwater levels in aquifer	• Minimize rate and duration of dewatering to that necessary for safe mining.	Y
Changes in downgradient groundwater quality	• Divert run-on water to minimize volume of mine affected water to manage and discharge. • Collection and controlled discharge of contact water in lined ditches and sedimentation ponds.	N
Operations		
Reduced groundwater levels in aquifer	• Minimize rate and duration of dewatering to that necessary for safe mining.	Y
Changes in downgradient groundwater quality	• Divert run-on water to minimize volume of mine affected water to manage and discharge. • Collection and controlled discharge of contact water in lined ditches and sedimentation ponds. • Minimize footprint, volume, and duration of stockpiled mine rock through removal and sale as aggregate.	N
Closure		
Reduced groundwater levels in aquifer	• Cease dewatering to the extent possible while maintaining safe ground conditions.	N
Changes in downgradient groundwater quality	• Divert run-on water to minimize volume of mine affected water to manage and discharge. • Collection and controlled discharge of contact water in lined ditches and sedimentation ponds. • Minimize footprint, volume, and duration of stockpiled mine rock through removal and sale as aggregate. • Reclaim remaining stockpiled mine rock to reduce infiltration and mobilization of constituents into groundwater. • Results of groundwater monitoring programs will be used to update predictive modelling to evaluate potential long-term effects of groundwater chemistry changes and whether additional mitigation measures such as groundwater interception and treatment are required and their predicted efficacy.	Y

6.4.5 Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table 6.4-3, a characterization of the residual effect is provided. Potential residual effects of the Project on Groundwater were identified for Quantity during the Construction and Operations phases and for Quality during the Closure phase. Decreased groundwater levels in the aquifer and reduced flow to neighboring surface water bodies are expected during construction and operations due to pit dewatering; however, numerical modelling predictions indicate that Closure groundwater quantity effects are anticipated to be temporary and reversible, with groundwater recovery occurring over time as hydraulic conditions re-equilibrate. Long-term regional groundwater depletion is not anticipated following closure of the Project. The characterization criteria used for this assessment are presented in Table 6.4-6 for groundwater quantity and in Table 6.4-7 for groundwater quality. Significance determinations of Project-related potential residual effects have been made in receptor VCs that are potentially affected by a change in groundwater quality or quantity.

Table 6.4-6: Residual Effects Characterization Criteria for Groundwater Quantity

Characterization Criteria	Description
Ecological Context	• Context is provided through a description of existing conditions in the local aquifer.
Magnitude	• Negligible: change in mean annual groundwater level or modelled flow <5%; not measurable in comparison to existing conditions. • Low: Change in mean annual groundwater level or modelled flow at monitoring location >5% and <10% in comparison to existing conditions • Moderate: Change in mean annual groundwater level or modelled flow at monitoring location >10% and <30% • High: Change in mean annual groundwater level or modelled flow at monitoring location >30%
Extent	• Site • Local • Regional
Timing	• Duration and frequency
Reversibility	• Reversible within a clearly defined period of time or irreversible (permanent)
Likelihood/Confidence	• Likelihood: – Unlikely – Likely – Highly likely • Prediction confidence: – Low; limited evidence is available; models and calculations are highly uncertain and/or evidence about potential effects is contradictory. – Medium: sufficient evidence is available and generally supports the prediction – High: sufficient evidence is available and most or all available evidence supports the prediction

Table 6.4-7: Residual Effects Characterization Criteria for Groundwater Quality

Characterization Criteria	Description
Ecological Context	• Context is provided through a description of existing conditions in the local aquifer.
Magnitude	• Negligible: change in mean annual groundwater concentrations of COPCs <5%; not measurable in comparison to existing conditions. • Low: Change in mean annual groundwater concentrations of COPCs in downgradient monitoring wells up to 10% greater than existing conditions and upgradient monitoring wells, but not exceeding drinking water quality guidelines • Moderate: A sustained trend of change in groundwater concentrations of COPCs in downgradient monitoring wells significantly exceeding existing conditions and upgradient monitoring wells, and drinking water quality guidelines • High: Change in mean annual groundwater concentrations of COPCs in downgradient monitoring wells exceeding upgradient monitoring wells and NFLD Regulation 65/03

Characterization Criteria	Description
Extent	• Site • Local • Regional
Timing	• Duration and frequency
Reversibility	• Reversible within a clearly defined period of time or irreversible (permanent)
Likelihood/Confidence	• Likelihood: – Unlikely – Likely – Highly likely • Prediction confidence: – Low; limited evidence is available; models and calculations are highly uncertain and/or evidence about potential effects is contradictory. – Medium: sufficient evidence is available and generally supports the prediction – High: sufficient evidence is available and most or all available evidence supports the prediction

6.4.5.1 Changes in Downgradient Groundwater Quantity During Construction and Operations

Changes to groundwater quantity are expected from the combined effects of pit dewatering, diverting non-contact water, and discharging effluent. A summary of the residual effect characterization is provided in Table 6.4-8. The spatial extent of groundwater drawdown from dewatering effects is limited to the vicinity of the South Ridge pit and immediately adjacent surface water bodies without extending to the broader regional groundwater system.

The magnitude of groundwater quantity effects during Operations is expected to be high near the pit during Operations with an estimated decrease in hydraulic heads ranging from approximately 19 m to 55 m (63% to 183%) at the end of mining compared to pre-mining conditions in the vicinity of the pit (Scenario C). Groundwater level drawdown predictions decrease to zero within approximately 230 m of the pit boundary for the horizontal dewatering strategy (Scenario C). A groundwater budget was developed to evaluate potential changes in groundwater inflow/outflow and storage at various groundwater and surface water boundary conditions. Results of the groundwater budget analysis are presented in Appendix 6.4-1 (Mining One 2026) and were used to estimate changes to surface water flows and water quality in Chapter 6.5 (Falkirk 2026b).

The duration of groundwater quantity effects is primarily limited to the Construction and Operations phases, with effects diminishing following closure as groundwater levels recover toward baseline conditions. Results of predictive modelling indicate that groundwater hydraulic heads at the modelled locations had fully recovered to pre-mining levels by 6.2 years after end of mining, except for one location (DS-2024-187), which had recovered to 93%. No residual effect on groundwater quantity is identified for the Closure phase.

Table 6.4-8: Summary of Residual Effect Characterization Related to: Changes to Groundwater Quantity during Construction and Operations

Criteria	Rating	Rationale
Magnitude	High	Changes in hydraulic heads ranging from approximately 19 m to 55 m (63% to 183%) compared to pre-mining conditions in the vicinity of the pit.
Extent	Local	Effect limited to the LSA, within approximately 230 m of the pit boundary for the horizontal dewatering strategy (Scenario C).
Duration	Short-term	Present during operations and closure.
Frequency	Continual	Sustained effect during pit dewatering.
Reversibility	Reversible	Groundwater hydraulic heads at the modelled locations had recovered from 93% to 100% of pre-mining levels by 5.2 years following cessation of dewatering.
Likelihood	Likely	Drawdown effects are likely based on numerical modelling.

6.4.5.2 Changes in Downgradient Groundwater Quality

The magnitude of potential groundwater quality effects was qualitatively assessed by predicting flow paths from Project sources to downstream receiving environments and by using water quality data from the AGS mine seeps and Grebes Pit Lake as a surrogate for future water quality in the South Ridge Pit during closure. Particle track analysis indicates there is a pathway from project sources (pit and waste rock storage areas) to Shoal Cove Pond and Shoal Cove Brook.

As described in Section 6.4.3.3, pit dewatering creates a groundwater sink during construction and operations and although flow paths from the mine rock storage area are identified, the mine rock seepage source term did not exceed any drinking water guidelines. During closure when the pit is flooded there is the potential for seepage from the pit lake to exceed drinking water quality guidelines for arsenic, lead and fluoride. Groundwater source terms exceeded the drinking water guidelines for these parameters by 20-40 % for arsenic, by 8% for lead and by 20% for fluoride, although it is acknowledged that groundwater samples collected during the baseline program also exceeded drinking water guidelines for fluoride and there is the potential that the element is naturally elevated in the regional groundwater. There are no groundwater users identified downgradient of the Project. The assessment evaluating potential effects of groundwater quality changes on surface water quality in the receiving environment is presented in Chapter 6.5 and Falkirk 2026b.

Changes to groundwater quality have been conservatively identified as a potential residual effect with an estimated moderate magnitude, local extent and unknown duration, infrequent, and unlikely to occur. There is low confidence in the characterization of potential residual effects prediction for groundwater quality. Confidence in the characterization will improve with future groundwater quality modelling and assessment.

The potential residual effect of changes in downgradient groundwater quality following closure could not be characterized within the current state of knowledge and will be evaluated as part of closure planning. Proposed additional mitigations during closure such as groundwater interception and treatment, if required, are commonly used to mitigate any significant potential changes to downgradient groundwater quality.

Table 6.4-9: Summary of Residual Effect Characterization Related to: Changes to Groundwater Quality during Closure and Post-Closure

Criteria	Rating	Rationale
Magnitude	Moderate	Potential for groundwater seepage from flooded pit to exceed drinking water quality guidelines for arsenic (by 20-40%), lead (by 8%) and fluoride (by 20%), although groundwater samples collected during the existing conditions program exceeded drinking water guidelines.
Extent	Local	Effect limited to the LSA, from Project footprint to downgradient groundwater discharge areas.
Duration	Long-term	Present during closure and post-closure.
Frequency	Unknown	Frequency of potential effect not currently known.
Reversibility	Reversible	Groundwater interception and treatment are known additional mitigation measures that would be implemented, if required, to reverse effects on groundwater quality.
Likelihood	Unlikely	Assessment is conservative and does not account for groundwater dispersion.

The groundwater monitoring program will be designed to provide early warning of changes in groundwater, the results will be regularly reviewed, and predictive modelling will be updated as necessary to evaluate potential long-term effects of groundwater chemistry changes and identify appropriate mitigation measures. Development of this monitoring program is described in Section 6.4.6.

6.4.6 Identification of Potential Cumulative Effects

There is the potential for cumulative effects from historical mining activities such as disposal of tailings in the Shoal Cove pond. The groundwater monitoring program will be designed such that potential effects from the Project can be differentiated from cumulative effects of historical land uses.

There are no known other projects or activities in the foreseeable future that are expected to effect groundwater quality or quantity that could act cumulatively with the residual effects identified for groundwater related to the Project.

6.4.7 Follow-up and Monitoring Programs

Follow-up and monitoring programs, when required, were identified in Section 6.4.5. Follow-up and monitoring programs will verify the accuracy of the effects assessment and the effectiveness of the mitigation measures. The follow-up program will be refined

according to consultation with the public and interested stakeholders and provincial and federal regulators, as relevant.

Based on the groundwater modelling results, sensitivity analysis, and identified uncertainties, the following programs will be implemented to support groundwater management during mine development, operation, and closure:

- Conduct groundwater quality predictive modelling to predict potential changes in groundwater quality in the aquifer downgradient of the Project, particularly for the post-closure period.
- A targeted groundwater monitoring program will be implemented prior to and during mining operations to verify model predictions and support adaptive groundwater management. The program will:
  - be designed to capture temporal and spatial variations in groundwater levels and groundwater quality under pre-mining, mining, and post-closure conditions.
  - track the development and extent of mining-induced groundwater drawdown, particularly along structurally controlled flow paths; and confirm groundwater recovery trends following cessation of dewatering, while providing early warning of unanticipated groundwater responses.
  - In addition to the recently installed PW1, OBS-01 and OBS-02, include monitoring locations that have been strategically positioned up-gradient and down-gradient of the pit and stockpile footprints, where practicable, aligned with key structural features controlling groundwater flow to identify potential effects of the Project.
- At a minimum, monitor for COPCs identified in groundwater (fluoride, manganese, and uranium) and for parameters that are inferred to potentially exceed surface water quality criteria in South Ridge Pit in closure based on surrogate data (fluoride, nitrate, nitrite, cadmium, copper, and zinc).
- In conjunction with surface water follow-up hydrometric monitoring described in Chapter 6.5, a field survey will be conducted to identify potential groundwater/surface water interactions and collect data to quantify existing conditions and potential changes to flow and water quality.
- Results from field investigations and modelling will be used to evaluate appropriate locations of upgradient “background” and far-field environmental groundwater monitoring wells, and if necessary, adjust the groundwater monitoring program.
- Dewatering System Optimisation:
  - The proposed dewatering configuration assessed in the predictive modelling will be reviewed and optimised as additional hydrogeological data become available, for example dewatering system drilling/construction records and groundwater flow/level monitoring data.
  - The groundwater conceptual model will be updated if new information from drilling/construction and monitoring studies results in any material changes to the conceptualization.
  - As new information becomes available, the numerical hydrogeological model will be validated, and if necessary, updated. It will represent key stages of mine development—pre-mining, mine development, and final pit conditions—to

simulate the evolution of groundwater responses throughout the mining sequence. Post-closure or recovery conditions will be considered in subsequent model updates if required. Model results will inform the groundwater monitoring program, for example by establishing monitoring wells both within and outside of the area expected to be affected by mine development activities, including diversion of surface water and pit dewatering.
  - Outputs from numerical groundwater modelling will be used to validate and if necessary, update the surface water quantity and quality modelling and assessment.
- Update evaluation of potential effects on groundwater quality and quantity:
  - Groundwater quality samples will be compared to applicable water quality guidelines to evaluate existing conditions, potential changes in groundwater quality resulting from pumping, and to inform development of a groundwater monitoring program.
  - Groundwater levels and flow rates from pumping will be monitored to evaluate baseline conditions and potential subsequent changes in spatial and temporal flow patterns, including discharge to surface water (baseflow).
  - COPCs for groundwater will be re-assessed if additional data collection and/or modelling indicate that that concentrations of constituents in groundwater downgradient of the site are not expected to exceed drinking water guidelines or if surface water quality COPCs change.
- Results of groundwater monitoring and modelling will be communicated with the public and interested stakeholders and provincial and federal regulators, as relevant.

6.5 Surface Water Quality and Quantity

The following section provides an assessment of the Surface Water Quality and Quantity Valued Component (VC) as it relates to the proposed Project.

Surface water quality and quantity are critical environmental factors that can influence the health of human populations, wildlife, aquatic life, and the overall environment. The assessment is intended to evaluate the extent to which Project activities may alter existing surface water characteristics and characterize any residual effects.

The regulatory context for this VC includes relevant federal, provincial, and municipal guidelines and standards that establish acceptable thresholds. These thresholds are designed to protect both human health and ecological integrity.

The assessment concludes by characterizing the residual effects of the Project on surface water quality and quantity and evaluating the effectiveness of proposed mitigation measures. Where residual effects remain, recommendations for additional monitoring or follow-up actions are provided such that the VC is expected to be adequately protected throughout the Project lifecycle.

6.5.1 Regulatory Context for the Management of Surface Water Quality and Quantity

The following statutes and guidance documents will inform the effects assessment for Surface Water Quality and Quantity.

6.5.1.1 *Provincial Guidelines*

- Environmental Assessment – A Guide to the Process. May 2025. Government of Newfoundland and Labrador, Environment and Climate Change.
- Environmental Assessment Legislation Review – Discussion Guide. Government of Newfoundland and Labrador.
- Newfoundland and Labrador Regulation 65/03 - Environmental Control Water and Sewage Regulation (2003).
- Policy of Land and Water Related Developments in Protected Public Water Supply Areas. March 10, 1999. Government of Newfoundland and Labrador, Water Resources Management.
- Policy for Development in Shore Water Zones. January 17, 2001. Government of Newfoundland and Labrador, Water Resources Management.
- Policy for Development in Wetlands. January 17, 2001. Government of Newfoundland and Labrador, Water Resources Management.

6.5.1.2 *Federal Guidelines*

- Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada. May 2013. Fisheries and Oceans Canada, Science.
- Canadian Council of Ministers of the Environment (CCME) water quality guidelines for the protection of aquatic life (CCME 2019).
    - Environment and Climate Change Canada (ECCC) Federal Environmental Quality Guidelines (ECCC 2024).

6.5.2 Assessment Boundaries

The assessment boundaries for the Surface Water VC were selected based on the appropriate geographic and temporal extents at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.5.2.1 *Temporal Boundaries*

The temporal boundaries for the Surface Water VC effects assessment included:

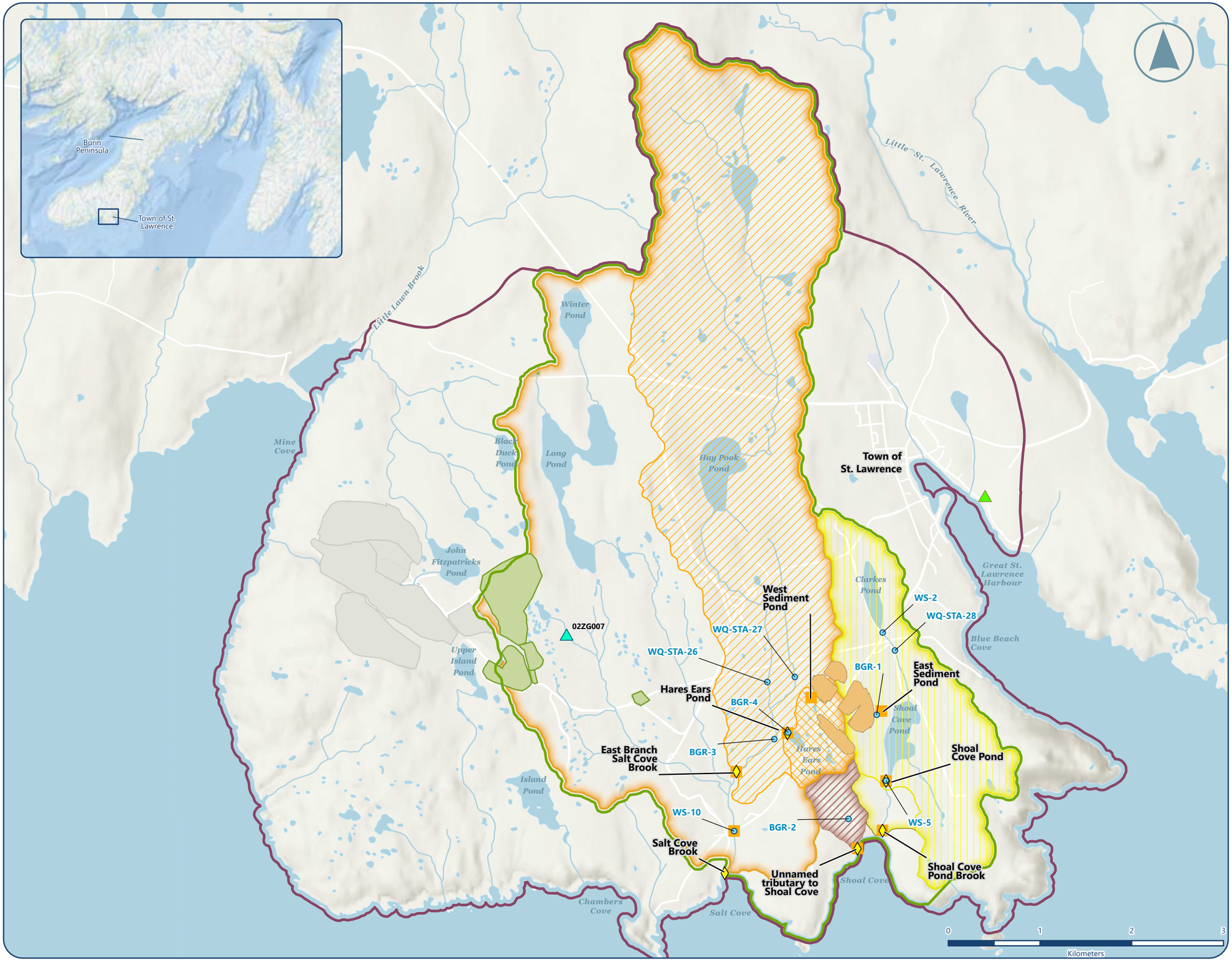
- Construction: 6 months
- Operations: 18 months
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.5.2.2 *Spatial Boundaries*

The spatial boundaries of the assessment are defined below and represented on Figure 6.5-1.

- Local Study Area (LSA): The LSA encompasses the Salt Cove, Shoal Cove, and Blue Beach Cove watersheds, which may be directly affected by the Project.
- Regional Study Area (RSA): The RSA includes the LSA in addition to the neighbouring Town of St. Lawrence and the AGS Mine, including the Grebes Nest, Mine Cove, Northwest Pond, and Upper Island Pond watersheds.

The project footprint for the proposed South Ridge Pit and associated stockpiles straddle the Salt Cove and Shoal Cove watersheds, while the existing Blue Beach Haul Road extends through the Blue Beach Cove watershed to the Blue Beach Marine Terminal. Although ore processing and tailings disposal will be carried out at the AGS Mine, it was assumed that related effects were assessed and permitted separately. As such, watersheds related to the AGS Mine were included in the RSA but not the LSA.



CFI
CANADA FLUORSPAR INC.

SOUTH RIDGE MINE

FIGURE 6.5-1
REGIONAL AND LOCAL STUDY AREAS

APRIL, 2026

- Proposed Project Infrastructure
- Shared AGS Mine Infrastructure
- Existing AGS Mine Infrastructure
- Water Survey of Canada Monitoring Station
- Surface Water Monitoring Locations
- St. Lawrence ECCC Climate Station
- Hydrology Model Assessment Node
- Water Quality Assessment Node
- Local Study Area
- Regional Study Area

Watersheds

- Salt Cove Brook
- East Branch of Salt Cove Brook
- Hares Ears Pond
- Shoal Cove Pond Brook
- Shoal Cove Pond
- Unnamed Tributary to Shoal Cove Brook

Scale: 1:40,000
when printed on 11 by 17 inch paper

FALKIRK

This map and associated spatial data were prepared by Falkirk Environmental Consultant Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Falkirk Environmental Consultant Ltd. Data featured in this map has been derived from a variety of digital sources and, as such, FEC does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: EA_Figures_20260428.aprx, Published to pdf on 2026-04-29 11:58 AM by PaulCampbell

6.5.3 Existing Conditions

This section describes the methods used to establish the existing conditions of the Surface Water Quality and Quantity VC and the description of the existing conditions.

6.5.3.1 Surface Water Quantity

6.5.3.1.1 Methods

Desktop analysis was completed to understand the local precipitation, air temperature, and evapotranspiration trends to inform the existing conditions of surface water average flow conditions, peak flow conditions, and low flow conditions.

Background information and data to inform the existing conditions for the Surface Water Quality and Quantity VC included:

- CFI 2015. Environmental Assessment Registration Pursuant to the Newfoundland and Labrador *Environmental Protection Act*. AGS Fluorspar Project St. Lawrence, NL, Appendix D – Baseline Water Quality Report.
- CFI 2015. Environmental Preview Report Pursuant to the Newfoundland and Labrador *Environmental Protection Act*. AGS Fluorspar Project St. Lawrence, NL, Volume 2, Appendix C – Water Management Strategy.
- CFI 2015. Environmental Preview Report Pursuant to the Newfoundland and Labrador Environmental Protection Act. AGS Fluorspar Project St. Lawrence, NL, Volume 2, Appendix F – Surface Water and Groundwater Quality Monitoring Program.
- Water quality monitoring data provided by CFI.
- Publicly available meteorological monitoring data (ECCC).
- Meteorological monitoring data from CFI Site.
- Publicly available hydrometric monitoring data (ECCC).
- Water level monitoring from AGS Mine.

Existing climate conditions within the Project area were characterized using an analysis of long-term historical meteorological data from ECCC monitoring station St Lawrence (ECCC IDs: 8403619 and 8403616) within the RSA, approximately 4 km northeast of the AGS Mine. A desktop climate analysis was completed to estimate monthly and annual precipitation and air temperature statistics at a scale appropriate for hydrologic baseline characterization and preliminary effects assessment.

The St. Lawrence station was selected as it is the closest ECCC climate station to the Project area, located approximately 31 km from the Project, and provides an extended continuous period of record (1994–2024) considered representative of climate conditions within the RSA and the Project, recognizing that the Project and climate station elevations are nearly identical at 49 metres above sea level (masl). Climate data from 1994 to 2024 were used for this analysis, representing a 30-year period of record commonly used to define climate normals and characterize long-term climate variability.

A regional hydrologic assessment was undertaken to characterize surface water flows within the LSA. In the absence of long-term continuous flow monitoring within the LSA, baseline flow conditions at assessment nodes were characterized using regional

historical hydrometric data from ECCC stations located in the Burin Peninsula (Figure 6.5-1).

Representative regression relationships between discharge and drainage area were developed and applied to delineated catchments within the LSA. Drainage area was used as the primary scaling parameter, recognizing that additional factors such as watershed storage and extent of wetlands may influence local flow response. The resulting regression relationships were intended to provide screening-level estimates of baseline flow conditions for ungauged Project catchments.

6.5.3.1.2 Description of Existing Conditions

The Project is situated on the southeastern end of the Burin Peninsula within a low-relief coastal landscape characteristic of the St. Lawrence Lowlands. Ground elevations generally range from approximately 0 to 200 masl. The terrain is defined by gently undulating ridges, shallow bedrock highs, and intervening low-lying areas occupied by wetlands and ponds. As shown on Figure 6.5-1, topographic divides are subdued, and surface drainage is organized through short, low-gradient brooks that flow toward the Atlantic Ocean.

Soils within the Project area generally consist of glacial till of variable thickness, ranging from approximately 1.5 m to 15 m, and are composed primarily of silty sand and gravel with varying proportions of cobbles and boulders (CFI 2015). The landscape has been shaped by glaciation into broad, elongate upland valley troughs that slope generally southward and are separated by rounded ridges forming the principal watershed divides.

The largest pond in the area is Long Pond, located west of the Project, which, together with Hay Pook Pond and Hares Ears Pond, report to the Salt Cove Brook catchment. Clarke's Pond and Shoal Cove Pond are located within the Shoal Cove Brook catchment. Historical mining activities have resulted in localized modification of the surface water system, including the historical use of Shoal Cove Pond for tailings deposition. Clarke's Pond, located upgradient, is believed to be hydraulically connected to the groundwater system and was historically used as a mine water supply. It is also currently used as a freshwater source for washroom facilities and mineral exploration support facilities. In addition, a canal constructed prior to 1967 diverted water from the Director Mine by intercepting flows from the upper reaches of Salt Cove Brook and discharging them at a downstream location within the same watershed. The numerous ponds together with associated wetland areas, providing localized flow attenuation and storage, influence runoff timing and baseflow conditions.

Surface drainage within the Project area is controlled by an interconnected network of small streams, ponds, and wetland complexes. The Project spans portions of the Salt Cove Brook and Shoal Cove Brook watersheds, both of which discharge directly to the coast, while adjacent areas drain east toward Blue Beach Cove.

Baseline conditions for climate and hydrology are described in Appendix 6.5-1 and are summarized in the following sections.

6.5.3.1.2.1 Precipitation

Mean monthly precipitation in the RSA is relatively consistent throughout the year, with a wet season in fall and no distinct dry season. Based on ECCC data from the St. Lawrence climate station (Figure 6.5-2, Table 6.5-1), mean monthly precipitation ranges from approximately 107 mm in July to 161 mm in November. Precipitation generally decreases through late spring and summer, reaching a minimum in July, before increasing through the fall months. Elevated precipitation totals are observed from September through December.

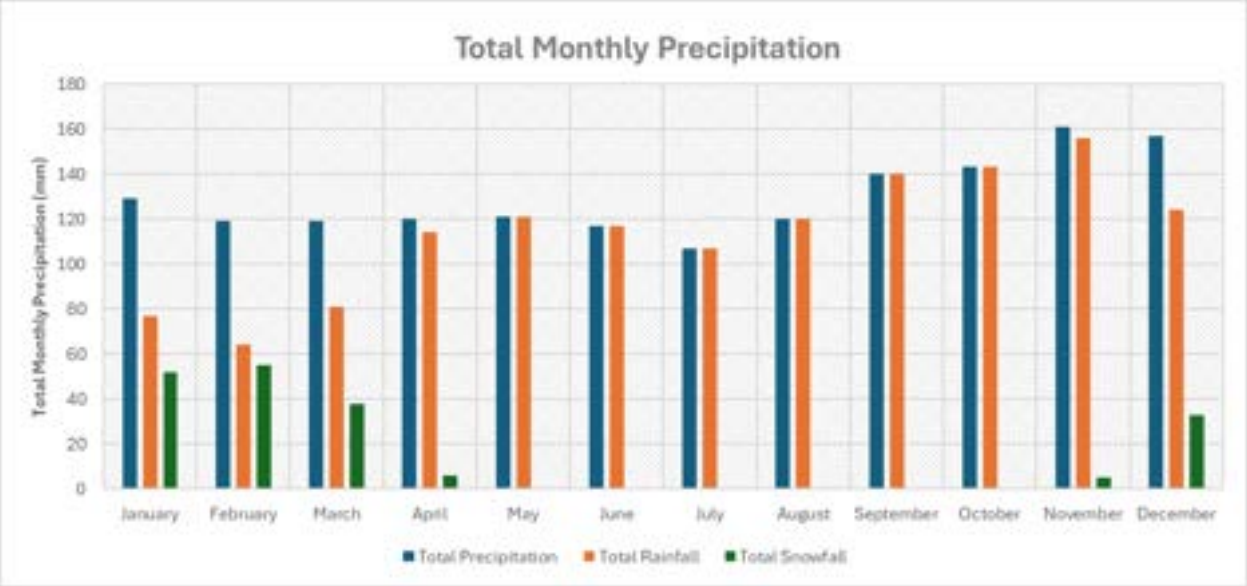


Figure 6.5-2: Mean Monthly Total Precipitation, Rainfall, and Snowfall in mm in the RSA

Table 6.5-1: Mean Monthly and Annual Precipitation Statistics in the RSA

Monthly Mean	Precipitation (mm)	Rainfall (mm)	Snow Water Equivalent (mm)
January	129	77	52
February	119	64	55
March	119	81	38
April	120	114	6
May	121	121	0
June	117	117	0
July	107	107	0
August	120	120	0
September	140	140	0
October	143	143	0

Monthly Mean	Precipitation (mm)	Rainfall (mm)	Snow Water Equivalent (mm)
November	161	156	5
December	157	124	33
Annual Mean	**1,555**	**1,364**	**191**

Note: Snow water equivalent values were calculated as the difference between total precipitation and rainfall.

6.5.3.1.2.2 Air Temperature

Mean monthly air temperatures exhibit seasonal variability as shown in Figure 6.5-3. Mean temperatures are below freezing during winter months, with the coldest mean monthly temperature occurring in February (-3.5°C). Temperatures increase steadily through the spring, becoming positive in April, and reach a peak mean monthly temperature of 16.9°C in August before declining through the fall. The mean annual air temperature over the 1994 to 2024 period was approximately 6.2°C (Table 6.5-2).

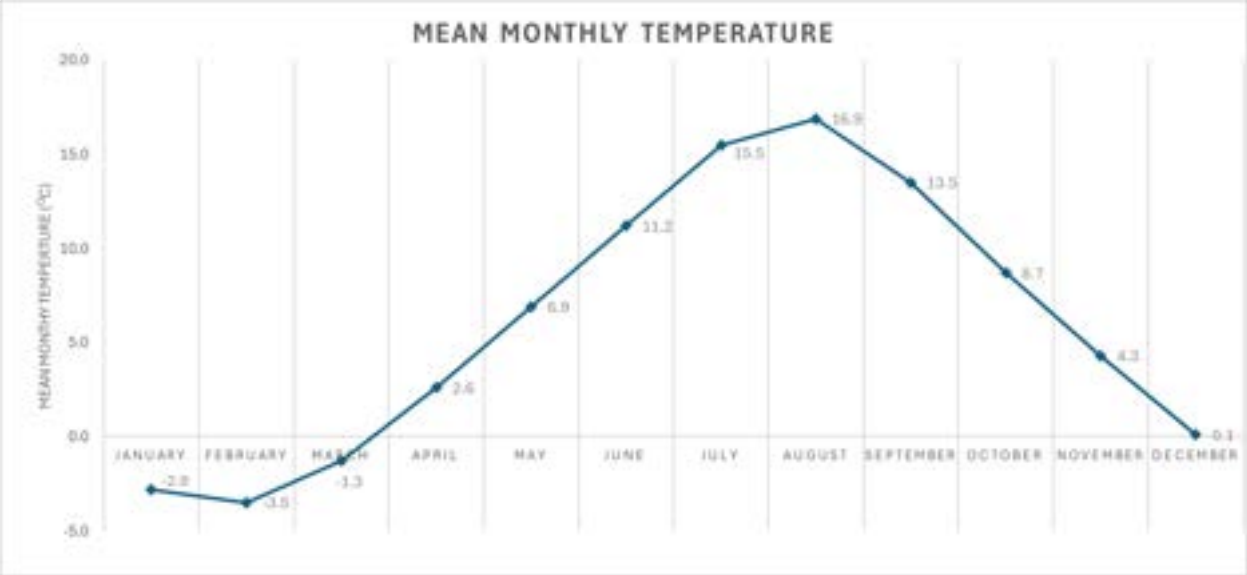


Figure 6.5-3 : Mean Monthly Temperatures at the RSA

Table 6.5-2: Summary of Mean Monthly Temperatures at the RSA

Month	Monthly Mean Temperature (oC)
January	-2.8
February	-3.5
March	-1.3
April	2.6
May	6.9
June	11.2

Month	Monthly Mean Temperature (oC)
July	15.5
August	16.9
September	13.5
October	8.7
November	4.3
December	0.1
Annual Mean	**6.2**

6.5.3.1.2.3 Evapotranspiration

Potential evapotranspiration (PET) reflects atmospheric demand for moisture under prevailing climatic conditions if there is sufficient moisture in the soil at all times. PET was estimated for the LSA according to the Thornthwaite method, using the recorded daily mean temperature at the ECCC St. Lawrence meteorological station (Johnstone 1983). The monthly accumulation of PET was calculated for the period of 1994 to 2024 and averaged as shown in Table 6.5-3.

Evapotranspiration is minimal during winter months (December to March), as shown in Figure 6.5-4, reflecting low air temperatures and limited solar radiation. PET increase steadily through spring, peak in July and August at 109 mm/month, coincident with the warmest temperatures (Table 6.5-2), and recede during the fall. The average annual PET for the LSA is 528 mm, the majority of which is accumulated during summer.

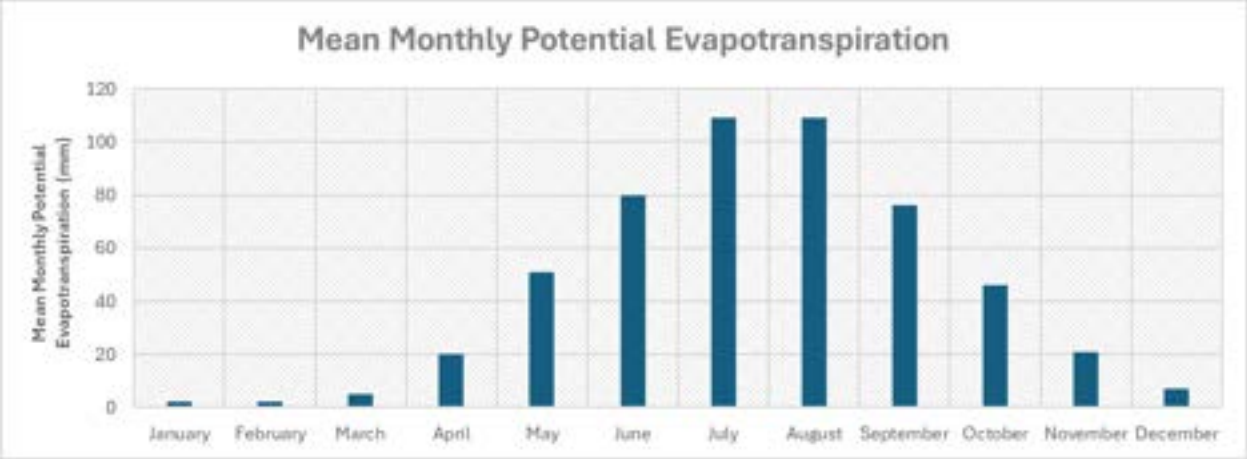


Figure 6.5-4: Estimated Monthly Potential Evapotranspiration

Table 6.5-3: Estimated Monthly Potential Evapotranspiration

Month	PET (mm)
January	2
February	2
March	5
April	20
May	51
June	80
July	109
August	109
September	76
October	46
November	21
December	7
Annual Total	**528**

6.5.3.1.2.4 Average Flow Conditions

Estimated mean monthly flows for assessment nodes are summarized in Table 6.5-4 and illustrated on Figure 6.5-5. Results indicate a seasonal pattern characterized by higher mean flows in winter and early spring, associated with snowmelt, with peak monthly values occurring in April, and lower mean flows during the late summer months, particularly July and August.

For Salt Cove Brook, mean monthly flows increase from approximately 1.24 to 1.52 m^3/s during the winter months (January-March) to a peak of approximately 1.84 m^3/s in April. Flows then decline through the summer, reaching a minimum of approximately 0.55 m^3/s in August. Flows subsequently increase during the fall, reaching approximately 0.92 to 1.42 m^3/s between September and December.

A similar seasonal pattern is observed for Shoal Cove Pond Brook, where mean monthly flows range from approximately 0.22 to 0.27 m^3/s in winter, peak at approximately 0.33 m^3/s in April and decline to approximately 0.10 m^3/s during August, followed by a gradual increase through the fall.

Table 6.5-4: Estimated Mean Monthly Flows for Assessment Nodes

Catchment	Catchment Area (km²)	Monthly Mean Flows (m³/s)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Shoal Cove Pond	3.9	0.22	0.20	0.25	0.30	0.18	0.14	0.11	0.09	0.15	0.20	0.23	0.23
Shoal Cove Pond Brook	4.2	0.24	0.22	0.27	0.33	0.20	0.15	0.11	0.10	0.16	0.22	0.25	0.25
Unnamed Tributary to Shoal Cove	0.4	0.02	0.02	0.02	0.03	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Hares Ears Pond	0.6	0.03	0.03	0.04	0.05	0.03	0.02	0.02	0.01	0.02	0.03	0.04	0.04
East Branch of Salt Cove Brook	13.2	0.73	0.68	0.84	1.01	0.61	0.46	0.35	0.30	0.51	0.68	0.77	0.78
Salt Cove Brook	24.1	1.32	1.24	1.52	1.84	1.10	0.84	0.64	0.55	0.92	1.23	1.40	1.42

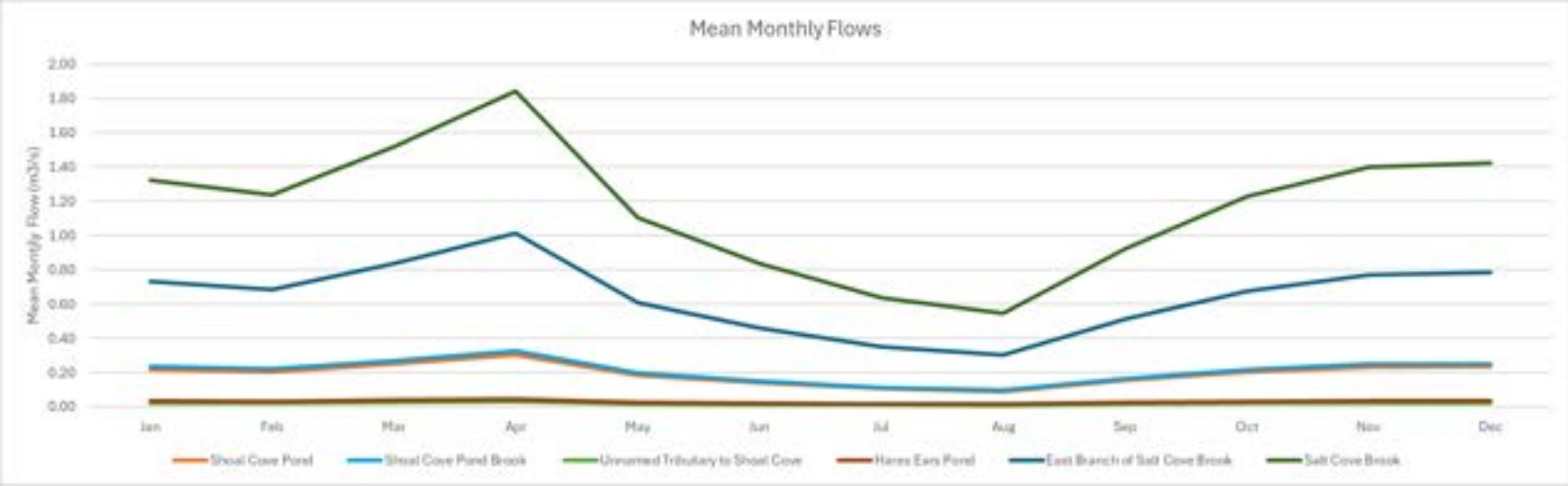


Figure 6.5-5: Estimated Mean Monthly Flows for Assessment Nodes

6.5.3.1.2.5 Peak Flow Conditions

Estimated peak flows for Salt Cove Brook and Shoal Cove Pond Brook were derived using the regional index-flood approach as shown in Table 6.5-5. Peak flows are presented for return periods ranging from 2 to 200 years and reflect the combined application of the drainage-area-based Q_2 regression and regional flood growth ratios.

As a supplementary check, peak flows were also estimated using the Newfoundland Regional Flood Frequency Analysis (NL RFFA) equations for the South-East Region of Newfoundland. Results of this comparison are also summarized in Table 6.5-5 and provide a validation of the index-flood approach for these watersheds.

Table 6.5-5: Estimated Peak Flows for Project Catchments

Return Period (years)	Shoal Cove Peak Flow (m³/s)		Salt Cove Peak Flow (m³/s)	
	Index Flood	NL RFFA	Index Flood	NL RFFA
2	5.5	4.9	17.4	22.0
5	8.2	6.6	25.8	30.1
10	10.4	7.7	32.7	35.6
20	12.9	8.8	40.4	40.8
50	16.7	10.2	52.3	47.6
100	20.1	11.3	62.9	52.7
200	24.0	12.4	75.2	57.9

6.5.3.1.2.6 Low Flow Conditions

Estimated low-flow statistics for the Project watersheds are summarized in Table 6.5-6. Low-flow estimates derived using the drainage-area regression relationships from regional WSC stations were compared with values obtained from provincial low-flow regression equations developed for Newfoundland and Labrador (NL 2017) as a qualitative check on reasonableness.

Table 6.5-6: Estimated Low-Flow Statistics for Project Watersheds

Basin	Method	Drainage Area (km²)	7Q10 (m³/s)	7Q20 (m³/s)
Salt Cove Brook	Drainage area regression	24.1	0.07	0.06
	NL 2017		0.09	0.08
Shoal Cove Pond Brook	Drainage area regression	4.2	0.013	0.011
	NL 2017		0.014	0.013

6.5.3.2 *Data or Information Limitations*

Limited hydrologic and bathymetric data are available within the LSA. As such, the baseline characterization and effects assessment rely on several assumptions which should be refined, including the following general recommendations and further details in Section 6.5.8:

- Hydrogeologic study results are required in order to quantify potential changes to baseflows in watercourses within the LSA and refine pit inflow estimates.
- Hydrometric monitoring is recommended for receiving environment brooks within the LSA, in order to better define flow conditions and confirm assessment results.
- Water level monitoring is recommended for receiving environment ponds within the LSA, and a bathymetric survey is recommended for Hares Ears Pond, to better define storage within the water balance and refine assessment results for potential flooding concerns.
-

6.5.3.3 *Surface Water Quality*

6.5.3.3.1 Methods

Existing surface water quality in the Project area was characterized using monitoring data collected from 2015 to 2025 at select monitoring locations required by CFI's Certificate of Approval No. AA22-085691, issued August 17, 2022.

At each surface water monitoring location, available data were grouped by season and descriptive statistics were calculated (i.e., minimum, 5th percentile, median, mean, 95th percentile, maximum, standard deviation, sample count, and count of non-detectable values) for each season as well as the full dataset. Concentrations measured below the detection limit (DL) were replaced with the DL value for the calculation of summary statistics.

Surface water quality samples were compared to the following guidelines for the protection of aquatic life:

- Environment and Climate Change Canada (ECCC) Federal Environmental Quality Guidelines (FEQGs; ECCC 2024).
- Canadian Council of Ministers of the Environment (CCME) long-term chronic and short-term acute water quality guideline for the protection of aquatic life (CCME 1999) in the absence of an FEQG.

Time series plots of surface water quality concentrations at each monitoring location were visually reviewed to identify seasonal, spatial, and temporal patterns (Appendix 6.5-2).

6.5.3.3.2 Summary of Existing Conditions

Monitoring data collected from 2015 to 2025 was summarized to characterize existing surface water quality in the LSA. Overall, surface waters were generally characterized as soft, well oxygenated, and low in total dissolved solids and suspended solids, with slightly alkaline pH and low to moderate alkalinity. These conditions indicate limited buffering capacity at some locations and elevated acid sensitivity, particularly where alkalinity was low.

At the surface water monitoring stations, concentrations of most parameters were below applicable guidelines or below the DLs. However, some laboratory DLs were too high to determine whether concentrations met or exceeded water quality guidelines. Re-sampling using analytical methods with lower DLs would be required to determine whether or not concentrations exceeded guidelines for some parameters (e.g., phenols, cadmium, cobalt, copper, lead, mercury, selenium, silver, and zinc).

Exceedances of short-term guidelines were measured for total zinc at Clarke's Pond Outlet (WS-2 and WQ-STA-28), Shoal Cove Pond Outlet (WS-5), and Salt Cove Brook (WS-10), and for total cadmium at Hay Pook Pond Outlets (WQ-STA-26 and WQ-STA-27). Exceedances of long-term chronic guidelines were observed for some parameters at one or more surface water monitoring location, including fluoride, nitrite, phenols, aluminum, cadmium, cobalt, copper, iron, lead, manganese, molybdenum, selenium, zinc, and pH.

Spatially, the highest TDS, alkalinity, phosphorus, manganese, strontium, and uranium concentrations were typically measured at Hay Pook Pond Outlet #1 (WQ-STA-26) and the lowest were measured at Hay Pook Pond Outlet #2 (WQ-STA-27). In contrast, total iron concentrations were typically higher at Salt Cove Brook (WS 10) and WQ STA 27 relative to other stations.

From 2015 to 2025, temporal trends were not identified for most parameters aside from an isolated increase in total phosphorus at all stations starting in December 2022 and elevated cobalt concentrations measured in September 2024.

Background runoff sampling was completed in January and March 2026, and results showed similar water quality characteristics to historical surface water monitoring locations, including soft water, low total dissolved solids, and low suspended solids. However, low alkalinity and pH values at several runoff locations indicate high acid sensitivity. Fluoride, aluminum, cadmium, lead, manganese, and zinc concentrations exceeded long-term chronic guidelines in one or more background runoff sample.

6.5.3.4 Metal Leaching and Acid rock Drainage Characterization

Acid Rock Drainage (ARD)/Metal Leaching (ML) characterization was initiated to qualitatively assess interaction of water contacting with materials exposed by mining. The characterization was concussed in two phases. The first phase of the characterization is complete, while second phase is on-going.

Phase I South Ridge Acid Rock Drainage (ARD)/Metal Leaching (ML) assessment report provided initial evaluation of ML/ARD risks associated with the exposure of mine rock, ore, overburden, and tailings using static and short-term leaching tests (Appendix 6.5-4). Based on results of acid base accounting (ABA) and Net Acid Generation (NAG) tests it can be concluded that:

- Ore, overburden, and tailings are classified as non-Potentially Acid Generating (NPAG) and do not require ARD mitigation.
- Low fraction (less than 4%) of mine rock samples conservatively classified as Potentially Acid Generating (PAG) indicate that risk of ARD is low. This low risk

can be further reduced through mixing with NPAG rock, which has excess neutralization potential.
- Contact water monitoring data from several operating and historical fluorite mines in the St. Lawrence area show no indications of acid drainage supporting overall risk of ARD associated with the project.

Short-term leaching Shake Flask Extraction (SFE) tests indicate following:

- Concentrations of elements in all samples are below effluent limits listed in the Newfoundland and Labrador (NL) Environmental Control Water and Sewage Regulations Regulation 65/03 (NL 2003).
- Cadmium and zinc exceeded short-term (acute) Canadian Council of Ministers of the Environment guidelines (CCME 1999) in ore (24% of SFE tests), historical tailings (20% of water samples), granite (6% of tests), and in tuffisite (14% of tests), showing low probability of acute toxicity of Zn and Cd in water draining these materials.
- Potential parameters of interest (POI) which might affect receiving water bodies are listed below due to overall frequency exceeding long-term guidelines:
  - Fluoride
  - Copper
  - Cadmium
  - Lead
  - Aluminum
  - Zinc

For further and more quantitative assessment of potential changes in surface water quality, contact water quality was predicted (i.e. source terms derived) for discharges from the site and in the receiving environment of the Project (Appendix 6.5-3).

The focus of Phase II is laboratory and field kinetic testing and detailed characterization of materials used in these tests. The objective of this memo is to outline methodology and preliminary results of kinetic tests conducted on ore and rock samples. Preliminary phase II results related to overall ARD risks and management remain the same as in Phase I South Ridge Acid Rock Drainage (ARD)/Metal Leaching (ML) assessment report (Falkirk 2026c).

6.5.4 Effects Assessment

The effects assessment was conducted according to the approach outlined in Section 5 of this EARD.

A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as following:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects;
- Identification of potential cumulative effects; and
- Follow-up commitments and monitoring programs.

6.5.4.1 *Identification of Project-VC Interactions and Potential Effects*

The effects assessment considered the potential interactions between the Project components and activities and the VCs within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). Interactions tables for the Surface Water Quality and Quantity VC are presented in Table 6.5-7 and Table 6.5-8.

Table 6.5-7: Project-VC Interactions with the Surface Water Quantity VC

Project Activity	Interaction	Nature of Potential Effect
Construction		
Community Access Roads	• Strip, fill, gravel, grade to accommodate vehicle traffic. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use. • Upgrades to Memorial Bridge and Blake's Brook Bridge.	Changes to potential local flooding and erosion and sedimentation due to disturbances, upgraded bridges and new culverts.
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded and berms will be built up to support larger equipment traffic • Strip, clear, fill	Changes to potential local flooding and erosion and sedimentation due to disturbances.
Pit Haul Roads	• Strip, fill, gravel, and grade.	Changes to potential local flooding and erosion and sedimentation due to disturbances.
Power Infrastructure Upgrades	• Transmission line re-routing and raising along the Blue Beach Haul road to allow Cat 777s to travel to the project area. • Powerline that follows Iron Springs Road will be re-routed around the pit and extended to provide power to dewatering pumps	Changes to potential local flooding and erosion and sedimentation due to disturbances.
	• The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	Changes to potential local flooding and erosion and sedimentation due to disturbances.

Project Activity	Interaction	Nature of Potential Effect
Pit Dewatering	• Dewatering and horizontal drain dewatering will be installed/used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability	Changes to water flows and levels due to changes to groundwater baseflow and the discharge of pumped water.
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas. • Constructing berms in advance of blasting	Changes to water flows and levels due to changes to land type.
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	Changes to water flows and levels due to changes to land type.
Stockpile Area Development	• Stripping, clearing and preparing stockpile areas for topsoil, overburden, and waste rock.	Changes to water flows and levels due to changes to land types.
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	Changes to water flows and levels due to contributing drainage areas.
Operations		
Water Management.	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored	Changes to water flows and levels due to contributing drainage areas.
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	Changes to water flows and levels due to changes to: • Land type • Ground elevation and topography • Contributing drainage areas • Groundwater Changes to potential local flooding and erosion and sedimentation due to dewatering discharge.

Project Activity	Interaction	Nature of Potential Effect
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	NA
Pit Dewatering	• Dewatering and horizontal drain dewatering will be installed/used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability	Changes to water flows and levels due to changes to groundwater baseflow and the discharge of pumped water.
Stockpiling	• As mining progresses waste rock will be deposited in the waste stockpiles.	Changes to water flows and levels due to changes to: • Land type • Ground elevation and topography
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	Changes to water flows and levels due to changes to: • Land type • Ground elevation and topography
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, then re-seeding for vegetation regrowth • Recreation access roads will remain in place and open for continued public use following Project closure	Changes to water flows and levels due to changes to land type.

Project Activity	Interaction	Nature of Potential Effect
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	Changes to water flows and levels due to changes to: • Land type • Ground elevation and topography
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	Changes to water flows and levels due to changes to: • Land type • Ground elevation and topography
South Ridge Pit	• South Ridge Pit may be flooded in closure and allowed to spill to Hares Ears Pond via a lined channel, pending additional underground development timelines. If the pit is flooded safety berms and signage will be installed around the perimeter • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal)	Changes to water flows and levels due to changes to: • Land type • Ground elevation and topography • Contributing drainage areas • Groundwater
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required.	NA
Access Roads	• Access roads will be maintained to facilitate post-closure monitoring	NA

Table 6.5-8: Project-VC Interactions with the Surface Water Quality VC

Project Activity	Interaction	Nature of Potential Effect
Construction		
Community Access Roads	• Strip, fill, gravel, grade to accommodate vehicle traffic. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use. • Upgrades to Memorial Bridge and Blake's Brook Bridge.	Changes to water quality from dust, erosion and sedimentation due to disturbances, upgraded bridges and new culverts.
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded and berms will be built up to support larger equipment traffic • Strip, clear, fill	Changes to water quality from dust, erosion, and sedimentation due to disturbances.
Pit Haul Roads	• Strip, fill, gravel, and grade.	Changes to water quality from erosion and sedimentation due to disturbances.
Power Infrastructure Upgrades	• Transmission line re-routing and raising along the Blue Beach Haul road to allow Cat 777s to travel to the project area. • Powerline that follows Iron Springs Road will be re-routed around the pit and extended to provide power to dewatering pumps	Changes to water quality from erosion and sedimentation due to disturbances.
	• The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	Changes to water quality from erosion and sedimentation due to disturbances.
Pit Dewatering	• Dewatering and horizontal drain dewatering will be installed/used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability	Changes to water quality due to changes to groundwater baseflow and the discharge of pumped water.

Project Activity	Interaction	Nature of Potential Effect
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas. • Constructing berms in advance of blasting	Changes to water quality from erosion and sedimentation due to disturbances.
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	Changes to water quality from erosion and sedimentation due to disturbances.
Stockpile Area Development	• Stripping, clearing, and preparing stockpile areas for topsoil, overburden, and waste rock.	Changes to water quality from runoff, erosion, and sedimentation. due to disturbances.
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	Changes to water quality from erosion and sedimentation due to disturbances.
Operations		
Water Management.	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored	Changes to water quality due to discharge from sediment ponds.
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	Changes to water quality due to pit dewatering, leaching of residue to mine water, and erosion and sedimentation.

Project Activity	Interaction	Nature of Potential Effect
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	Changes to water quality from dust and erosion and sedimentation.
Stockpiling	• As mining progresses waste rock will be deposited in the waste stockpiles.	Changes to water quality from erosion and sedimentation and leaching from waste rock stockpiles.
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	Changes to water quality from dust and erosion and sedimentation.
Closure and post-closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, then re-seeding for vegetation regrowth • Recreation access roads will remain in place and open for continued public use following Project closure	Changes to water quality from dust and erosion and sedimentation.
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	Changes to water quality from runoff, erosion, sedimentation, and leaching from waste rock stockpiles.

Project Activity	Interaction	Nature of Potential Effect
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	Changes to water quality from runoff, erosion, and sedimentation.
South Ridge Pit	• South Ridge Pit may be flooded in closure and allowed to spill to Hares Ears Pond via a lined channel, pending additional underground development timelines. If the pit is flooded safety berms and signage will be installed around the perimeter • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal)	Changes to water quality due to pit decanting.
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required.	NA
Access Roads	• Access roads will be maintained to facilitate post-closure monitoring	Changes to water quality from runoff, erosion, and sedimentation.

6.5.4.2 Assessment Approach

The potential hydrology effects of the Project were assessed using a water balance analysis. An average annual water balance was prepared to estimate pre-development and post-development water balance conditions throughout the life of mine on a site-wide basis, and the results were assessed in the context of the estimated baseline flows at receiving watercourses and ponds. In this way, the hydrology assessment considers potential impacts to hydrology throughout the LSA.

The surface water quality assessment was completed to evaluate Project-related changes to water quality for the defined assessment boundaries. Surface water quality modelling was completed using a mass-balance model to reflect changes in site conditions and water management practices over time and the results of the site-wide average annual water balance. To evaluate the potential effects of the Project on surface water quality the downstream environment, concentrations were projected for three mine phases: Construction and Operations, Closure, and Post-closure. Model projections were developed for two discharge locations and four receiving environment locations. Water management during the Construction phase is similar to that during Operations, but during Construction the stockpiles are yet not fully developed. As a conservative approach, the end of Operation water management scenario was used to represent Construction phase conditions.

Although ore processing and tailings disposal will occur at the AGS Mine, potential hydrologic effects associated with those activities are assumed to be assessed and permitted separately.

6.5.5 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs associated with the AGS Mine, Project design, and additional recommended mitigation measures relevant to the VC effects assessment for the Project.

The potential effects identified in Section 6.5.4 were used to inform the design and implementation of Project mitigation measures. The identified mitigation measures are outlined in more detail in the following sections, including a discussion of their effectiveness and confidence related to avoiding, minimizing, or restoring the VC to prevent residual effects.

This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and the proposed mitigations effective.

6.5.5.1.1 Construction

The Project includes the development of a pit, stockpiles, construction of haul roads and existing road upgrades, including watercourse crossing replacements or upgrades at Blake's Brook Bridge and Memorial Bridge, and at minor tributaries along the existing haul road. If temporary isolation measures are required to carry out in-stream work, short-term construction water management activities can potentially affect flows, water levels, water quality, and erosion-sedimentation processes immediately upstream and downstream of the isolation work area and at the point of discharge. However, short-term water isolation and dewatering activities will be carried out in accordance with industry standards and best management practices, including:

- Directing diverted water back to the same watercourse at pumping rates that generally align with observed discharge rates at the time of construction,
- Installing/operating isolation works to the extent possible to maintain characteristic water level conditions upstream and downstream of the construction area, and

- Properly installing, maintaining, and monitoring sediment and erosion control measures at points of water-taking and discharge, as well as where construction work areas border the open channel of Salt Cove Brook and its tributaries.

Compliance with these measures will be enforced through the development of an erosion and sediment control plan, which includes requirements for adaptive management. Effects would be localized and of short duration, since any increase or reduction in stream flows, water levels, water quality, and erosion-sedimentation processes would be limited to the area in the immediate vicinity of isolation works and largely indiscernible from a short distance upstream or downstream of short-term water management activities. Environmental performance will be evaluated based on the erosion and sediment control plan, which would determine the appropriate action during each construction activity and could include making repairs or improvements to erosion and sediment control measures.

6.5.5.1.2 Operations

The Project Operations includes open pit mining, stockpiling, operation of haul roads, blasting, ore processing, water management, and tailings management. Proper design (e.g., to the 100-year storm event for road crossings and to the 10-year storm event for mine water management) and maintenance of water management and conveyance infrastructure will ensure that design flows can be conveyed without altering water quality and erosion and sedimentation processes in Salt Brook Cove and its tributaries.

Flow changes due to pit dewatering discharges have the potential to alter characteristic flooding and erosion and sedimentation processes at Shoal Cove Pond/Shoal Cove Brook and Hares Ears Pond/Salt Cove Brook. In order to mitigate the magnitude of effects to the receiving environment watercourses, discharges from the dewatering well array are proposed to be split between Shoal Cove Pond and Hares Ears Pond. Moderate increases to flows in the receiving watercourses will be limited to the duration of dewatering (i.e., approximately 18 months). Further hydrometric monitoring and a bathymetric survey of Hares Ears Pond is recommended to characterize the receiving environment and to refine the interpretation of potential hydrologic effects in the receiving environment.

Open pit mining has the potential to alter surface water quality in downstream receiving environment in the Shoal Cove and Salt Cove watersheds through pit dewatering. In order to mitigate the effects to the receiving environment watercourses, discharges from the pit dewatering are proposed to be split between the Shoal Cove (East Pond) and Salt Cove (West Pond) watersheds. As a part of the Water Management Plan, CFI will develop a monitoring and discharge plan to manage the portion of mine water going to the West Pond and East Pond such that exceedances for the NFLD ECWSR 65/03 limit would not be expected to occur. Additional changes to water quality in the downstream receiving environment are expected to occur and will be evaluated as part of the aquatic health assessment.

6.5.5.1.3 Closure

The Project includes closure of the pit by allowing it to fill with water and spill towards Hares Ears Pond and includes reclamation of the stockpiles and haul roads by capping with overburden, topsoil and seeding to establish vegetative cover. Land uses within the

Project area will therefore largely return to a re-naturalized condition, noting that diversions and the flooded pit will still represent a change to hydrologic processes and catchment delineation at the Project site and have the potential to continue to alter water quality in the downstream receiving environment.

6.5.5.2 Summary of Mitigation Measures

Table 6.5-9 and Table 6.5-10 summarize all proposed mitigation measures and identifies whether, after implementation, a residual effect will remain, as well as identifies if a follow up program is recommended. Identified Follow Up Programs are summarized in Section 6.5.8.

Table 6.5-9: Summary of Proposed Mitigation Measures Surface Water Quantity

Potential Effect	Proposed Mitigation / Best Practices	Potential Residual Effect? (Y/N)
Construction		
Changes to potential local flooding and erosion and sedimentation due to disturbances and new culverts.	Properly installing, maintaining, and monitoring sediment and erosion control measures at points of water-taking and discharge, as well as where construction work areas border the open channel of Salt Cove Brook and its tributaries.	N
	Development and enforcement of an erosion and sediment control plan, which includes requirements for adaptive management.	
Changes to water flows and levels due to construction of new culverts.	Directing diverted water back to the same watercourse at pumping rates that generally align with observed discharge rates at the time of construction.	N
	Installing/operating isolation works to the extent possible to maintain characteristic water level conditions upstream and downstream of the construction area.	
Operations		
Changes to water flows and levels due to pit dewatering, water diversions, and land use changes.	Discharges from the dewatering well array are proposed to be split between Shoal Cove Pond and Hares Ears Pond.	Y
Changes to potential flooding and erosion and sedimentation due to increased flows associated with pit dewatering.	Proper design (e.g., to the 100-year storm event for road crossings and to the 10-year storm event for mine water management) and maintenance of water management and conveyance infrastructure.	Y

Potential Effect	Proposed Mitigation / Best Practices	Potential Residual Effect? (Y/N)
Closure		
Changes to water flows and levels due to altered hydrologic regime and pit overflow.	Ceasing of pit dewatering.	Y
	Covering of mine rock stockpiles with overburden and revegetation of mine infrastructure.	

Table 6.5-10: Summary of Proposed Mitigation Measures Surface Water Quality

Potential Effect	Proposed Mitigation / Best Practices	Potential Residual Effect? (Y/N)
Construction		
Changes to potential water quality due to disturbances, mine site preparation and earthworks.	Properly installing, maintaining, and monitoring sediment and erosion control measures at points of water uptake and discharge, as well as where construction work areas border the open channel of Salt Cove Brook and its tributaries.	N
	Development and enforcement of an erosion and sediment control plan, which includes requirements for adaptive management.	
Changes in water quality from infiltrating water, overburden removal	Excavation, Embankment and Grading, Implement Erosion and Sediment Controls	N
Operations		
Changes to water quality due to discharge from sedimentation ponds.	Discharges are proposed to be split between Shoal Cove Pond and Hares Ears Pond	Y
	Water management infrastructure has been designed to keep contact and non-contact water separated.	

Potential Effect	Proposed Mitigation / Best Practices	Potential Residual Effect? (Y/N)
Changes to water quality associated with pit operations, blasting, excavation, and ore stockpiling.	Site discharges are expected to be controlled in alignment with the Operational Water Management Plan	Y
	Regular monitoring of discharge to confirm regulatory discharge criteria are achieved.	
	Discharge from pit will be divided between the East and West ponds respectively, to manage potential exceedances of discharge limits (e.g. for nitrates).	
	Buffer zones, appropriate laydown and storage areas, clearing of vegetation, grubbing and disposal of related debris, overburden management.	
	Electronic detonation and 100% of emulsion explosive will be used to mitigate effects of loss of nitrogen species from explosives to mine water.	
Changes to water quality from erosion of stockpiles.	Development and enforcement of an erosion and sediment control plan, which includes requirements for adaptive management. Runoff collection and settling suspended solids in sedimentation ponds. Erosion prevention by seeding topsoil and overburden? stockpiles to reduce bare soil and limit sediment. Inspect all areas of exposed soils, ditches, stockpiles, roadways on a regular basis to identify soil stability concerns.	N
Leaching from waste rock stockpile.	Minimize stockpile footprint. Exporting waste rock from the site by selling it as aggregate.	Y
Closure and Post-closure		
Changes to water quality due leaching from waste rock stockpiles.	Covering of mine rock stockpiles with overburden and revegetation to limit metal leaching. Collecting toe seepage in the East pond and pumping it to the pit lake. Exporting waste rock from the site by selling it as aggregate.	Y
Changes in water quality due to pit lake decanting.	Filling pit lake faster to minimize exposure of pit walls, (e.g. pumping contact water from east pond); grading and covering pit exposed slopes with overburden and topsoil where possible.	Y
Changes in water quality due to erosion and sedimentation.	Reclaim slopes using a Growth Media Cover to support the growth of vegetation and limit erosion and sedimentation.	N
	Development and enforcement of an erosion and sediment control plan, which includes requirements for adaptive management.	

6.5.6 Identification and Characterization of Residual Effects

Residual effects are those remaining after the implementation of mitigation measures.

For each potential residual effect identified in Table 6.5-7, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.5-11 and Table 6.5-12 below. Significance determinations of Project-related potential residual effects have been made in receptor VCs that are potentially affected by a change in surface water quality or quantity (e.g. Fish and Fish Habitat).

Table 6.5-11: Residual Effects Characterization Criteria for Surface Water Quantity

Characterization Criteria	Description
Ecological Context	Context is provided through a description of existing conditions in local watersheds.
Magnitude	• Negligible: change in mean annual flow <5%; not measurable • Low: change in mean annual flow >5% and <10% • Moderate: change in mean annual flow >10% and <30% • High: change in mean annual flow >30%
Extent	• Site • Local • Regional
Duration	Duration of the effect (e.g., short-term, long-term)
Frequency	Frequency of occurrence of the effect (e.g., continuous, intermittent)
Timing	When effects are expected to occur (e.g., seasonal, event-driven)
Reversibility	Reversible within a clearly defined time period or irreversible (permanent)
Likelihood/Confidence	Likelihood: • Unlikely • Likely • Highly likely Prediction confidence: • Low: limited evidence is available; models and calculations are highly uncertain and/or evidence about potential effects is contradictory • Medium: sufficient evidence is available and generally supports the prediction • High: sufficient evidence is available and most or all available evidence supports the prediction

Table 6.5-12: Residual Effects Characterization Criteria for Surface Water Quality

Characterization Criteria	Description
Magnitude	• Low: Projected concentration of COPC is greater than the long-term chronic guideline for the protection of aquatic life • Moderate: Projected concentration of COPC is greater than the short-term acute guideline for the protection of aquatic life • High: Projected concentration of COPC is greater than the NFLD ECWSR 65/03 limits.

Characterization Criteria	Description
Extent	• Site • Local • Regional
Timing	Duration and frequency
Reversibility	Reversible within a clearly defined time period or irreversible (permanent)
Likelihood/Confidence	• Likelihood: • Unlikely • Likely • Highly likely • Prediction confidence: • Low: limited evidence is available; models and calculations are highly uncertain and/or evidence about potential effects is contradictory • Medium: sufficient evidence is available and generally supports the prediction • High: sufficient evidence is available and most or all available evidence supports the prediction

6.5.6.1 Surface Water Quantity

Project-related changes in surface water quantity were evaluated using a site-wide average annual water balance under Existing, Operational, Closure, and Post-Closure conditions (Appendix 6.5-1). During Operations, runoff increases to 725,000 m³/yr, driven primarily by assumed pit inflows and dewatering discharge (Mining One 2025) routed to the east and west sedimentation ponds. During Closure (pit filling), runoff is similar to existing conditions (259,000 m³/yr), while infiltration remains reduced relative to existing conditions. In the Post-Closure condition, runoff remains elevated, primarily due to reduced infiltration at the Site (344,000 m³/yr).

Using the average annual and monthly existing conditions flows estimated in Appendix 6.5-1, and the average annual and monthly site-wide water balance, changes to flows were estimated at assessment nodes within the LSA. Project-related changes, including changes to groundwater baseflows as a result of mining, are anticipated throughout the Shoal Cove and Salt Cove watersheds. Expected changes to flows at assessment nodes for the Operations, Closure, and Post-Closure conditions are shown for average annual flows in Table 6.5-13 and for average monthly flows in Appendix 6.5-1.

Table 6.5-13: Expected Changes to Average Annual Flows at Assessment Nodes (m³/day)

Assessment Node	Existing Condition Flow m³/day	Change in Operations Case m³/day (%)	Change in Closure Case m³/day (%)	Change in Post-Closure Case m³/day (%)
Shoal Cove Pond	16,600	+701 (+4.2%)	+69 (+0.4%)	+49 (+0.3%)
Shoal Cove Brook	17,800	+695 (+3.9%)	+63 (+0.4%)	+43 (+0.2%)

Assessment Node	Existing Condition Flow m^3/day	Change in Operations Case m^3/day (%)	Change in Closure Case m^3/day (%)	Change in Post-Closure Case m^3/day (%)
Unnamed Tributary of Shoal Cove	1,600	+8 (+0.5%)	+8 (+0.5%)	+10 (+0.7%)
Hares Ears Pond	2,600	+685 (+26%)	+37 (+1.4%)	+295 (+11%)
East Branch Salt Cove Brook	55,400	+519 (+0.9%)	-129 (-0.2%)	+135 (+0.2%)
Salt Cove Brook	100,600	+373 (+0.4%)	-274 (-0.3%)	0 (<0.0%)

The greatest expected changes to flows in the receiving watercourses are limited to the Operations Case, while pit dewatering is ongoing. The results of the hydrology effects assessment are summarized for each assessment node, below:

- Shoal Cove Pond: A negligible increase to average annual flows (i.e., +4.2%) is expected during the Operations period. This increase is substantially reduced during Closure (i.e., +0.4%) and remains negligible during Post-Closure (i.e., +0.3%). Flow increases during operations are primarily resulting from pit inflow dewatering. These increases are expected to remain relatively consistent seasonally, with the largest relative increase during Operations occurring in August (i.e., +7.6%). During Closure, the largest relative increase occurs in September (i.e., +0.6%), and during Post-Closure, the largest relative increase occurs in November (i.e., + 0.4%).
- Shoal Cove Brook: A negligible increase to average annual flows (i.e., +3.9%) is expected during the Operations period. This increase is substantially reduced during Closure (i.e., +0.4%) and remains negligible during Post-Closure (i.e., +0.2%). Flow increases during operations are primarily resulting from pit inflow dewatering. These increases are expected to remain relatively constant seasonally.
- Unnamed Tributary of Shoal Cove: A negligible increase to average annual flows (i.e., +0.7%) is expected during the Post-Closure period. Flow increases are limited to changes to groundwater baseflows as a result of pit development, recognizing that there will be limited surface disturbance in this catchment.
- Hares Ears Pond: A moderate increase to average annual flows (i.e., 26%) is expected during the Operations period. This increase is reduced during Closure (i.e., 1.4%) but remains elevated during Post-Closure (i.e., 11%). Flow increases during operations are primarily resulting from pit inflow dewatering. In the Post-Closure condition, flow increases are primarily resulting from increased catchment area associated with proposed water management and are expected to be less during summer when evapotranspiration is higher. During Operations, the maximum increase occurs in August (i.e., +48%). During Post-Closure, the maximum increase occurs in December (i.e., +15%). A bathymetric survey of the pond is recommended in order to better understand the potential effects of increased flows, storage, flooding, and potential sedimentation.

- East Branch Salt Cove Brook: A negligible increase to average annual flows (i.e., 0.9%) is expected during the Operations period, followed by a negligible decrease during Closure (i.e., -0.2%) and a negligible increase during Post-Closure (i.e., 0.2%). During Operations, the largest relative increase occurs in August (i.e., 1.8%). During Closure, the largest relative decrease also occurs in August (i.e., -0.4%).
- Salt Cove Brook: A negligible increase to average annual flows (i.e., 0.4%) is expected during the Operations period, followed by a negligible decrease during Closure (i.e., -0.3%) and no change during Post-Closure (i.e., 0.0%). During Operations, the largest relative increase occurs in August (i.e., 0.7%). During Closure, the largest relative decrease also occurs in August (i.e., -0.5%).
- It is noted that the above conclusions rely on the expected waste rock spoil footprint, rather than the worst-case waste rock spoil footprint (CFI 2025). However, the change in flows due to land use is small relative to the change in flows due to dewatering, so the results of the flow assessment are not expected to be sensitive to the waste rock spoil footprint.

Prediction confidence is low, recognizing that hydrological site observations are not available, and models and calculations were completed using regional data. It is also noted that the above conclusions rely on the expected waste rock spoil footprint, rather than the worst-case waste rock spoil footprint (CFI 2025). However, the change in flows due to land use is small relative to the change in flows due to dewatering, so the results of the flow assessment are not expected to be sensitive to the waste rock spoil footprint.

6.5.6.1.1 Operations Residual Effect: change in water flows and levels due to pit dewatering

Following the implementation of mitigation measures, residual effects will result in changes to water flows and levels due to pit dewatering, water diversions, and land use changes. The residual effect to flows and levels is considered to be moderate, as dewatering discharges will be split between Hares Ears Pond and Shoal Cove Pond.

Table 6.5-14: Summary of Residual Effect Characterization Related to: Changes to water flows and levels due to pit dewatering, water diversions, and land use changes

Criteria	Rating	Rationale
Magnitude	Moderate	Changes in annual average flows of up to 26% at Hares Ears Pond and 4.2% at Shoal Cove Pond.
Extent	Local	Effect limited to the LSA, including Shoal Cove Pond and Hares Ears Pond.
Duration	Short-term	Present during operations
Frequency	Continuous	Elevated flows are expected to be consistent over the course of pit dewatering.
Timing	Seasonally variable	Greater relative increases during summer and lesser relative increases during spring.

Criteria	Rating	Rationale
Reversibility	Reversible	Flows will return closer to normal after closure when pit dewatering ceases.
Likelihood	Highly likely	Pit dewatering will be required in order to facilitate mining and is unavoidable during operations.

6.5.6.1.2 Operational residual effect: Change to potential flooding and erosion

Following the implementation of mitigation measures, residual effects will result as changes to potential flooding and erosion and sedimentation due to increased flows associated with pit dewatering. The residual effect to potential flooding and erosion and sedimentation is considered to be moderate, recognizing that elevated flows associated with operations will last for only 18 months and sedimentation will be mitigated with sedimentation ponds.

Table 6.5-15: Summary of Residual Effect Characterization Related to: Changes to potential flooding and erosion and sedimentation due to increased flows associated with pit dewatering

Criteria	Rating	Rationale
Magnitude	Moderate	Changes in annual average flows of up to 26% at Hares Ears Pond and 4.2% at Shoal Cove Pond.
Extent	Local	Effect limited to the LSA, including Shoal Cove Pond and Hares Ears Pond.
Duration	Short-term	Present during operations.
Frequency	Intermittent	Elevated potential for flooding and erosion and sedimentation processes will be most significant during periods of high flows.
Timing	Event-driven	Flood events are most likely during high-flow periods and storm events.
Reversibility	Irreversible	Damage to infrastructure due to flooding or to the receiving watercourses due to erosion and sedimentation could have lasting consequences.
Likelihood	Likely	Increased flows will increase the potential for flooding and erosion and sedimentation processes, but the extent of effects will be dependent on meteorologic conditions during operations.

6.5.6.1.3 Closure Residual Effects

Following the implementation of mitigation measures, residual effects to water flows and levels may occur due to an altered hydrologic regime after mining. The South Ridge Pit will fill and subsequently overflow to Hares Ears Pond. The residual effect to flows and levels is considered to be moderate, based on predicted changes in flow magnitude within the LSA, with effects expected to remain localized.

Table 6.5-16: Summary of Residual Effect Characterization Related to: Changes to water flows and levels due to altered hydrologic regime and pit overflow.

Criteria	Rating	Rationale
Magnitude	Moderate	Changes in annual average flows of up to 11% at Hares Ears Pond.
Extent	Local	Effect limited to the LSA, including Hares Ears Pond.
Duration	Long-term	Present after closure for the foreseeable future.
Frequency	Continuous	Elevated flows are expected to persist after closure.
Timing	Seasonally variable	Greater relative increases during fall and winter months and lesser relative increases during summer.
Reversibility	Irreversible	The pit will continue to overflow for the foreseeable future.
Likelihood	Highly likely	Pit overflow will be necessary after closure.

6.5.6.2 Surface Water Quality

Project-related changes to water quality were using a mass-balance model to reflect changes in site conditions and water management practices over time. To evaluate the potential effects of the Project on surface water quality in the downstream environment, concentrations were projected for three snapshots representing following mine phases: Construction and Operations, Closure and Post-closure. For each snapshot, water quality was predicted for a range of seasonal flow and water quality conditions. No residual effects are identified during Construction.

Model projections were developed for two discharge locations and four receiving environment locations.

- Discharge locations:
  - West Pond Outflow
  - East Pond Outflow
- Receiving environment locations:
  - Hares Ears Pond Outflow
  - East Branch Salt Cove Brook
  - Salt Cove Brook Outflow (WS-10)
  - Shoal Cove Pond Outflow (WS-5)

Projected concentrations at each assessment node and for each modelled phase were screened to identify constituents of potential concern (COPCs). The COPC screening was a multi-step process that involved comparing projected concentrations to selected screening values and existing conditions, full details are provided in Appendix 6.5-3. The screening values selected for the assessment were as follows:

- Canadian Council of Ministers of the Environment (CCME) short-term water quality guidelines for the protection of aquatic life (CCME 2019),
- Newfoundland and Labrador (NFLD) Environmental Control Water and Sewage Regulations (ECWSR) 65/03 (NFLD 2003).

- A combination of the CCME long-term water quality guidelines for the protection of aquatic life (CCME 2019) and Federal Environmental Quality Guidelines (FEQGs, ECCC 2024). The FEQGs were used to supplement the CCME guidelines for parameters without guidelines and in cases where the FEQG provides a more up-to-date guideline than the corresponding CCME value.

Following the implementation of mitigation measures, potential residual effects may result as changes to water quality due to pit dewatering, water diversions and discharges, erosion and sedimentation, and leaching from stockpiles. The magnitude of residual effects to surface water quality was characterized for each COPC as low, moderate, or high, as defined in Table 6.5-12 and the timing corresponded to the month(s) during each phase the constituent was identified as a COPC. A summary of the COPC screening is provided below and the residual effect to water quality in the downstream receiving environment is characterized at each downstream receiving assessment location is presented in Table 6.5-16 to Table 6.5-19.

Projected concentrations of all parameters during all phases were below the NFLD ECWSR 65/03 limits in the discharge of East and West Ponds, except for nitrate + nitrite nitrogen in the West Pond. Concentrations of nitrate + nitrite nitrogen (10.5 mg/L) marginally exceed the NFLD ECWSR 65/03 limit of 10 mg/L in June during Operations and therefore was identified as a COPC. A monitoring and discharge plan will be developed to manage the portion of mine water going to the West Pond and East Pond such that the modelled exceedance of the NFLD ECWSR 65/03 limit would not be expected to occur. With the suggested mitigation, it is expected the NFLD EQWSR 65/03 limits will be met at all locations. As such, none of the residual effects have been classified as having a high magnitude.

Cadmium and zinc were identified as COPCs at both locations, as projected concentrations are above the short-term guidelines as follows:

- East Pond Outflow:
  - Cadmium – December and March during Operations.
  - Zinc – December, March, and June during Operations.
- West Pond Outflow:
  - Cadmium and zinc– all months during Operations.

Although projected concentrations of cadmium and zinc in the discharge of the East and West Ponds are above the short-term guidelines, concentrations are below the NFLD ECWSR 65/03 limits. Further assessment of potential effects of discharges to aquatic life in the receiving environment are discussed in Section 6.6.

In the receiving environment, projected concentrations of all parameters during all phases were below the NFLD ECWSR 65/03 limits and the short-term guidelines, with the exception of cadmium and zinc which exceeded the short-term guidelines as follows:

- Hares Ears Pond Outflow:
  - Cadmium – all months during Operations, and September, December, and March during Post-closure.
  - Zinc – December and March during Operations

The following COPCs were identified at the receiving environment locations, as projected concentrations are above the long-term guidelines and above existing conditions.

- Shoal Cove Pond Outflow (WS-5):
  - Nitrite – June during Operations
  - Copper – December and June during Operations
- Hares Ears Pond Outflow:
  - Fluoride – all months during Operations and September and December during Post-closure
  - Nitrate – June during Operations
  - Nitrite – all months during Operations
  - Cadmium – all months during Operations and September, December, and March during Post-closure
  - Copper – all months during Closure and Post-closure
  - Zinc – all months during Operations and December, March, and June during Post-closure
- East Branch of Salt Cove Brook:
  - Copper – all months during Operations and December and March during Post-closure
- Salt Cove Brook (WS-10):
  - Copper – June during Operations
  - Iron – September and June during all phases

Elevated detection limits above long-term guidelines and a high percentage of non-detect data in the existing conditions and source terms data, particularly for cadmium and cobalt, contributed to the projected long-term guideline exceedances and overall uncertainty in the projections of these parameters. Further assessment of the short-term and long-term guideline exceedances is discussed in Section 6.6.

The following conservative assumptions, incorporated into the surface water quality model, are potential sources of uncertainty in the projected concentrations:

- Use of detection limits as inputs for non-detect data, which may result in overprediction for arsenic, cadmium, cobalt, mercury, selenium, thallium, and vanadium.
- Use of surrogates as inputs for proposed project components and receiving environment nodes without monitoring data (e.g. West Branch of Salt Cove Brook).
- Discharge management, such as changing the split of mine water between the two sedimentation ponds was not considered. A sensitivity analysis of this mitigation demonstrated this can be effective management option to keep concentrations of nitrate + nitrate nitrogen below the NFLD ECWSR 65/03 limit in the discharge from the West Pond.
- Not considering the effects of suspension settling in sedimentation ponds on concentrations of total metals.

The conservatism associated with the predictions may result in an overestimation of the projected concentrations of some constituents as there is low confidence in some of the

model inputs. Follow-up water monitoring programs should increase confidence in the model inputs over time as more data are collected.

Table 6.5-16: Summary of Residual Effect Characterization at Shoal Cove Pond Outflow (WS-5) Related to: Changes to water quality due to pit dewatering, water diversions and discharges, and leaching from stockpiles

Criteria	Rating	Rationale
Magnitude	Nitrite - Low	Projected concentrations are greater than long-term chronic guideline and existing conditions
	Copper - Low	
Extent	Local	Effects are limited to the LSA
Duration	Nitrite - Operations	Effects occur during Operations only
	Copper - Operations	
Frequency	Nitrite: Operations - June	Effects occur during June
	Copper: Operations - December and June	Effects occur during December and June
Reversibility	Nitrite: Reversible	Concentrations decrease to within 10% of existing conditions during closure when pit dewatering stops and remain within 10% of existing conditions during Post-closure
	Copper: Reversible	
Likelihood	Nitrite: Highly likely	Pit dewatering will be required in order to facilitate mining and is unavoidable during operations. During Post-closure the pit will continue to overflow for the foreseeable future
	Copper: Highly likely	

Table 6.5-17: Summary of Residual Effect Characterization at Hares Ears Pond Outflow Related to: Changes to water quality due to pit dewatering, water diversions and discharges, and leaching from stockpiles

Criteria	Rating	Rationale
Magnitude	Fluoride - Low	Projected concentrations are greater than long-term chronic guideline and existing conditions
	Nitrate - Low	
	Nitrite - Low	
	Cadmium - Low to Moderate	Projected concentrations are greater than long-term chronic and short-term acute guidelines and existing conditions
	Copper - Low	Projected concentrations are greater than long-term chronic guideline and existing conditions
	Zinc - Low to Moderate	Projected concentrations are greater than long-term chronic and short-term acute guidelines and existing conditions
Extent	Local	Effects are limited to the LSA
Duration	Fluoride - Operations and Post-closure	Effects occur during Operations and Post-closure
	Nitrate - Operations	Effects occur during Operations only
	Nitrite - Operations	
	Cadmium - Operations and Post-closure	Effects occur during Operations and Post-closure
	Copper - Operations and Post-closure	
	Zinc - Operations and Post-closure	
Frequency	Fluoride: Operations - Continuous Post-closure - September and December	Effects occur in all months during Operations and occur in September and December during Post-closure
	Nitrate: Operations - June	Effects occur during June
	Nitrite: Operations - Continuous	Effects occur in all months
	Cadmium: Operations - Continuous Post-closure - September, December, and March	Effects occur in all months during Operations and occur in September and December during Post-closure
	Copper: Operations and Post-closure - Continuous	Effects occur in all months during Operations and Post-closure
	Zinc: Operations - Continuous Post-closure - December, March, and June	Effects occur in all months during Operations and occur in December, March, and June during Post-closure

Criteria	Rating	Rationale
Reversibility	Fluoride: Reversible/Irreversible	Concentrations decrease to within 10% of existing conditions during closure when pit dewatering stops. However, concentrations increase during Post-closure due to pit lake decanting.
	Nitrate: Reversible/Irreversible	
	Nitrite: Reversible	Concentrations decrease to within 10% of existing conditions during closure when pit dewatering stops and remain within 10% of existing conditions during Post-closure
	Cadmium: Reversible/Irreversible	Concentrations decrease to within 10% of existing conditions during closure when pit dewatering stops. However, concentrations increase during Post-closure due to pit lake decanting.
	Copper: Reversible/Irreversible	
	Zinc: Reversible/Irreversible	
Likelihood	Fluoride: Highly likely	Pit dewatering will be required in order to facilitate mining and is unavoidable during operations. During Post-closure the pit will continue to overflow for the foreseeable future.
	Nitrate: Highly likely	
	Nitrite: Highly likely	
	Cadmium: Highly likely	
	Copper: Highly likely	
	Zinc: Highly likely	

Table 6.5-18: Summary of Residual Effect Characterization at East Branch of Salt Cove Brook Related to: Changes to water quality due to pit dewatering, water diversions and discharges, and leaching from stockpiles

Criteria	Rating	Rationale
Magnitude	Copper - Low	Projected concentrations are greater than long-term chronic guideline and existing conditions
Extent	Local	Effects are limited to the LSA
Duration	Copper - Operations and Post-closure	Effects occur during Operations and Post-closure
Frequency	Copper: Operations - Continuous Post-closure: December and March	Effects occur in all months during Operations and occur in December and March during Post-closure
Reversibility	Copper: Reversible	Concentrations decrease to within 10% of existing conditions during closure when pit dewatering stops and remain within 10% of existing conditions during Post-closure
Likelihood	Copper: Highly likely	Pit dewatering will be required in order to facilitate mining and is unavoidable during operations. During Post-closure the pit will continue to overflow for the foreseeable future

Table 6.5-19: Summary of Residual Effect Characterization at Salt Cove Brook (WS-10) Related to: Changes to water quality due to pit dewatering, water diversions and discharges, and leaching from stockpiles

Criteria	Rating	Rationale
Magnitude	Copper - Low	Projected concentrations are greater than long-term chronic guideline and existing conditions
	Iron - Low	Projected concentrations are greater than long-term chronic guideline and existing conditions
Extent	Local	Effects are limited to the LSA
Duration	Copper - Operations	Effects occur during Operations only
	Iron - Operations, Closure, and Post-closure	Effects occur during all phases
Frequency	Copper: Operations - June	Effects occur during June
	Iron: Operations, Closure, and Post-closure - September and June	Effects occur in September and June during all phases
Reversibility	Copper: Reversible	Projected concentrations are less than existing conditions in all months and phases except June during operations
	Iron: Reversible/Irreversible	Projected concentrations are higher than existing conditions in September during all phases; however, concentrations decrease to within 10% of existing conditions in December, March, and June during all phases
Likelihood	Copper: Highly likely	Pit dewatering will be required in order to facilitate mining and is unavoidable during operations. During Post-closure the pit will continue to overflow for the foreseeable future
	Iron: Unlikely	Pit dewatering will be required in order to facilitate mining and is unavoidable during operations and during Post-closure the pit will continue to overflow for the foreseeable future. However, “unlikely” likelihood rating resulted from uncertainty in the projected concentrations of iron at this location due to the conservatively high source term value in the non-contact water assumed for the East Branch of Salt Cove Brook (Appendix 6.5-2)

6.5.7 Identification of Potential Cumulative Effects

Identified potential residual effects of the Project are limited to the LSA (specifically in the vicinity of Hares Ears Pond) but have the potential to overlap with the effects of other existing or future projects, including existing operations at the AGS Mine and TMF. A monitoring and discharge plan will be developed to manage the portion of mine water going to the West Pond and East Pond such that exceedances for the NFLD ECWSR 65/03 limit would not be expected to occur. Additionally, hydrometric, water level, and water quality monitoring programs will be implemented, and a bathymetric survey of Hares Ears Pond will be completed, as described in the below section, in order to better understand existing conditions and the potential for cumulative effects and to verify the conclusions of this assessment.

6.5.8 Follow up and Monitoring Programs

Follow-up and monitoring programs are proposed to verify the accuracy of the effects assessment and the effectiveness of the mitigation measures. The follow-up program should be refined according to consultation with the public and interested stakeholders and provincial and federal regulators, as relevant.

Limited hydrologic and bathymetric data are available within the LSA. As such, the baseline characterization and effects assessment rely on several assumptions which will be refined through additional data collection (e.g., pre-construction monitoring), where feasible, to reduce uncertainty, including the following (further details in Table 6.5-20):

- Hydrometric and water quality monitoring will be conducted for receiving environment brooks within the LSA, in order to better define flow and water quality conditions and confirm assessment results.
- Water level monitoring will be conducted at the outlets of receiving environment ponds within the LSA, and a bathymetric survey is recommended for Hares Ears Pond to better define storage within the water balance and refine assessment results for potential flooding concerns.
- A monitoring and discharge plan will be developed to manage the portion of mine water going to the West Pond and East Pond such that exceedances for the NFLD ECWSR 65/03 limit would not be expected to occur.

Table 6.5-20: Summary of Follow up Programs

Information Need	Description	Data Gap	Follow Up Program
Streamflow Data	Hydrometric data from receiving environment locations are required to characterize existing hydrological conditions.	Existing hydrometric data is available in the LSA for Outflow of Unnamed Pond south of Long Pond (ECCC 02ZG007), for 2016 to 2023, based on current record on ECCC; however, no long-term continuous hydrometric data are available at other locations within the LSA. This represents a data gap for characterizing site-specific streamflow conditions within the LSA.	Commence hydrometric monitoring at the following locations within the LSA (Figure 6.5-1): • Shoal Cove Brook (WS-5) • Unnamed Tributary to Shoal Cove • Hares Ears Pond • Salt Cove Brook (WS-10) Hydrometric monitoring should include continuous stage/water level monitoring, paired with monthly spot flow measurements at a range of flow conditions, to support development and maintenance of stage-discharge relationships. Monitoring should begin prior to construction and continue through operations, where required, to support assessment of potential Project effects on streamflow.
Water Level Data	Water level data for mine-related reservoirs and neighbouring ponds are required to support understanding of the existing water balance.	Existing water level data is available in the LSA for the Tailings Management Facility (2024 to 2025). Existing water level data is available in the RSA for the following stations: • AGS Grebes Pit (2024 to 2025) • AGS Center Pit (2025) • John Fitzpatrick Pond near Outlet (ECCC 02ZG008), for 2022 to 2023. However, no site-specific water level data are available for key ponds within the LSA (e.g., Shoal Cove Pond and Hares Ears Pond). This represents a data gap for characterizing baseline water level conditions within the LSA.	Commence water level monitoring at the following locations within the LSA (Figure 6.5-1): • Shoal Cove Pond • Hares Ears Pond Water level monitoring should consist of a water level logger, paired with a geodetic survey point to serve as a benchmark for relative water levels.

Information Need	Description	Data Gap	Follow Up Program
Water Quality Data	Water quality data within the LSA and RSA are required to further characterize existing conditions and monitoring future changes.	Existing water quality data are available within the LSA. There are gaps in the frequency of sample collection, the spatial coverage, and the list of water quality constituents.	Increase the frequency of sample collection at the following locations to monthly (Figure 6.5-1): • Clarke's Pond Brook (WS-2) • Shoal Cove Pond Brook (WS-5) • Salt Cove Brook (WS-10) Continue quarterly sampling at locations upstream of the project area (Figure 6.5-1): • Hay Pook Pond Brook East (WQ-STA-27) • Hay Pook Pond Brook West (WQ-STA-26) Commence monthly water quality monitoring at the following locations within the LSA (Figure 6.5-1): • Unnamed Tributary to Shoal Cove • Hares Ears Pond • West Branch of Salt Cove Brook Update list of water quality constituents tested at each monitoring location to include the following: • In-situ field measurements (pH, specific conductivity, temperature, and dissolved oxygen); • Conventional parameters (e.g., pH, specific conductivity, hardness, alkalinity, total dissolved solids); • Major ions (e.g., calcium, chloride, fluoride, magnesium, potassium, sodium, and sulphate); • Nutrients (nitrate, nitrite, orthophosphate, and total and dissolved phosphorus); • Total and dissolved metals
Bathymetric Data	Bathymetric data will be required in order to characterize the storage capacity of water bodies that could be impacted by the project.	Bathymetric data is available for Shoal Cove Pond. There remains a bathymetric data gap for Hares Ears Pond.	Obtain bathymetric survey of Hares Ears Pond.

6.6 Fish and Fish Habitat

The following sections include the assessment of the Fish and Fish Habitat Valued Component (VC). Fish and Fish Habitat have been identified as a VC for the South Ridge Project due to ecological importance and regulatory protection under federal and provincial legislation. Freshwater environments within the Project Area support fish habitat that may be influenced by Project activities.

For purposes of this assessment, the Fish and Fish Habitat VC include freshwater and diadromous fish species and their associated freshwater habitats, including all life stages (e.g., eggs, larvae, juveniles, and adults). Marine fish are not included in this VC. Although freshwater systems within the Regional Study Area (RSA) ultimately discharge to the marine environment, the scope of this assessment is limited to freshwater environments and fish habitat occurring within the Project Area (PA), Local Study Area (LSA), and RSA. We have also paid special attention to fish Species at Risk (SAR) and Species of Conservation Concern (SOCC). SAR include any species listed as Endangered, Threatened, or Special Concern on Schedule 1 of the federal *Species at Risk Act* (SARA) or on the Newfoundland and Labrador *Endangered Species Act* (NL ESA) (see Sections 6.6.1.1 and 6.6.1.2, below). Species of Conservation Concern are not federally or provincially listed but are rare in the province and/or the long-term sustainability of their population(s) is in question. For the purposes of this VC, fish SOCC are those species recommended for listing under SARA Schedule 1 by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or species recommended for listing under the NL ESA by the Species Status Advisory Committee.

The following subsections present:

- Regulatory context applicable to the VC;
- Scoping of the VC assessment including boundaries and indicators;
- Existing conditions of the VC;
- Project components or activities that may interact with this VC and the potential effects related to the interactions;
- Proposed mitigation and management measures to manage the potential effects;
- Characterization of identified residual adverse effects of the Project;
- Summary of potential cumulative effects; and
- Overview of follow-up programs related to the monitoring and management of potential effects on this VC as needed.

6.6.1 Regulatory Context for the Management of Fish and Fish Habitat

The following legislation and regulations were reviewed and considered in the effects assessment for the Fish and Fish Habitat VC.

6.6.1.1 Federal Guidelines

6.6.1.1.1 *Fisheries Act*

Fish and their habitats are protected under the federal *Fisheries Act*, which prohibits works, undertakings, or activities that result in the harmful alteration, disruption, or destruction (HADD) of fish habitat unless authorized. Under the act, “fish” are defined to include all life stages of fish, including eggs, sperm, spawn, larvae, and juvenile stages.

Fish habitat is defined as waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes, including spawning, nursery, rearing, feeding, and migration areas. The *Fisheries Act* also prohibits the deposition of deleterious substances into waters frequented by fish, except as authorized by regulation.

6.6.1.1.2 *Species at Risk Act*

Federal SAR listed as extirpated, endangered, or threatened under SARA are afforded protections such that it is not permitted to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of that species or any part or derivative of such an individual. Protections under SARA are also afforded to the residence(s) of such species, prohibiting their damage or destruction by any person, if a recovery strategy has recommended the reintroduction of that species into the wild in Canada.

6.6.1.1.3 Fish Habitat Compensation Agreement

A *Fisheries Act* Authorization was issued by Fisheries and Oceans Canada (DFO) in 1997 for activities affecting fish habitat within the Shoal Cove watershed, including Shoal Cove Pond, Shoal Cove Brook, and Clarke's Pond Brook (See Appendix 6.6-2. 1997 *Fisheries Act* Authorization and Agreement). As part of this authorization, a Fish Habitat Compensation Agreement was established to ensure no net loss of fish habitat within the affected system (CFI 2015).

Subsequent project developments required updates to the original authorization. In 2012, an amendment to the 1997 Fisheries Act Authorization was requested, and an updated Fish Habitat Compensation Plan (now referred to as an Offset Plan) was submitted to DFO to address impacts associated with the Tailings Management Facility (TMF), Clarke's Pond cutoff wall, and associated diversion channel (AMEC 2012; CFI 2015). A *Navigation Protection Act* (now renamed to the Canadian *Navigable Waters Act*) approval was also issued by Transport Canada in 2012 for the construction of the Clarke's Pond cutoff wall (CFI 2015).

The amended authorization and associated compensation/offset plans were reviewed and accepted by DFO (AMEC 2012; CFI 2015). While the overall offsetting approach remained consistent with the original plan, updates were required to reflect changes to the *Fisheries Act* and project design (AMEC 2012; CFI 2015). These updates included reassessment of potential serious harm to fish and fish habitat, refinement of offset measures, as well as submission of a Request for Project Review to DFO (AMEC 2012; CFI 2015).

6.6.1.1.4 Federal Guidelines for the Protection of Aquatic Life

Guidelines for the protection of aquatic life that were considered in the assessment included:

- Environment and Climate Change Canada (ECCC) Federal Environmental Quality Guidelines (FEQGs; ECCC 2024).
- Canadian Council of Ministers of the Environment (CCME) long-term chronic and short-term acute water quality guidelines for the protection of aquatic life (CCME 2019) in the absence of an FEQG.

6.6.1.2 Provincial Guidelines

6.6.1.2.1 Newfoundland and Labrador Wild Life Act

Fish species that are not federally protected (see Section 6.6.1.1, above) are nonetheless afforded protection under the Newfoundland and Labrador *Wild Life Act* (NL WLA), which prohibits the fishing, taking, or killing of fish except via a license or permit. The exception is for speckled (*Salvelinus fontinalis*), brown (*Salmo trutta*), and rainbow trout (Oncorhynchus mykiss), as well as landlocked salmon (ouananiche; *Salmo salar*), which can all be fished by Newfoundland and Labrador residents without a license in non-scheduled waters within season (February 1 to April 15 and May 15 to September 7 in Zone 1, i.e., insular Newfoundland) up to a daily bag limit of 12 fish, or 2.25 kg round weight plus one fish of any of the aforementioned species. As there are no scheduled salmon rivers in the RSA, salmon fishing is not permitted there. Note that the NL WLA also protects non-tidal waters frequented by fish from obstruction or pollution.

6.6.1.2.2 Newfoundland and Labrador Environmental Protection Act

Under the Newfoundland and Labrador *Environmental Protection Act* (NL EPA), it is prohibited to release substances into the environment that may cause an adverse effect, except by special authorization under the Act. In the event of such a release of substances into the environment, the person(s) responsible must immediately report the release to the government of Newfoundland and Labrador Department of Environment, Conservation and Climate Change. It is also prohibited to dispose of waste on land or in water, or to use waste collection and/or disposal facilities or equipment that are not part of an approved waste disposal system. Indeed, the entire environmental assessment process in the province of Newfoundland and Labrador is governed and dictated by the NL EPA and the statutes therein; by these statutes, an undertaking may not proceed in the province until it has been exempted or released under the Act.

6.6.1.2.3 Newfoundland and Labrador Endangered Species Act

In addition to the *Wild Life Act*, certain species that have been assessed to be provincially at-risk by their respective Species Status Advisory Committee or federally at-risk by COSEWIC may be designated under the Newfoundland and Labrador *Endangered Species Act* (NL ESA) as vulnerable, threatened, endangered, extirpated, or extinct. Under the NL ESA, it is prohibited for a person to disturb, harass, injure, or kill individuals of threatened, endangered, or extirpated species, or to capture, possess, purchase, sell, or trade them or their parts or any derivatives thereof. The residences of individuals of these species are also protected from disturbance and destruction by any person.

6.6.1.2.4 Newfoundland and Labrador Water Resources Act

The Newfoundland and Labrador *Water Resources Act* (NL WRA) provides regulations surrounding the alteration of a body of water within the province, including changing the direction of flow, altering the quantity of water, pollution or changing drainage characteristics. It applies to all surface or subterranean sources of fresh or salt water within the jurisdiction of the province (rivers, streams, brooks, creeks, watercourses, lakes, ponds, springs, lagoons, ravines, gullies, canals, wetlands) as well as water above the seabed within provincial boundaries. The Environmental Control Water and Sewage Regulations (ECWSR 65/03) are part of the NL WRA and provide regulations surrounding

sewage and other effluent discharge, which outline maximum allowable concentrations for various pollutants (such as biochemical oxygen demand, suspended solids, metals, temperature and pH limits) in discharges to surface water.

6.6.1.2.5 St. Lawrence Coastal Management Unit

The St. Lawrence Coastal Management Unit is a land use and conservation agreement between the Town of St. Lawrence and the Government of Newfoundland and Labrador, established under the provincial Municipal Habitat Stewardship Program. The Municipal Habitat Stewardship Agreement was signed in October 2013 (amended in 2021) and it currently encompasses an ~400 m inland coastal buffer from the Town's western boundary at the outflow of Three Stick Pond, covering Little Lawn Harbour and a 100 m buffer along the Little Lawn River, along the southern coastline and then east to Cape Chapeau Rouge, excluding a ~150 m coastal section set aside for mine-related infrastructure. Within this Conservation Area, the Town commits to preventing habitat destruction or degradation. As stated in the plan, the Town shall "permit only those activities within the Management Units that have no negative or adverse impact upon the land, or on the wildlife which utilize those areas" and must refer any proposed development within these areas to the Wildlife Division for a mandatory 30-day review. This creates a clear regulatory expectation that all land use decisions consider potential effects on wetlands, coastal habitats, and associated wildlife, including seabirds, waterfowl, and species linked to the nearby Lawn Islands Archipelago Reserve.

6.6.1.3 Municipal Guidelines

The Town of St. Lawrence's Municipal Plan and Development Regulations have been in effect since December 27, 2013 (Town of St. Lawrence 2012a, 2012b). Within the plan, CFI's operations, including the proposed Project Area, have been designated and zoned Mining. Developmental regulations with direct implications for fish and fish habitat are defined in the Use Zone Schedule for Mining; relevant topics include Separation from Adjacent Uses, Water Pollution, Water Ponding, and Erosion Control. Within the Mining Zone the minimum distance from any proposed mining working from a waterbody or watercourse is 50 m, unless the Town is satisfied that the mining activity will not adversely affect the natural feature (Town of St. Lawrence 2012a, 2012b).

6.6.2 VC Scoping

This section provides the scope of the VC, which was used to frame the assessment, including the identification of indicators, pathway of effects, and assessment boundaries. Public and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EARD.

6.6.2.1 Assessment Boundaries

The assessment boundaries for the VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.6.2.1.1 Temporal Boundaries

The temporal boundaries for the Fish and Fish Habitat VC effects assessment are as follows:

- Construction: 6 months.
- Operations: 18 months.
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.6.2.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.6-1.

- Project Area (PA): the physical footprint of Project activities; namely, the Topsoil Stockpile; Overburden Stockpile; Waste Stockpile 1; Waste Stockpile 2; Waste Pad; South Ridge Pit; Access Road Network for the stockpiles and pit; and two Settlement Ponds with associated drainage ditches. In addition, the Project Area includes upgrades to the existing Main Haul Road, Community Access Road, and a new road segment (~250 m) connecting Iron Springs Road with the coastal access road to Hares Ears. The Project Area encompasses 0.58 km^2 as detailed in Section 2.6.1.2.11.
- Local Study Area (LSA): this area includes the PA (58.3 ha) and adjacent freshwater environments that are hydraulically connected to the Project footprint and may be directly or indirectly affected by Project-related surface water runoff, drainage, or sediment transport. The LSA boundaries (2,962.1 ha) are defined based on hydraulic connectivity and watershed drainage patterns, rather than a uniform buffer distance.
- Regional Study Area (RSA): is based upon the Study Area established for the original AGS assessment and the watersheds that interact with Project activities. It was selected to allow for assessment of potential cumulative effects from the Project with the AGS Mine and other relevant activities in the area. The RSA has a total area of 5,730.8 ha.

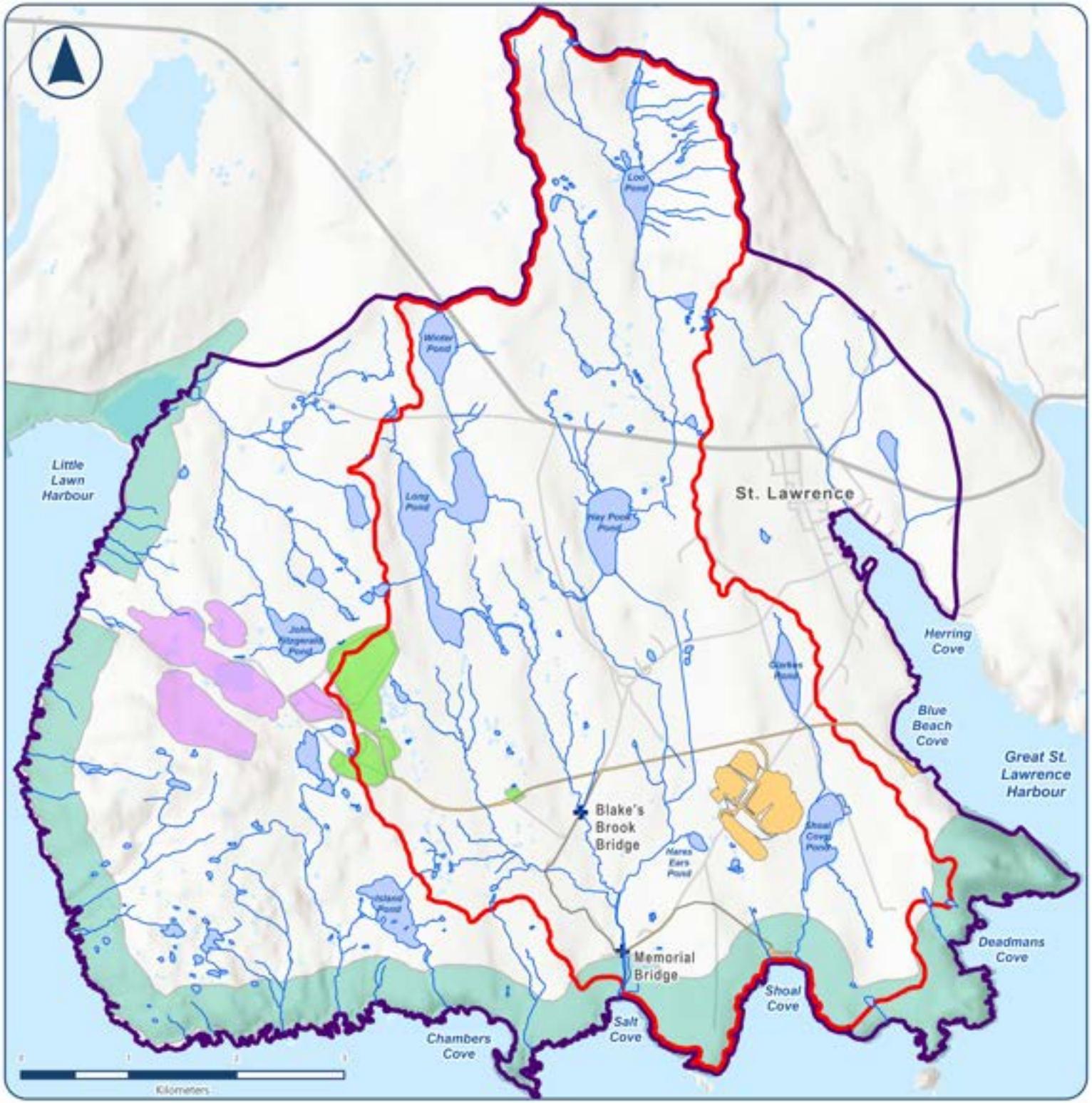


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FIGURE 6.6-1

ASSESSMENT AREAS:
FISH AND FISH HABITAT

22 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area
- St. Lawrence Coastal Mgmt. Unit
- Proposed Bridge Upgrades

Existing AGS Mine Components:

- Existing
- Shared

Scale: 1:50,000
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6.6.3 Existing Conditions

This section describes the methods that established the existing conditions of the Fish and Fish Habitat VC and the description of the existing conditions.

6.6.3.1 Methods

To support the EARD, a review of available information and data sources, including historical baseline studies and Environmental Effects Monitoring (EEM) programs completed for the CFI AGS Mine and surrounding watersheds, was conducted. Where existing data were considered sufficient and representative of current conditions, these data were used to identify fish presence, habitat conditions, and watercourse sensitivity. In fall of 2025, DFO identified data gaps within the PA, which were then surveyed by LGL personnel (LGL 2026) to support the characterization of fish and fish habitat (Appendix 6.6-1 South Ridge Project Fish and Fish Habitat Report).

6.6.3.1.1 Data Sources

Background information and data that were used to describe the baseline conditions for the Fish and Fish Habitat VC included the following:

- Fish and Fish Habitat Surveys (LGL 2026)
- Reactivation of the St. Lawrence Fluorspar Mine at St. Lawrence, NL: Project Registration and Project Description (2009)
- Reactivation of the St. Lawrence Fluorspar Mine: Environmental Preview Report and the Federal Environmental Assessment Screening Report (2009)
- Environmental Assessment Registration: AGS Fluorspar Project, St. Lawrence, NL (2015)
- Freshwater Offset Monitoring Program, Salt Cove Watershed (WSP 2025), including complied data from 2018, 2019, 2020, 2024
- St. Lawrence Fluorspar Marine Shipping Terminal Project: Project description and Project registration (2019)

Application for Authorization Amendment under Paragraph 35(2) of the *Fisheries Act*- AGS Fluorspar Project, St. Lawrence, NL (AMEC 2016).

- Historical fish and fish habitat studies conducted on behalf of Canadian Fluorspar Inc., including studies by ADI Nolan Davis (1990–1996), Fisheries and Oceans Canada (1997), and AMEC (2009)
- Spatial datasets maintained by NL DECCC: Water Resources Management Division:
  - Hydrometric data, Salt Cove Brook (Station NF02ZG0012 and NF02ZG0029)
  - Protected Public Water Supply Areas (PPWSAs; St. Lawrence River WS-S-0699)
- COSEWIC status reports and management plans
- Scientific literature

6.6.3.1.2 Data or Information Limitations

The following data and information limitations were noted for the Fish and Fish Habitat VC:

- Existing information for the Salt Cove Brook watershed is focused primarily on Salt Cove Brook and Hay Pook Pond. Sufficient fish habitat and community data are not publicly available for other features within the watershed (Loo Pond, Winter Pond, Long pond, and associated drainage features).
- Available datasets for the Salt Cove Brook watershed are primarily derived from historical surveys and long-term monitoring programs. Recent, site-specific data are limited outside of EEM and offset monitoring programs.
- No baseline data were identified for benthic invertebrate communities within the RSA, limiting assessment of aquatic productivity.
- No fish or fish habitat data are available for the unnamed tributary watershed, resulting in uncertainty regarding fish presence, habitat characteristics and use.
- Continuous flow monitoring data are not available for Shoal Cove Brook or Unnamed Tributary watersheds resulting in uncertainty in seasonal and interannual flow variability.
- Spatial and temporal variability in water quality exceedances is not fully characterized, limiting the ability to assess potential exposures.

6.6.3.2 Description of Existing Conditions

The RSA is located within the Eastern Hyper-Oceanic Barrens Ecoregion, which is characterized by 200 m or less elevation, strong marine influence, high wind exposure, frequent fog, and cool summer and mild winter conditions (LGL 2026).

Vegetation within the RSA is dominated by tuckamore (balsam fir [*Abies balsamea*]), heath barrens and extensive blanket and plateau bog systems (LGL 2026). These conditions support a high density of small ponds, wetlands, and low-order streams, with limited channel definition and variable hydraulic connectivity.

Freshwater systems within the RSA are typical of coastal headwater environments on the Burin Peninsula, consisting of short, low-gradient watercourses with direct drainage to the marine environment (CFI 2015; LGL 2026). Habitat conditions are influenced by shallow soils, predominantly organic substrates, and hydraulic regimes driven by precipitation and surface runoff (CFI 2015; LGL 2026).

6.6.3.2.1 Watersheds

The following section summarizes fish and fish habitat characterization and baseline conditions relevant to the PA and associated watersheds, with a focus on freshwater environments within the PA, LSA and to a lesser extent, the RSA.

The PA is located within three coastal watersheds that drain southward to the Atlantic Ocean: Salt Cove Brook, Shoal Cove Brook, and a small unnamed tributary (Figure 6.6-2). These watersheds represent the primary pathways interaction within the Project and are therefore the focus of the baseline characterization and effects assessment for the Fish and Fish Habitat VC. These watersheds are characteristic of coastal headwater

systems on the Burin Peninsula and are composed primarily of short, low-order streams, small ponds, and wetlands with direct discharge into the marine environment.

- Salt Cove Brook watershed: drains the western portion of the LSA and includes a series of small ponds and wetland features, with surface water flowing towards Salt Cove
- Shoal Cove Brook watershed: drains the eastern portion of the LSA and includes small ponds and wetland features prior to discharging in Shoal Cove
- Unnamed tributary watershed drains a localized area within the LSA and flows southward towards the coast into Shoal Cove

The St. Lawrence River watershed, which is approximately defined by the Protected Public Water Supply Area (PPWSA) of the same name, is situated outside of the Fish and Fish Habitat RSA and LSA (Figure 6.6-1). For purposes of the Fish and Fish Habitat VC, individual watercourses within the LSA are delineated by pond and stream confluence. Downstream connectivity from freshwater systems to the marine environment is present within all three watersheds; however, connectivity may be influenced by physical features and seasonal flow conditions. The scope of the Fish and Fish Habitat VC is limited to freshwater environments; therefore, marine fish and fish habitat are not considered further in this assessment.

Additional watersheds within the larger RSA include the Grebes Nest, Upper Island Pond, Mine Cove and Northwest Pond watersheds (CFI 2015; AMEC 2016). These systems occur within the broader AGS Mine footprint, are located outside the primary pathway of effect for this Project, and in some instances have been modified as a result of prior mine expansion (e.g., infill of the former Grebes Nest Pond). As such, they are described at a lower level of detail relative to the main three watersheds intersecting the PA and LSA.

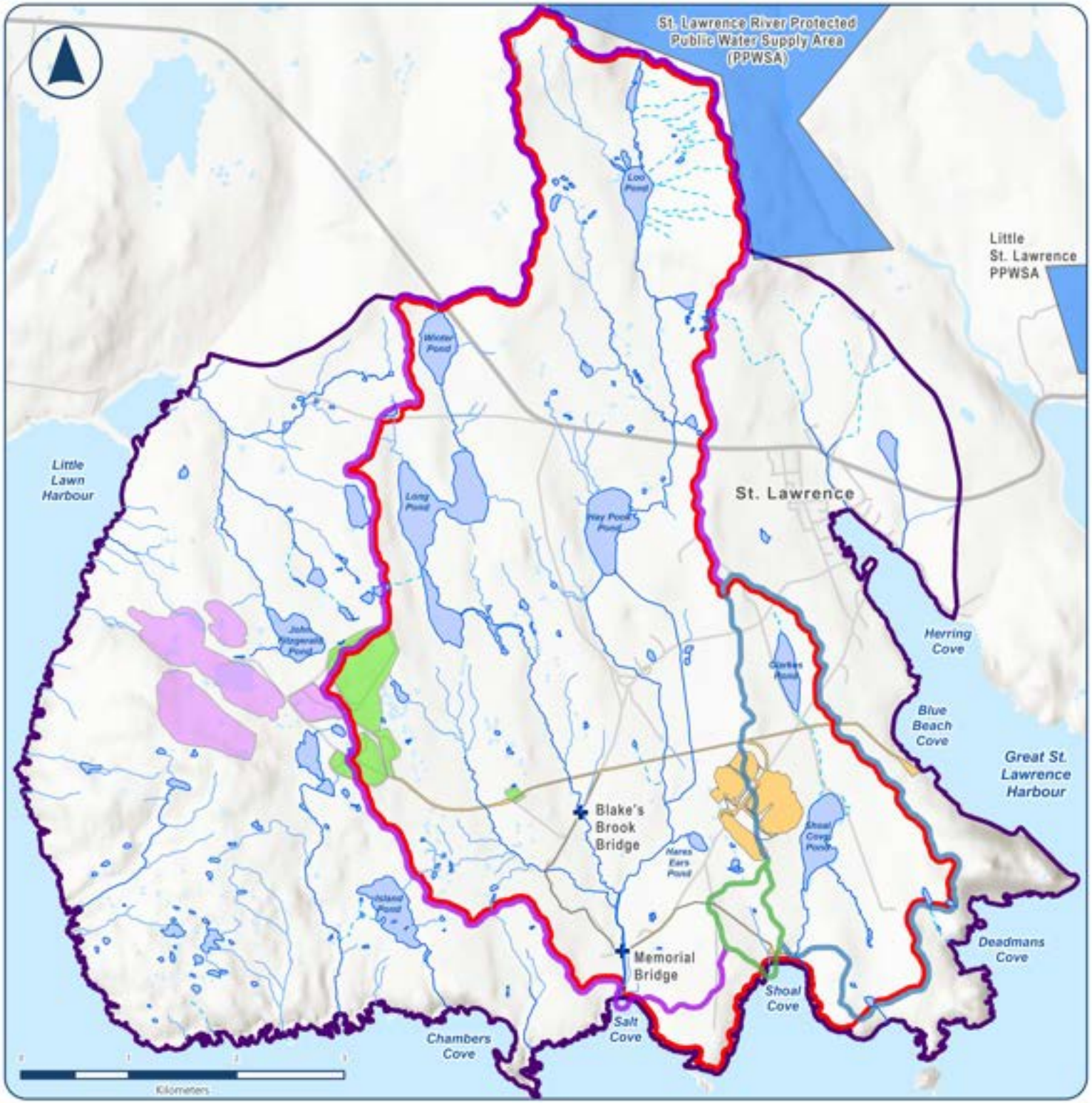

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FIGURE 6.6-2

LOCAL ASSESSMENT AREA: WATERSHEDS

22 APRIL 2026

- Regional Study Area
- Local Study Area
- Project Area
- PPWSA
- Proposed Bridge Upgrades

Existing AGS Mine Components:
- Existing
- Shared

Watershed:
- Salt Cove Brook
- Shoal Cove Brook
- Unnamed Tributary

Watercourse Type:
- Indeterminate
- Intermittent
- Definite

Scale: 1:50,000
when printed on 8 1/2 by 11 inch paper

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6.6.3.2.2 Fish Habitat Characterization

Fish habitat within the RSA includes lacustrine (lentic) and stream (lotic) habitat, along with wetland complexes, and supports key life processes such as spawning, rearing, migration, and overwintering where suitable habitat conditions are present. Habitat characterization is based on a desktop review of hydrology, substrate, flow conditions, aquatic and instream cover, connectivity, and potential barriers to fish movement. Fish habitat for each watershed within the LSA is described below.

6.6.3.2.2.1 Shoal Cove Brook Watershed

The Shoal Cove Brook watershed is approximately 3.9 km^2 in size and contains part of a former tailings facility (AMEC 2012, 2016; CFI 2015) (Figure 6.6-3). The watershed includes two ponds (Clarke's Pond and Shoal Cove Pond), associated wetlands, Clarke's Pond inlet, Clarke's Pond Brook, and Shoal Cove Brook, and Table 6.6-1). Historical mining activities have occurred throughout the watershed and have influenced hydrology, water quality, and habitat conditions (AMEC 2012, 2016; CFI 2015; Environment and Conservation 2026; LGL 2026).

Fish habitat within the Shoal Cove Brook watershed is characterized by a connected network of lacustrine and lotic environments; however, connectivity is locally constrained by physical barriers and may be seasonally influenced by flow conditions (AMEC 2012, 2016; CFI 2015; LGL 2026). Four small diameter pipe culverts and approximately 20 m of large riprap exists about 500 m upstream of Shoal Cove Pond, within Clarke's Pond Brook (LGL 2026). Habitat conditions are influenced by substrate composition, flow conditions, and historical mining activities, which have contributed to fine sediment deposition and altered substrate characteristics (AMEC 2012, 2016; CFI 2015; LGL 2026).

Substrate conditions are variable throughout the watershed, with coarse materials (cobble and boulder) present in stream reaches and finer sediments (silt and muck) more prevalent within pond environments, which may influence the availability of suitable spawning habitat (AMEC 2012, 2016; CFI 2015; LGL 2026).

Wetlands are present in Shoal Cove Brook watershed, particularly between Clarke's Pond and Shoal Cove Pond. The wetlands are hydraulically connected to the broader system but are not considered to provide sustained fish habitat due to seasonal variability (LGL 2026). See Section 6.7 for more information on wetlands.

Table 6.6-1: Fish Habitat in the Shoal Cove Brook Watershed[1]

Watercourse	Dimensions[2]	Flow (m^3/s)	Substrate and Vegetation	Habitat Type	Other Information
Clarke's Pond Inlet	W: 1.2 m D: 0.19 m	0.113	Cobble covered by fine silt	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Good feeding and holding areas for larger fish in deeper pools, pockets, or backwater eddies. Riffle or riffle/run habitat.	Inlet is small stream that winds through fen for approximately 300 m. Primary source was formerly mine drainage prior to mine closure.
Clarke's Pond	D: 1.5 m (avg.) SA: 0.1 km^2	N/A	Thick, muddy bottom in northern portion; rocky substrate in lower quarter Thick aquatic vegetation: pondweed (*Potamogeton* sp.), yellow water lily (*Nuphar variegata*)	Foraging habitat and cover for fish, with limited spawning potential.	Water supplied to pond from underground springs, formerly mine drainage from Clarke's Pond Inlet. Shoreline banks are stable, well-vegetated with grass, alder (*Alnus sp.*), spruce (*Picea sp.*), and fir (*Abies sp.*).
Clarke's Pond Brook	W: 1.6-3.4 m (wetted) W: 6.4-11.8 m (channel) D: 0.07-0.12 m (range)	0.08	Rubble, cobble, gravel with sand, silt; minor proportions of small boulder	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Good feeding and holding areas for larger fish in deeper pools, pockets, or backwater eddies. Riffle or riffle/run habitat.	Brook is ~1,000 m long. Total area of fish habitat is 1,000-4,000 m^2 and areas with suitable spawning substrate are in areas with no cover. Stream banks are variable; some sections affected by vegetation removal (60-m section below Clarkes Pond is primarily composed of exposed soil, gravel, alder, and grass), whereas some sections flow through natural wooded and fen areas.

Watercourse	Dimensions[2]	Flow (m^3/s)	Substrate and Vegetation	Habitat Type	Other Information
Shoal Cove Pond	D: 1.8 m (max.) SA: 0.16 km^2	N/A	Thick layer of fine silt. Patches of emergent pondweed (*Potamogeton sp.)* on east side, northeast and southeast corners	Tailings disposal has resulted in the deposition of tailings throughout the pond.	Shallow throughout, especially at north end. Tailings from settling basins upgradient of the pond have infilled a large portion of the pond (approximately 50%). Water levels fluctuate seasonally.
Shoal Cove Brook	W: 2.1-4.5 m (wetted) W: 5.6-9.2 m (channel) D: 0.09-0.38 m (range)	0.177	Small boulder, rubble, cobble, gravel; minor proportions of sand, silt, and large boulder	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Small areas (less than 1 m long) of migratory habitat with faster-flowing water. During low flow conditions, discharge into Shoal Cove crosses sandy beach with unstable channel, forming barrier to fish passage	Brook is approximately 600 m long. Banks are steep in places and well-vegetated. Lower 70 m of stream before Shoal Cove Beach is marshy. Upper 100 m of brook was diverted from historical route, channelized, and banks have been stabilized with rock due to previous mine tailings management.

Notes:
1 Adapted from Table 6-4 in CFI 2015
2 W = Width; D = Depth; SA = Surface Area
N/A= Not Applicable

6.6.3.2.2.1.1 Pond Habitat

Pond habitat within the Shoal Cove Watershed includes Clarke's Pond (approximately 10.0 ha) and Shoal Cove Pond (approximately 15.7 ha), forming the headwater and mid-watershed components of the system (AMEC 2012, 2016; CFI 2015). Both ponds are shallow and dominated by littoral habitat, with limited or no profundal zones due to their relatively low maximum depths (CFI 2015; LGL 2026).

Clarke's Pond is located upstream of the watershed and historically served as a water source for mining operations in the area and is currently used as a water source for washing facilities and core cutting (AMEC 2012, 2016; CFI 2015; Environment and Conservation 2026). Surface water from Clarke's Pond drains south through wetlands via Clarkes Pond Brook before entering Shoal Cove Pond. Water supply is primarily from groundwater, with historical contributions from mine drainage via Clarke's Pond Inlet (AMEC 2012; CFI 2015). Upstream fish passage into Clarke's Pond is restricted by a grated culvert and rock barrier located within Clarke's Pond Brook, limiting connectivity with downstream habitats (CFI 2015; LGL 2026).

Clarke's Pond has an average depth of approximately 1.5 m and consists of extensive aquatic vegetation including pondweed (*Potamogeton sp.*) and yellow water lily (*Nuphar variegata*), with substrates consisting of organic material in the northern portion and coarser materials in the southern portion (CFI 2015).

Shoal Cove Pond is a shallow pond with water depths of generally less than 1.5 m and a maximum recorded depth of approximately 1.8 m (AMEC 2012; CFI 2015; LGL 2026). The pond receives inflow from Clarke's Pond Brook and discharges via Shoal Cove Brook. A damaged weir is present at the pond outlet, but it no longer restricts fish passage (LGL 2026). Connectivity between Shoal Cove Pond and downstream is generally maintained, although seasonal flow conditions may influence fish passage at the outlet (CFI 2015; LGL 2026).

Shoal Cove Pond consists entirely of littoral habitat with submerged aquatic macrophytes (primarily pondweed) and emergent vegetation (water bulrush) distributed throughout much of the pond (LGL 2026). Substrate within Shoal Cove Pond is dominated by fine materials (silt and muck), particularly in the northern portion of the pond, overlying coarser materials (CFI 2015; LGL 2026).

The dominance of fine substrates reduces the availability of suitable spawning habitat, although localized areas of coarser substrate along the shoreline may provide potential spawning areas, as indicated by the capture of spawned-out brook trout (*Salvelinus fontinalis)* in 2025 (LGL 2026). Shoal Cove Pond provides suitable habitat for fish rearing and migration, with moderate habitat suitability (see Appendix 6.6-1; LGL 2026) for Habitat Suitability Indices (HSI) and Habitat Equivalent Units (HEU) for brook trout, American eel [*Anguilla rostrata*] and Atlantic salmon).

Historical mining activities have influenced substrate conditions within Shoal Cove Pond. From the mid-1930s to 1957, tailings were deposited into Shoal Cove Pond via Clarke's Pond Brook (AMEC 2012, 2016; CFI 2015; Environment and Conservation 2026; LGL 2026). These inputs resulted in the accumulation of fine sediments, particularly at the

northern end of the pond, with approximately 50% of the pond infilled by tailings (CFI 2015; LGL 2026).

Subsequent mining operations (1987-1998) also discharged mine water and effluent into the watershed, with reported exceedances of discharge limits (CFI 2015). These historical inputs have influenced sediment and water quality conditions within the watershed (AMEC 2012; CFI 2015; LGL 2026).

Historical water quality monitoring (1984-2014) indicates pH values ranging from approximately 6.2-8.5 (AMEC 2009, 2012, 2016; CFI 2015). Exceedances of guidelines were reported for fluoride, aluminum, copper, iron, lead, zinc, total suspended solids, and phosphorus, particularly during periods of mining activity and high-flow conditions (CFI 2015).

Dissolved oxygen levels and water temperature data were not identified for this watershed but are assumed suitable for fish given historic capture data (CFI 2015; LGL 2026).

6.6.3.2.2.1.2 Stream Habitat

Stream habitat within the Shoal Cove Brook watershed includes Clarkes Pond Inlet, Clarkes Pond Brook, and Shoal Cove Brook, which form a freshwater system connected between upstream ponds (Clarkes Pond and Shoal Cove Pond) and the marine receiving environment at Shoal Cove Beach.

Clarkes Pond Inlet is approximately 300 m in length and drains from the north into Clarkes Pond (CFI 2015). The inlet is approximately 1.2 m wide and 0.19 m deep, with substrates consisting of cobble overlain by silt (CFI 2015). Instream habitat features include riffles and localized pools, with variable substrates and adjacent wetland vegetation (CFI 2015; LGL 2026).

Downstream of Clarkes Pond, Clarkes Pond Brook flows approximately 1 km into Shoal Cove Pond (CFI 2015). The brook has wetted widths ranging from approximately 1.6 to 3.4 m and depths ranging from ~0.07 to 0.12 m (CFI 2015). Substrates primarily consist of rubble, cobble, and gravel, with smaller amounts of sand, silt, and boulders (CFI 2015). As noted above, fish passage within the reach is limited by a barrier restricting upstream movement into Clarke's Pond (CFI 2015; LGL 2026).

Shoal Cove Brook originates at the outlet of Shoal Cove Pond and flows approximately 600 m south to Shoal Cove Beach (CFI 2015; Environment and Conservation 2026). Wetted widths range from approximately 2.1 to 4.5 m with depths of approximately 0.09 to 0.38 m (CFI 2015; Environment and Conservation 2026). Substrate is dominated by coarse materials (CFI 2015; LGL 2026).

The lower 70 m of Shoal Cove Brook flows through a marshy area prior to reaching the beach (CFI 2015). During low-flow conditions, the mainstream channel may become braided and/or too shallow to consistently provide fish passage (CFI 2015; LGL 2026). The upper 100 m has been diverted due to previous mine tailings management activities altering natural flow patterns (CFI 2015; LGL 2026).

6.6.3.2.2.2 Salt Cove Brook Watershed

The Salt Cove Brook Watershed is located within the RSA and represents one of the primary freshwater systems potentially influenced by the Project. The watershed has a catchment area of approximately 24.7 km^2 and drains southward to the Atlantic Ocean at Salt Cove (CFI 2015). The watershed consists of ponds, wetlands, and connecting drainage features that provide a network of aquatic habitat that supports fish movement, rearing, spawning, and migration from upstream ponds through to the ocean (AMEC 2012, 2016; CFI 2015; LGL 2026).

Available fish and fish habitat information within the watershed is derived primarily from historical environmental assessments, *Fisheries Act* authorizations, compensation planning, and freshwater offset monitoring programs, with a focus on key components of the watershed (AMEC 2009, 2012, 2016; CFI 2015; WSP 2025; LGL 2026). As such, the level of detail available varies across the watersheds, with more comprehensive information available for major waterbodies within primary flow pathways.

Salt Cove Brook has historically been divided into seven sections (Sections A-G; Figure 6.6-3; Table 6.6-2) based on channel characteristics and habitat conditions (CFI 2015; AMEC 2016). More recent monitoring has focused on offset reaches within the upper to mid-reaches of the system, corresponding generally to Sections E and F (WSP 2025).

In addition to baseline habitat characterization, portions of Salt Cove Brook have been subject to habitat enhancement and offsetting works, including the placement of gravel and cobble substrates, installation of low head barriers, and modification of existing structures to improve spawning habitat and connectivity (WSP 2025). Monitoring programs have included assessments of substrate stability, hydrology, and fish habitat utilization (WSP 2025).

Habitat characteristics summarized in Table 6.6-2 indicate that stream sections are generally dominated by coarse substrates (cobble and boulder), with localized areas of gravel and finer materials (AMEC 2012, 2016; CFI 2015). Channelized and historically modified sections (Sections D, E and F) exhibit altered morphology and flow conditions relative to more natural reaches (e.g., Section G), which may influence habitat structure and fish use (CFI 2015).

Connectivity is present throughout the watershed; however, it is locally influenced by physical modifications (e.g., diversions, culverts, and weirs) and may be seasonally variable under different flow conditions (CFI 2015; WSP 2025; LGL 2026). Key features influencing connectivity within the system include a man-made diversion channel from Hay Pook Pond, multiple culvert crossings (including culverts beneath Iron Springs Road connecting Hares Ears Pond to adjacent wetlands), and channelized reaches within Sections D, E and F (CFI 2015; AMEC 2016; LGL 2026).

CFI
CANADA FLUORSPAR INC.

FIGURE 6.6-3

FISH AND FISH HABITAT: PROJECT AREA WATERSHEDS

22 APRIL 2026

- Regional Study Area
- Local Study Area
- Project Area
- Proposed Bridge Upgrades
- Historical Tailings Area
- Watershed Boundary
- Wetland
- Waterbody

Watercourse Type:

- Indeterminate
- Intermittent
- Definite

Scale: 1:28,000
when printed on 8 1/2 by 11 inch paper

LGL

This map and associated spatial data were prepared by LGL Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Fabris Environmental Consultant Ltd. (FEC) and LGL. Data featured in this map has been derived from a variety of digital sources and, as such, FEC/LGL does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Data Sources: CFI, IGBE Base Map, CANVEC data (1:50K), and NL Gov. Spatial Reference Name: NAD83(CSRS)v2 UTM Zone 21N File: CFI_South_Ridge_EIS.aprx Exported on: 2026-04-22 11:11:44 by: SJS

Table 6.6-2: Fish Habitat in the Salt Cove Brook Watershed.[1]

Watercourse	Dimensions[2]	Substrate and Vegetation	Habitat Type	Other Information
Lacustrine				
Loo Pond	SA: 11.2 ha	Data deficient	Potential rearing and holding habitat	Downstream flow to Hay Pook Pond
Hay Pook Pond	SA: 25.8 ha	Data deficient	Rearing, overwintering, and holding habitat for salmonids and American eel	Primary headwater. Documented supporting salmonids. Outflow through man-made diversion channel.
Long Pond	SA: 50.6 ha	Data deficient	Potential rearing and holding habitat	Data deficient
Winter Pond	SA: 14.9 ha	Data deficient	Potential rearing and holding habitat	Downstream flow to Long Pond
Hares Ears Pond	SA: 1.9 ha	Fine silt overlying cobble and boulder; scattered large boulders Extensive submerged aquatic macrophytes.	Entirely littoral, lacustrine. Rearing and foraging habitat	Connected to wetlands via permanent channels and culverts beneath Iron Springs Road
Riverine				
Salt Cove Brook - Section A	L: 440 m W: 13.5 m (wetted) SA: 5,933 m^2	Primarily cobble and boulder substrate.	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Good feeding and holding areas for larger fish in deeper pools, pockets, and backwater eddies. Primarily riffle habitat. Gravel beach sometimes serves as barrier to fish movement	A pond approximately 60 m × 150 m is located on the southern end of the section created by an extensive gravel beach. There is a single pool in the riverine portion and there is little overhanging vegetation or undercut banks.

Watercourse	Dimensions[2]	Substrate and Vegetation	Habitat Type	Other Information
Section B	L: 574 m W: 10.1 m (wetted) SA: 5,739 m^2	Primarily cobble, boulder, and bedrock.	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Good feeding and holding areas for larger fish in deeper pools, pockets, and backwater eddies. Primarily riffle habitat. Small sections of poor rearing habitat with no spawning capabilities, used for migratory purposes.	Greater amount of pool habitat than Section A. The demarcation point separating Sections A and B is the existing Memorial Bridge (clear span).
Section C	L: 1.0 km W: 9.2 m (wetted) SA: 9,631 m^2	Primarily cobble and boulder. Lesser amounts of gravel and sand.	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Good feeding and holding areas for larger fish in deeper pools, pockets, and backwater eddies. Primarily riffle habitat.	Most conducive salmonid habitat with substrate diversity, presence of pools, back eddies, and well-developed morphology.
Section D	L: 312 m W: 6.0 m (wetted) SA: 1,870 m^2	Cobble and boulder.	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Good feeding and holding areas for larger fish in deeper pools, pockets, and backwater eddies. Primarily riffle habitat.	Straight man-made channel section bound by steep banks approximately 3-4 m high. Moderate to steep streambed channels.
Section E	L: 899 m W: 5.1 m (wetted) SA: 4,557 m^2	Cobble and boulder.	Good salmonid rearing habitat; limited spawning habitat in isolated gravel pockets. Good feeding and holding areas for larger fish in deeper pools, pockets, and backwater eddies. Primarily riffle habitat.	Straight man-made channel section bound by steep banks approximately 3-4 m high. Moderate to steep streambed channels.

Watercourse	Dimensions[2]	Substrate and Vegetation	Habitat Type	Other Information
Section F	L: 1.3 km W: 4.9 m (wetted) SA: 6,542 m^2	Cobble, boulder, and gravel.	Good salmonid rearing habitat; good spawning areas, often with pools for larger age classes. Primarily riffle habitat.	Straight man-made channel section bound by steep banks approximately 3-4 m high. Lower slope than Sections D and E.
Section G	L: 1.3 km W: 5.3 m (wetted) SA: 6,635 m^2	Gravel, cobble, and boulder. Gravel substrate heavily embedded due to reduced flow and sedimentation.	Good salmonid rearing habitat; good spawning areas, often with pools for larger age classes. Riffle/run habitat.	Historic, natural section of riverbed. Channel construction resulted in diversion of majority of flow away from this section. Riparian zone well-vegetated, with trees on both banks and better channel morphology than Sections D, E, or F.

Notes:

[1] Adapted from table 6-5 CFI 2015

[2] L = Length; W = Width; D = Depth; SA = Surface Area

6.6.3.2.2.2.1 Pond Habitat

Pond habitat within the Salt Cove Brook watershed consists of several lacustrine features that contribute to the hydrology, connectivity, and fish habitat in the system. Key ponds within the Salt Cove Brook watershed LSA include Hay Pook Pond, Long Pond, Hares Ears Pond, Loo Pond, and Winter Pond, as well as additional smaller ponds and wetland features that support drainage through the watershed (CFI 2015; AMEC 2016; LGL 2026).

Hay Pook Pond is a large pond upstream of the PA and represents a key component of fish habitat within the Salt Cove Brook watershed. The pond is connected to Salt Cove Brook via its outlet, which flows through a man-made diversion channel constructed in the 1950s to redirect surface water away from historical mining areas (CFI 2015; AMEC 2016; WSP 2025). Monitoring programs have documented fish use of the pond, including brook trout, American eel, and Atlantic salmon, and have applied mark-recapture methods to assess habitat utilization following enhancement and connectivity improvements (CFI 2015; AMEC 2016; WSP 2025).

Long Pond is located upstream of Hay Pook Pond and downstream of Winter Pond and contributes to the hydrology of the upper Salt Cove Brook watershed. Detailed habitat characterization data for Long Pond are limited.

Hares Ears Pond is a shallow, completely littoral pond with water depths consistently less than 1.0 m (LGL 2026). Substrates consist primarily of silt overlying cobble and boulder, with submerged and emergent aquatic vegetation distributed throughout the pond (LGL 2026). The pond is hydraulically connected to Salt Cove Brook at its outlet and to upstream wetlands via permanent channels and culverts beneath Iron Springs Road (LGL 2026). HEU calculations identified a substantial proportion of available habitat for brook trout, American eel, and Atlantic salmon (LGL 2026).

Loo Pond and Winter Pond are smaller features within the watershed that contribute to local surface water storage and connectivity. Available information on habitat characteristics within these ponds is limited.

Water quality within the Salt Cove Brook watershed has been assessed at multiple pond and stream locations. Available monitoring data indicate slightly acidic values (approximately 6.3-7.1) (AMEC 2009, 2012, 2016; CFI 2015). Exceedances of applicable guidelines have been reported for parameters including fluoride, total phosphorus, aluminum, cadmium, iron, and lead, reflecting the influence of historical mining activities (AMEC 2009, 2012, 2016; CFI 2015).

6.6.3.2.2.2.2 Stream Habitat

Stream habitat within Salt Cove Brook watershed is represented primarily by Salt Cove Brook itself, which forms the main surface water conveyance feature between Hay Pook Pond and the marine receiving environment at Salt Cove (CFI 2015). The system also includes tributaries (T-1 and T-2) that drain from the west, and a network of smaller drainage channels that provide hydraulic connectivity throughout the watershed (CFI 2015).

The lower reach of Salt Cove Brook (Sections A-B) extends from the mouth of Salt Cove upstream to the confluence with T-2 (CFI 2015). This reach is influenced by coastal processes, including a gravel beach at the stream mouth that may restrict fish passage

during low-flow conditions (CFI 2015). Substrates are dominated by cobble and boulder, with limited gravel (CFI 2015).

The middle reach (Sections C-E) extends upstream through a combination of natural and modified stream segments. Substrates are generally dominated by cobble and boulder, with localized gravel deposits. Habitat features include riffle-pool sequences, eddies, and areas of variable channel morphology (CFI 2015). Portions of the reach (particularly within Section E) correspond to offset areas where enhancement has occurred, and monitoring indicates that placed materials have generally remained stable, with only minor downstream redistribution observed (WSP 2025).

The upper reach (Sections F-G) includes both the diversion channel and the historic stream bed. The diversion channel is a straight, engineered feature with steep banks and coarse substrates (CFI 2015). Habitat enhancement activities in this reach (Section F) included the placement of spawning substrates and installation of low-head barriers to improve habitat complexity and connectivity. Monitoring indicates that these features are generally functioning as intended, although localized scour and substrate movement have been observed (WSP 2025).

The historic stream channel (Section G) represents the former natural alignment of Salt Cove Brook. Following diversion, this section has reduced flow, resulting in areas of standing water and embedded substrates due to sediment accumulation. However, the channel retains well-developed riparian vegetation and more natural channel morphology relative to the diversion channel (CFI 2015).

Substrate conditions within Salt Cove Brook are generally characterized by coarse materials (gravel, cobble, and boulder), with limited aquatic vegetation due to higher flow velocities (CFI 2015; AMEC 2016; LGL 2026). Field observations indicate that flow conditions can vary in response to precipitation, with elevated flows observed during recent assessments (LGL 2026). Hydraulic conditions are variable and influenced by precipitation, with available data representing discrete measurements rather than continuous flow records (WSP 2025; LGL 2026).

Fish habitat utilization within Salt Cove Brook includes documented use of enhanced reaches for spawning and rearing, with repeated observations of young-of-year (YOY) brook trout indicating successful reproduction within the system (WSP 2025). Redd surveys and electrofishing data further support continued use of these habitats by salmonids, particularly within areas where spawning substrates have been enhanced (WSP 2025).

6.6.3.2.2.3 Unnamed Tributary Watershed

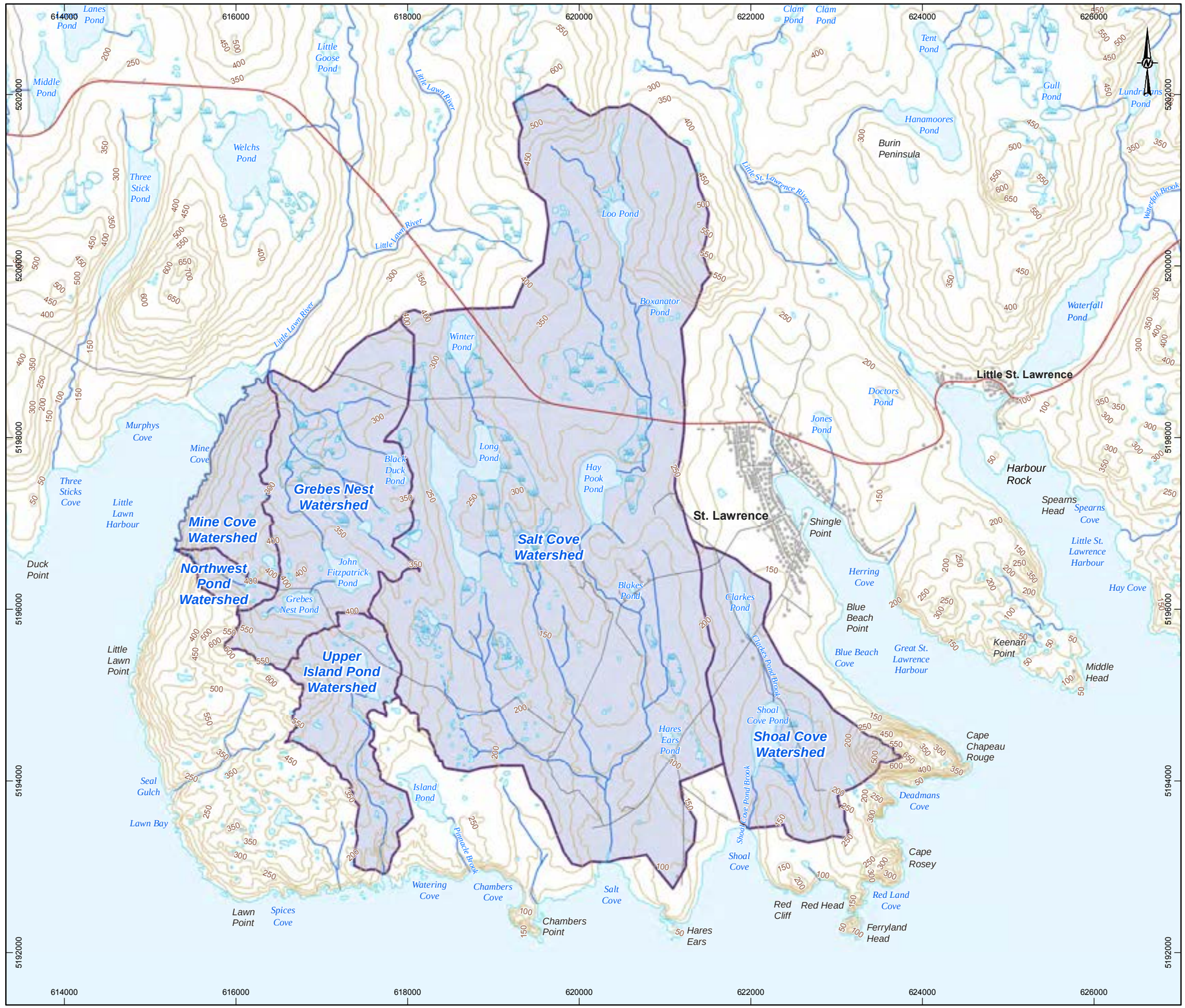
No information is available on the fish habitat in the Unnamed Tributary watershed. As such, a detailed characterization of habitat features (e.g., substrate composition, flow conditions, instream cover, and connectivity) is not available.

It is anticipated that the fish and fish habitat within the watershed may be broadly similar to those in nearby systems, including the Shoal Cove Brook and Salt Cove Brook watersheds; however, this assumption has not been verified through field investigation.

Potential limitations to fish passage (e.g., physical barriers, low flow conditions, or channel instability) have not been assessed and therefore are a source of uncertainty.

6.6.3.2.2.4 Additional Watersheds within the RSA

In addition to the Salt Cove Brook and Shoal Cove Brook watersheds, several watersheds occur within the RSA, including the Grebes Nest, Upper Island Pond, Mine Cove and Northwest Pond watersheds (CFI 2015; AMEC 2016) (Figure 6.6-4). These watersheds were previously assessed as part of the AGS Fluorspar Project (CFI 2015; AMEC 2016).



LEGEND

WATERSHED

- Watershed Area

TOPOGRAPHY

- Building
- Highway
- Road
- Contour Line (interval: 50 ft)
- Watercourse
- Waterbody
- Wetland

0 1 2

Kilometres
1:45 000

REFERENCE

SOURCE(S): DEVELOPMENT REGULATIONS 2011 LAND USE ZONING MAP 1, JAN. 19, 2013, TOWN OF ST. LAWRENCE; GEOSCIENCE ATLAS, GOVERNMENT OF NEWFOUNDLAND AND LABRADOR; CANVEC & CANVEC+, 1: 50 000 SCALE, NRCAN.

DATUM: NAD 83. PROJECTION: UTM ZONE 21.

CLIENT

CANADA FLUORSPAR INC.

PROJECT

AGS MINE PROJECT, ST. LAWRENCE NL
WATER MANAGEMENT PLAN

TITLE

Figure 6.6-4
EXISTING WATERSHEDS

CONSULTANT

Golder Associates

YYYY-MM-DD	2015-05-25
DESIGN	CC
GIS	ED
REVIEW	DJM
APPROVED	DJM

PROJECT No. 14-07707 | Rev. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B 279mm x 432mm

Path: H:\Projets\Canada Fluorspar\St-Lawrence_NL_Mines\PROJECT\14-07707_EA_AGS_Mine_St-Lawrence\14-9_Water Management Plan\MXD\Rev0\14-07707-4-9_Figure_1_Existing_Watersheds_20150715.mxd

Portions of Grebes Nest and Mine Cove watersheds have been altered as a result of AGS Mine development (WSP 2025). Specifically, Grebes Nest Pond and Mine Cove Pond, along with associated stream sections, were removed to facilitate the development of the AGS vein (WSP 2025).

The loss of waterbodies and associated fish habitat was addressed through implementation of a fish habitat offsetting plan, which included habitat enhancement and connectivity improvements within the Salt Cove Brook watershed (WSP 2025).

The Upper Island Pond and Northwest Pond watersheds remain within the RSA; however, available information on fish habitat characteristics within these systems is limited (CFI 2015). These watersheds are not directly connected to Project activities and are described for regional context only.

6.6.3.2.2.5 Adjacent Wetlands

Wetland habitats within the LSA provide limited and localized fish habitat, primarily where permanent flow paths and hydraulic connectivity are present (LGL 2026). Fish habitat information for wetlands within the RSA is limited, with the exception of areas north of Hares Ears Pond and east of Shoal Cove Pond (LGL 2026). Where connectivity is maintained, wetlands may provide rearing and foraging habitat; however, their overall contribution to fish habitat within the LSA is considered limited. For detailed information on direct and indirect fish habitat within these wetlands see Appendix 6.6-1 South Ridge Project Fish and Fish Habitat Report).

Adjacent wetlands at the periphery of Shoal Cove Pond and Hares Ears Pond include a combination of permanent and temporary ponds, vegetated channels, and wetland flow paths (LGL 2026). Wetlands southeast of Hares Ears Pond include permanent surface-water channels and small ponds that are directly connected via culverts beneath Iron Springs Road (LGL 2026). These features extend for approximately 400 m and exhibit characteristics indicative of permanent aquatic habitat, including defined channels and macrophyte growth (LGL 2026). These connected wetland features represent areas of direct fish habitat and provide localized habitat functions where flow and connectivity are sustained (LGL 2026).

In contrast, other portions of the wetland complexes contain isolated or seasonally dry ponds and are not considered to provide fish habitat connectivity (LGL 2026). Wetlands adjacent to Shoal Cove Pond include small drainage channels; however, these features are limited in extent and were not observed to support permanent fish habitat (LGL 2026).

6.6.3.2.3 Fish Communities

Within the RSA, fish communities are typical of small coastal watersheds on the South Coast of Newfoundland and are composed primarily of brook trout, Atlantic salmon, American eel, and nine-spine stickleback (*Pungitius pungitius*) (CFI 2015; WSP 2025; LGL 2026). These species utilize freshwater environments within the Salt Cove Brook and Shoal Cove Brook watersheds for life processes including spawning, rearing, migration, and overwintering, where habitat conditions are suitable (CFI 2015; WSP 2025; LGL 2026). Fish distribution within these watersheds is influenced by habitat connectivity and local environmental conditions, including water quality and physical barriers to fish passage.

Baseline information on benthic invertebrate communities within the RSA is limited. Historical visual surveys conducted in 1990 described benthic invertebrates as “extremely scarce” (CFI 2015); however, more recent observations documented the presence of predaceous diving beetle (family *Dytiscidae*) within wetlands adjacent to Hares Ears Pond (LGL 2026).

Atlantic salmon and American eel rely on both freshwater and marine environments to complete their life cycle. Atlantic salmon migrate to freshwater systems to spawn, with juveniles rearing in streams and ponds prior to migration. American eel spawn in the marine environment and utilize freshwater habitats for rearing, growth, and overwintering. Brook trout are resident freshwater fish that complete their entire life cycle in freshwater systems.

6.6.3.2.3.1 Shoal Cove Brook Watershed

Fish communities within the Shoal Cove Brook watershed are less documented compared to the Salt Cove watershed. Available information indicates the presence of brook trout and American eel, typically at lower abundances compared to nearby watersheds (CFI 2015; LGL 2026).

Brook trout in Shoal Cove Pond is reported to be of smaller size than those in Clarkes Pond, indicating they may be of lower health (CFI 2015; AMEC 2016). However, historical data also indicate that fish within the Shoal Cove watershed may be larger than those within the Salt Cove watershed, highlighting variability in available datasets (CFI 2015).

Brook trout exhibiting black spot disease (a parasitic condition caused by trematodes resulting in dark cysts on the skin) have been observed within Shoal Cove Pond (AMEC 2012, 2016; CFI 2015; LGL 2026). In contrast, brook trout in Clarkes Pond were not observed to exhibit black spot (AMEC 2012, 2016). This suggests potential differences in habitat conditions or population structure (AMEC 2016).

6.6.3.2.3.2 Salt Cove Brook Watershed

Salt Cove Brook watershed has the most well documented fish communities in the RSA. Fish species confirmed within the watershed include Atlantic salmon, brook trout, American eel, and nine-spine stickleback (CFI 2015; WSP 2025; LGL 2026).

Salt Cove Brook provides suitable habitat for multiple life stages of salmonids, including rearing, migration, and localized spawning within gravel substrates (CFI 2015; WSP 2025; LGL 2026). Several sections of the watershed, including Hay Pook Pond, Hares Ears Pond, and the brook, support feeding, holding, rearing, and overwintering habitat, as well as spawning areas (CFI 2015; WSP 2025; LGL 2026).

6.6.3.2.3.3 Unnamed Tributary Watershed

No site-specific information is available on fish communities within the unnamed tributary watershed. In the absence of site-specific data, fish presence is considered possible where suitable habitat and connectivity exist; however, species composition, distribution and abundance have not been confirmed in this watershed.

6.6.3.2.3.4 Additional Watersheds within the RSA

Fish population surveys conducted in 2014 indicate that watersheds associated with the AGS Vein support brook trout, American eel, and Atlantic salmon (CFI 2015). Brook trout

and American eel were widely distributed throughout surveyed stream sections, including reaches between Grebes Nest Pond and John Fitzpatrick Pond and downstream to the marine environment, whereas Atlantic salmon were restricted to lower reaches near the ocean confluence (CFI 2015). Within Grebes Nest Pond and John Fitzpatrick Pond, only brook trout and American eel were recorded, indicating limited use of these ponds by Atlantic salmon (CFI 2015).

Subsequent development of the AGS Mine resulted in the removal of Grebes Nest Pond and Mine Cove Pond and associated stream sections; therefore, the 2014 survey results reflect historical conditions but may not represent current fish distribution within these watersheds (WSP 2025).

6.6.3.2.3.5 Adjacent Wetlands

Fish sampling within the wetlands yielded limited results, with only isolated captures of brook trout in areas directly connected to Hares Ears Pond (see Appendix 6.6-1 South Ridge Project Fish and Fish Habitat Report). These observations indicate that fish use of wetland habitats is limited and restricted to areas with direct hydraulic connection to adjacent waterbodies, with little evidence of sustained fish occupancy in isolated or seasonally disconnected wetland features (LGL 2026).

6.6.3.2.4 Species at Risk

There are three fish SAR/SOCC that could potentially occur in the Project LSA (Table 6.6-3). American eel has been documented within both the Salt Cove watershed and Shoal Cove watershed (CFI 2015; WS 2025). The species is listed as *Threated* by COSEWIC and *Vulnerable* under the NL ESA but is not listed under SARA (COSEWIC 2012; NL ESA 2025; SARA 2026). Newfoundland, along with Anticosti Island (Quebec), forms part of the Atlantic Islands National Freshwater Biogeographic Zone NFBZ8 (COSEWIC 2012).

The South Newfoundland Atlantic salmon population designatable unit (DU) has been deactivated as of December 2025 (COSEWIC 2025). A revised population structure was proposed and accepted by COSEWIC resulting in the division of the original population into two distinct DUs: South Newfoundland East, and South Newfoundland West (COSEWIC 2025). The population present within the RSA is thus now part of the South Newfoundland East DU. COSEWIC determined this population to be of *Special Concern* in December 2025 (COSEWIC 2025) and it is now under consideration for addition to SARA Schedule 1 (SARA 2026); because it is not yet listed under SARA or the NL ESA it is therefore considered a SOCC for the purposes of this VC. This population occurs in rivers from the southeastern Avalon Peninsula westward along the south coast to the Burin Peninsula. Atlantic salmon have been extensively documented in the Salt Cove Brook watershed, where suitable habitat for rearing and migration is present (CFI 2015; WSP 2025). There is no evidence of Atlantic salmon presence in the Shoal Cove Brook watershed.

Banded killifish (*Fundulus diaphanus*) is designated as *Special Concern* by COSEWIC and is *Vulnerable* under the NL ESA but is not listed under SARA. On insular Newfoundland, the species has a limited range which in the eastern portion includes the Burin Peninsula (COSEWIC 2014). Banded killifish are typically associated with shallow, clear pond habitats with low flow, fine substrates, and abundant aquatic vegetation

(COSEWIC 2014). While suitable habitat conditions may occur within some pond environments in the RSA, banded killifish have never been documented within the RSA.

Table 6.6-3: Fish Species at Risk/ Species of Conservation Concern that may occur in the Local Study Area.

Species[1]	Status[2,3]			Habitat Preferences[4]	Probability of Occurrence in LSA
	SARA	COSEWIC	NLESA		
Banded Killifish (*Fundulus diaphanus*)	Special Concern	Special Concern	Vulnerable	Shallow, clear water, low current, sandy/muddy substrate and aquatic vegetation	Low
American Eel (*Anguilla rostrata*)	Not listed	Threatened	Vulnerable	Freshwater and estuarine habitats; rivers and ponds used for rearing, migration, and overwintering	Moderate to High
Atlantic Salmon (*Salmo salar*) (South Newfoundland East)	Under Consideration	Special Concern	Not listed	Rivers and streams with gravel substrates for spawning; rearing and migration habitat in streams and ponds	Moderate to High

Sources: COSEWIC 2014; SARA public registry; COSEWIC 2025; Lehnert et al. 2023.

6.6.3.2.5 Recreational Fisheries

No commercial fisheries occur within the freshwater systems of Salt Cove Brook or Shoal Cove Brook watersheds. Recreational angling opportunities for species such as Atlantic salmon and brook trout may occur within the region, however, no scheduled salmon rivers are located within the RSA. The Little Lawn River that defines the western coastal extent of the RSA is a known salmon-bearing watercourse but is a non-scheduled river. Adjacent scheduled rivers include the Lawn River to the west, and the Little St. Lawrence River to the east (Reddin et al. 2010). A land use survey conducted during 2015 community consultations identified only one participant that declared that they fished Shoal Cove Pond (CFI 2015).

6.6.4 Effects Assessment

This section provides input and results specific to the Fish and Fish Habitat VC effects assessment. A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as follows:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects; and
- Follow-up commitments and monitoring programs.

6.6.4.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the Fish and Fish Habitat VC within the identified spatial

boundaries and phases of the Project (i.e., Construction, Operation, and Closure). An interaction table for the Fish and Fish Habitat VC is presented in Table 6.6-4.

Potential Project-related effects on the Fish and Fish Habitat VC were determined by comparing existing conditions to those expected to result from the Construction, Operation, and Closure phases of the Project. Potential effects are outlined, including an indication of whether they are expected to be direct (i.e., as a result of a Project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another VC). In many cases, changes in the Surface Water Quantity and Quality VC (see Section 6.5), can indirectly affect the Fish and Fish Habitat VC.

As indicated in Table 6.6-4, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Fish and Fish Habitat VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Mine assessment, and professional judgement. Overall, effects can be categorized into three primary categories: (1) changes in fish habitat quantity; (2) changes in fish habitat quality; and (3) changes in fish health and mortality risk.

Table 6.6-4: Identification of Project-VC Interactions and Associated Potential Effects on the Fish and Fish Habitat VC.

Project Activity Interaction		Nature of Potential Effect
Construction		
Community Access Roads	• Strip, clear, fill, gravel, and grade to accommodate vehicle traffic • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use • Upgrades to Memorial Bridge and Blake's Brook Bridge	**Indirect**: Change in fish habitat quality due to fugitive dust and increases in potential erosion and sedimentation due to disturbances, upgraded bridges, and new culverts. **Direct**: Change in fish habitat quantity due to habitat loss from new road section.
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded and berms will be built up to support larger equipment traffic • Strip, clear, fill	**Indirect**: Change in fish habitat quality due to fugitive dust and increases in potential erosion and sedimentation due to disturbances.
Pit Haul Roads	• Strip, fill, gravel, and grade.	**Indirect**: Change in fish habitat quality due to fugitive dust and increases in potential erosion and sedimentation due to disturbances.

Project Activity Interaction		Nature of Potential Effect
Power Infrastructure upgrades	• Transmission line re-routing and raising along the Blue Beach Haul road to allow Cat 777s to travel to the project area. • The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	**Indirect**: Change in fish habitat quality due to fugitive dust and increases in potential erosion and sedimentation due to disturbances.
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	**Indirect**: Change in fish habitat quality due to fugitive dust and increases in potential erosion and sedimentation due to disturbances. **Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type. **Direct**: Change in fish habitat quantity due to habitat loss from pit development.
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	**Indirect**: Change in fish habitat quality (water flow/levels) due to changes to groundwater baseflow and the discharge of pumped water.
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	**Indirect**: Change in fish habitat quality due to fugitive dust and sedimentation due to disturbances. **Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type.
Stockpile Area Development	• Stripping, clearing, and preparing stockpile areas for topsoil, overburden, and waste rock.	**Indirect**: Change in fish habitat quality due to fugitive dust and sedimentation due to disturbances. **Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type.
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	**Indirect**: Change in fish habitat quality due to fugitive dust and increases in potential erosion and sedimentation due to infrastructure installation. **Indirect**: Change in fish habitat quality (water flow/levels) due to contributing drainage areas.

Project Activity Interaction		Nature of Potential Effect
Operations		
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment ponds and monitored.	**Indirect**: Change in fish habitat quality (water flow/levels) due to contributing drainage areas. **Indirect**: Change in fish habitat quality (pH, contaminants) due to surface water run-off and effluent discharge. **Indirect**: Change in fish health and mortality risk (pH, contaminants) due to surface water run-off and effluent discharge.
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	**Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type, ground elevation and topography, contributing drainage areas, and groundwater. **Indirect**: Change in fish habitat quality due to fugitive dust (and associated contaminants) and increases in potential erosion and sedimentation due to dewatering discharge. **Direct**: Change in fish health and mortality risk from blasting overpressure.
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	**Indirect**: Change in fish habitat quality due to fugitive dust (and associated contaminants).
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	**Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type, ground elevation, and topography.
Stockpiling	• As mining progresses waste rock will be deposited in the waste rock stockpiles.	**Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type, ground elevation, and topography.

Project Activity Interaction		Nature of Potential Effect
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, and re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure and post-closure.	**Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type.
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	**Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type, ground elevation, and topography. **Indirect**: Change in fish habitat quality due to fugitive dust (and associated contaminants) and increases in potential erosion and sedimentation.
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	**Indirect**: Change in fish habitat quality (water flow/levels) due to changes in land type, ground elevation, and topography.
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).	**Direct**: Change in fish habitat quality (water flow/levels) due to changes in land type, ground elevation and topography, contributing drainage areas, and groundwater.

Project Activity Interaction		Nature of Potential Effect
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required. • Access roads will be maintained to facilitate post-closure monitoring	No interaction.

6.6.5 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and described in Section 6.6.4 were used to inform the design and implementation of the Project mitigation measures. The identified mitigation measures are outlined in more detail in the following sections, including a discussion of their effectiveness and confidence related to avoiding, minimizing, or restoring the VC to prevent residual effects. This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and the proposed mitigations are effective.

Existing mitigation and management measures and contingency plans in place for the AGS Mine will continue to be implemented for the South Ridge Project and will serve to minimize potential effects on the Fish and Fish Habitat VC. Section 2.12 provides a detailed overview of various management and contingency plans. Effect of Project activities on Surface Water quantity and quality are directly linked to potential effects on the Fish and Fish Habitat VC. Effects management procedures related to Surface Water Quantity and Quality for each phase of the Project are included in Section 6.5. Table 6.6-5 summarizes proposed mitigation measures applicable to the Fish and Fish Habitat VC.

6.6.5.1 Change in Fish Habitat Quantity

Section 6.5 details the measures for minimizing effects on the Surface Water Quantity VC, including the development of a Water Management Plan, which serves to minimize effects on fish habitat quantity. There are several key mitigation measures that are specifically designed to minimize potential changes to fish habitat quantity. The Project footprint was adjusted to minimize direct overlap with identified fish habitat, which is an effective means to avoid direct effects. Project activities in and near bodies of water will undergo review by provincial and federal regulators (DFO) and appropriate permits, practices, and reporting will be conducted to ensure compliance for the protection of fish habitat.

6.6.5.2 Change in Fish Habitat Quality

There are several key pathways that may result in changes to fish habitat quality and which key mitigation measures have been designed to minimize potential effects: sedimentation of waterbodies; removal of riparian vegetation; effluent discharge and surface water runoff (i.e., contaminants and related changes in pH); and changes in water flow and water quantity of fish habitat. Dust generated from roads, operating equipment, and stockpiles may alter fish habitat quality. CFI will implement several measures to supress dust generation including watering roads during dry periods, covering earthworks (when possible), and revegetating areas. These commonly used practices at mine sites have proven effective. CFI will follow an approved Erosion and Sediment Control Plan, which aligns with standard industry practices and DFO guidelines for fish and fish habitat (DFO 2019, 2022). These procedures, when implemented properly, are considered effective. Likewise, wherever possible, a minimum 30-m undisturbed vegetation buffer around all water bodies and wetlands/bogs within the Project footprint will be maintained. Contact and non-contact water will be monitored at various points in the LSA with mitigative steps taken as necessary (through an adaptive management approach) to meet regulatory discharge criteria. Specific measures and monitoring procedures will be detailed in a Water Management Plan. While effective, residual effects of discharges and runoff on fish habitat quality may persist. Section 6.5 outlines the measures to minimize changes to surface water quantity and flow. While effective, residual effects will persist on surface water quantity, which may affect fish habitat quality.

6.6.5.3 Change in Fish Health and Mortality Risk

There are several key pathways that may result in changes to fish health and mortality risk: blasting (overpressure exposure); effluent discharge and surface water runoff (i.e., contaminant exposure and related changes in pH); sedimentation of waterbodies; and substantial changes in water flow and water quantity of fish habitat. DFO Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998) sets industry standards to prevent fish habitat damage, specifically limiting explosive overpressure to 100 kPa and peak particle velocity to 13 mm/s. These well-established and effective guidelines provide best practices and procedures for the legal use of explosives to prevent the destruction of fish and fish habitat under the Fisheries Act. If specific setback distances based on the weight of the explosives and the type of substrate are followed, risks to fish health and mortality related to overpressure and particle velocity are considered negligible. Sedimentation/siltation in streams and waterbodies can affect fish health and reproduction. CFI will follow an approved Erosion and Sediment Control Plan, which aligns with standard industry practices and DFO guidelines for fish and fish habitat (DFO 2019, 2022). These procedures, when implemented properly, are considered effective. Section 6.5 outlines the measures to minimize changes to surface water quantity and flow. While effective, residual effects will persist on surface water quantity, which may affect fish health. Contact and non-contact water will be monitored at various points in the LSA with mitigative steps taken as necessary to meet regulatory discharge criteria. While effective, residual effects of discharges may persist on fish health.

Table 6.6-5: Summary of Proposed Mitigation Measures for the Fish and Fish Habitat VC.

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Change in Fish Habitat Quantity	• Adjustment of project footprint to minimize overlap with identified fish habitat. [All Phases] • Design and implement Water Management Plan [All Phases] • Implement Fisheries Offsetting Plan pursuant to Fisheries Act as required [All Phases] • Obtain and comply with Alteration of a Body of Water permits for bridge and/or culvert installation as required [All Phases] • Follow DFO's guidance on measures to avoid causing serious harm to fish and fish habitat (DFO 2019) [All Phases] • Follow Best Management Practices for the Protection of Freshwater Fish Habitat in Newfoundland and Labrador (DFO 2022) [All Phases]	Y
Change in Fish Habitat Quality	• Wherever possible, a minimum 30-m undisturbed vegetation buffer around all water bodies and wetlands/bogs within the Project footprint will be maintained. [All Phases] • Design and implement Water Management Plan [All Phases] • Regular monitoring of discharge to confirm regulatory discharge criteria are achieved. • Obtain and comply with Alteration of a Body of Water permits for bridge and/or culvert installation as required [All Phases] • Follow DFO's guidance on measures to avoid causing serious harm to fish and fish habitat (DFO 2019) [All Phases] • Follow Best Management Practices for the Protection of Freshwater Fish Habitat in Newfoundland and Labrador (DFO 2022) [All Phases] • Stockpiles of topsoil, overburden, and other potentially dust-generating materials will be kept covered, where practical, and used as soon as practical, or will be appropriately temporarily vegetated. [All Phases] • Haul and access roads will be watered during dry weather to suppress dust. [All Phases] • In Closure Phase, access roads and stockpile areas will be regraded to be continuous to the surrounding topography and re-seeded with native vegetation similar in species composition to the original habitat. [Closure] • In the event of an accidental discharge, emergency spill kits will be readily available when working within 15 m of watercourses and waterbodies.	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Change in Fish Health and Mortality Risk	• Regular monitoring of discharge to confirm regulatory discharge criteria are achieved. • Regular monitoring of water flows and levels in fish bearing water bodies • Design and implement Water Management Plan [All Phases] • Blasting to comply with DFO Guidelines for blasting in and near water (Wright and Hopky 1998).	Y

6.6.6 Identification and Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table 6.6-4, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.6-6.

Table 6.6-6: Residual Effects Characterization Criteria for the Fish and Fish Habitat VC.

Assessment Criteria	Categories/Parameters for Fish and Fish Habitat VC
Nature	The long-term trend of the residual effect. **Positive** – A residual effect that provides benefit to VC relative to baseline. **Negative** – A residual effect that is detrimental to VC relative to baseline. **Neutral** – No net change in measurable parameters for VC relative to baseline.
Magnitude	The overall amount or degree of change in a measurable parameter, or variable, related to existing conditions that are expected. **Negligible** – No measurable change to VC relative to baseline. **Low** – Judged to result in <1% change in the size or health of the population or the carrying capacity of its habitat. A change in a population can result from an absolute reduction in population size or from displacement of animals to areas outside the area of consideration. **Moderate** – Judged to result in a 1% to <10% change in the size or health of a population or the carrying capacity of its habitat. **High** – Judged to result in a 10%, or greater, change in the size or health of a population or the carrying capacity of its habitat.
Geographic Extent	The range or scale of approximate geographic areas over which any potential interaction and effect is anticipated to occur. • Within Project footprint • Within LSA • Within RSA • Beyond RSA

Assessment Criteria	Categories/Parameters for Fish and Fish Habitat VC
Timing	Refers to the effects of seasonal variability on the VC. **Negligible Sensitivity** – Residual effect is not sensitive to seasonality. **Moderate Sensitivity** – Residual effect may be influenced by seasonality, but the assessment of attribute parameters is unchanged (i.e., magnitude, geographic extent, duration, frequency, reversibility). **High Sensitivity** – The assessment of the residual effect (i.e., magnitude, geographic extent, duration, frequency, reversibility) is changed based on seasonality.
Frequency	How often the residual effect being assessed is expected to occur. **Single Event** – Residual effect occurs once during the Project. **Irregular Events** – Residual effect occurs sporadically at an irregular interval and is not predictable. **Regular Events** – Residual effect occurs regularly and may be at predictable intervals or specific times. **Continuous** – Residual effect occurs continuously.
Duration	The length of time a potential residual effect may occur. **Short-term** – Residual effect restricted to construction or decommissioning/ rehabilitation phases. **Medium-term** – Residual effect extends through project operations but is expected to subside when operations cease. **Long-term** – Residual effect extends beyond the life of the Project.
Reversibility	Refers to the ability of the VC to return to its original state once the stressor is removed **Reversible** – Residual effect is likely to be reversed after activity completion and rehabilitation. **Irreversible** – Residual effect is unlikely to be reversed. It should be noted that a biological effect may be irreversible at the individual level (e.g., mortality of an individual animal) but reversible at the population level.
Ecological/Socio-economic Context	Existing condition and trends in the area where residual environmental effects occur. **Undisturbed** – Area is relatively undisturbed or not adversely affected by human activity. **Disturbed** – Area has previously been substantially disturbed by human development or human development is still present.
Level of Confidence (Certainty of Knowledge)	The general level of confidence in the knowledge used to describe the potential environmental effect. **High** – Based on good understanding of cause-effect relationships and data specific to the Project Area. **Moderate** – Based on good understanding of cause-effect relationships using data from elsewhere or incompletely understood cause-effect relationships using data specific to the Project Area. **Low** – Based on incomplete understanding of cause-effect relationships and/or incomplete data specific to the Project Area.

Significant biological effects are those that are considered to be of sufficient magnitude, duration, and geographic extent to cause a change in the VC that will alter its status or integrity beyond an acceptable level. Establishment of the criteria is based on professional judgement but should be transparent and repeatable. An effect can be considered significant (negative by definition), not significant, or positive. A significant residual negative effect on biological VCs is defined as a residual Project-related change in the VC population and/or habitat in the LSA where recovery to baseline condition is unlikely. Additionally, a significant residual negative effect on Fish and Fish Habitat can be defined as a Project-related HADD of fish habitat or the death of a fish, as defined by the *Fisheries Act*, that cannot be mitigated, authorized, or offset.

6.6.6.1 Assessment Context

As indicated in Table 6.6-4, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Fish and Fish Habitat VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Mine assessment (CFI 2015), and professional judgement. It is also important to provide context for the South Ridge Project and the assessment of potential residual effects on the Fish and Fish Habitat VC:

- The Project is an expansion of the existing CFI AGS Mine and occurs in a designated mine zone, which is considered a disturbed area. To the extent possible, CFI will use previously disturbed/cleared areas to support the South Ridge Project. However, the new proposed footprint represents 0.583 km^2 of new physically disturbed area. The LSA boundaries (2,962.1 ha) are defined based on hydraulic connectivity and watershed drainage patterns, that may be affected by Project-related surface water runoff, drainage, or sediment transport.
- Historical mining activities in and near the Project Area have resulted in elevated background levels of certain contaminants, changes in pH, deposits of tailings materials, and alteration of watercourses and waterbodies. More recently, these historical activities have been guided by DFO and provincial regulations and permitting requirements. Potential Project effects are assessed relative to known baseline conditions.
- There is no direct fish habitat that overlaps with the Project footprint of the South Ridge pit, stockpiles, and waste pad.
- There are several fish SAR that occur in and near the Project Area. Atlantic salmon have been extensively documented in the Salt Cove Brook watershed, where suitable habitat for rearing and migration is present. There is no evidence of Atlantic salmon presence in the Shoal Cove Brook watershed. American eel has been documented within both the Salt Cove watershed and Shoal Cove watershed. There is low probability that banded killifish may occur in the RSA.
- Within the RSA, fish communities are typical of small coastal watersheds on the South Coast of Newfoundland and are composed primarily of brook trout, Atlantic salmon, American eel, and nine-spine stickleback. These species utilize freshwater environments for life processes including spawning, rearing, migration, and overwintering, where habitat conditions are suitable. Fish distribution within these watersheds is influenced by habitat connectivity and local environmental conditions, including water quality and physical barriers to fish passage.

- Existing mitigation and management measures and contingency plans will continue to be implemented for the South Ridge Project and will serve to minimize potential effects on the Fish and Fish Habitat VC. Section 2.11 provides a detailed overview of various management and contingency plans; and Table 6.6-5 provides key mitigation measures applicable to Fish and Fish Habitat.

6.6.6.2 Residual Effects: Change in Fish Habitat Quantity

The Project has been designed to avoid loss of fish habitat by assessing fish habitat via a field study (see Appendix 6.6.1) and siting Project components away from identified direct fish habitat and waterbodies at the South Ridge site. The new Connector Road (~550 m in length) does not overlap with fish habitat as it is located on a plateau through a small, forested stand. Updates to Memorial Bridge and Blake's Brook Bridge will not require in stream works as a clear span bridge will be installed as needed. The installation or replacement of culverts will follow best practices in accordance with DFO's "Measures to Protect Fish and Fish Habitat" and will allow fish passage. If required and in consultation with regulators, CFI will develop an Offsetting Plan to address potential direct loss of fish habitat (none predicted) and potential indirect loss associated with changes in flow due to water management infrastructure.

Two fish SAR/SOCC have been detected in the LSA: Atlantic salmon and American eel; banded killifish may occur there, but this species has not been detected to date. Project activities are not expected to result in direct habitat loss for any fish SAR. Based upon the hydrology effects assessment (see Section 6.5), increases to annual flows during the Operations period are considered negligible for Shoal Cove Pond, Unnamed Tributary of Shoal Cove, East Branch Salt Cove Brook, and Salt Cove Brook. A moderate increase in annual flows (26%) was predicted for Hares Ears Pond with a maximum monthly increase in flow (48%) predicted to occur in August.

Increases in annual and/or monthly flow volumes are typically expressed as risks to fish and fish habitat through increased flow rates. Generally, increased flow rates will increase water levels in watercourses, potentially increasing fish habitat availability and accessibility. Risk exists when the increased flow rates result in higher erosive forces that may cause excessive sediment mobility and channel instability. Given that Hares Ears Pond outlet stream channel has substrates consisting of cobbles and gravel with some boulders, increased bed erosion and/or channelization are unlikely occur. The highest project-related flow conditions are projected to occur during Operations. Only two proposed monthly flow volumes during Operations (March, April) out of Hares Ears Pond are higher than the existing maximum monthly flows (April), limiting the erosive potential from the Project activities (Section 6.5).

During field investigations in 2025 following rainfall events, Hares Ears Pond outlet flows were contained within the stream and side channels and there was little evidence of flow reaching the floodplain (see Appendix 6.6-1). In eddies and side channels, substrates were fine (silt, detrital organics) with abundant vegetation growth. Negative effects to fish habitat quantity are not anticipated as a result of increased flows. Further geomorphic assessment of the connectivity and erosive resilience of Hares Ears Pond outlet stream are required to increase confidence in evaluating potential effects to fish habitat quality,

but it is unlikely that the increased flows will be detrimental to fish habitat availability or connectivity.

Numerous mitigation measures are in place to avoid and minimize the potential effects of habitat loss on fish (Table 6.6-5). With these measures in place, residual effects of Project activities on the Fish and Fish Habitat VC due to habitat loss are predicted to be low in magnitude, localized (within the LSA), long-term in duration (throughout Closure and for 5+ years after as habitat regenerates), occur continuously, have moderate sensitivity to seasonality (i.e., spawning and migration periods), and are considered reversible. As such, residual effects of Project activities on fish and fish habitat due to changes in habitat quantity are predicted to be not significant (Table 6.6-7).

Table 6.6-7: Summary of Residual Effect Characterization Related to: Fish Habitat Quantity.

Criteria	Rating	Rationale
Magnitude	Low	Less than 1% change in fish habitat quantity relative to baseline conditions. No average daily flow deficits >1%, flow increases unlikely to cause detrimental effects to fish habitat availability or accessibility.
Geographic Extent	Within LSA	Effects limited to LSA.
Timing	Moderate Sensitivity	Effects more pronounced during spawning and migration periods.
Frequency	Short-term to continuous	Indirect habitat loss associated with change in flow is considered limited to the Operations Phase whereas potential direct habitat loss considered continuous (i.e., ongoing throughout the life of the Project).
Duration	Long-term	Effects could extend beyond the life of the Project.
Reversibility	Irreversible	Alterations to hydrology of each catchment area are modeled to occur through Operations into Closure and Post-closure.
Ecological/Socio-economic Context	Disturbed	Project Area is located on a previously disturbed site due to past mining activities.
Level of Confidence	Moderate	Hydrology modelling predictions that influence potential indirect effects on fish habitat are based on numerous assumptions and limited fish/fish habitat data available for Hares Ears Pond.
Significance	Not Significant	Low magnitude effects, which are localized and considered reversible. Additionally, any potential Project-related HADD of fish habitat as defined by the *Fisheries Act*, can be mitigated, authorized, or offset.

6.6.6.3 Residual Effects: Change in Fish Habitat Quality

Fish habitat quality is characterized by the physical and chemical components of watercourses that represent fish habitat. Residual effects to physical components of fish

habitat may include changes in hydrology (streamflow) that alter the presence or abundance of spawning substrates, refuge areas and/or cover. Other physical components of fish habitat related to passage and access to habitat are discussed in Section 6.6.5.1. Residual effects to chemical components of fish habitat may include changes to chemical concentrations of constituents of potential concern (COPC) in areas of fish habitat, evaluated in different areas of the LSA and RSA. Surface water quality data were compared to water quality guidelines (WQGs) based on Environment and Climate Change Canada (ECCC) Federal Environmental Quality Guidelines (FEQGs; ECCC 2024). In absence of FEQGs, Canadian Council of Ministers of the Environment (CCME) long-term chronic and short-term acute water quality guideline for the protection of aquatic life (CCME 2019) were used.

The Unnamed tributary does not receive any runoff from any land that is associated with the Project and thus can be considered outside of the potential pathway of Project effects and any residual effects as a result of the proposed Project are not applicable to this subcatchment.

Shoal Cove Pond and its associated tributaries receive drainage from the East Pond, represented by evaluation node WS-5 of the water quality model (Appendix 6.5-3). At evaluation node WS-5, COPC were identified in three seasons, all during the Operations Phase: nitrite during the June-August period and copper for June–August and December—February.

- Nitrite COPC identification is based on a modelled concentration during Operations of 0.061 mg/L, representing a 22% increase from existing conditions and a 1.7% exceedance of the long-term WQG. Since the modeled concentration of nitrite is only 1.7% higher than the WQG and will only occur for approximately 18-24 months, nitrite concentrations present a *low* magnitude risk to fish habitat quality. (Table 6.6-8)
- Copper COPC identification is based on modelled concentrations of 0.0028 and 0.0024 mg/L, representing 11% and 18% increases in concentration compared to existing conditions for December – February and June – August, respectively. Similar to nitrite, the modelled concentrations only represent COPC during the 18–24-month period of Operations and decrease to near-existing conditions concentrations during closure and post-closure; as such, this is considered a *low* magnitude risk to fish habitat quality.

Salt Cove watershed's pathway of potential effects from the planned Project occurs upstream-to-downstream through the West Pond, Hares Ears Pond, Salt Cove Brook East Branch, and eventually Salt Cove Brook (at evaluation node WS-10). The magnitude of residual effects changes proportionately to the dilution of effluent from the West Pond, with *high* magnitude effects predicted in Hares Ears Pond and *low* magnitude effects predicted in downstream evaluation nodes within the LSA: Salt Brook Cove East Branch and Salt Cove Brook (WS-10).

- Hares Ears Pond is modelled to have exceedances in WQGs and existing conditions concentrations during the Operations Phase for nitrite as well as Operations and Post-closure periods for fluoride, cadmium, copper, and zinc. The exceedances for cadmium during Operations and Post-closure and zinc during

Operations represent exceedances of acute WQGs, likely to cause substantial effects to aquatic biota if maintained for seasonal predictions through the time period projected in the WQ model, representing a potential high magnitude of residual effects in Hares Ears Pond area. Hares Ears Pond represents a relatively small portion of the Salt Cove Brook East Branch fish habitat and an even smaller portion of the LSA, so a *low* magnitude of residual effect for the LSA is a reasonable representation of potential residual effects even with *high* magnitude effects predicted specific to Hares Ears Pond. Water quality model source terms also made the conservative assumption to model samples that were below detection limits at detection limit concentrations (Appendix 6.5-3). This assumption likely led to an over-estimation of COPC concentrations, and further modeling or monitoring may be used to support lower-magnitude potential effects on water quality in Hares Ears Pond.

- The East Branch of Salt Cove Brook is modelled to have one COPC: copper during Operations and Post-closure periods. The dilution of outflow from Hares Ears Pond that occurs from the existing flows in the main East Branch of Salt Cove Brook that is relatively independent of Project influence reduces fluoride, cadmium, and zinc concentrations below COPC levels, and other constituents above WQGs are all relatively close (±6%) in concentration to existing conditions. Copper concentrations are modelled to increase between 7-17% and 3-8% during Operations and Post-closure, respectively. This represents a range between 15.3% and 5.6% higher than the long term WQG for copper during Operations and Post-closure, respectively. Given the limited period of Operations (18-24 months) and relatively low magnitude of exceedance for long term WQG during post-closure for only one parameter, the potential residual effects for the East Branch of Salt Cove Brook are considered *low*. This is further supported through the observation of existing condition copper concentrations being only 4% lower than the WQG, so it is unlikely that the modelled increases in COPC concentrations will cause a measurable population-level effect to fish community >1%.
- Salt Cove Brook (WS-10) is modelled to have two COPCs: copper in Operations during the summer season and iron across all Project phases during summer and fall seasons. Copper concentrations are modelled to increase by 7% during summer of Operations, with notable decreases in winter and spring. The summer increase represents modelled values 5.8% higher than the long term WQG. Given the limited period of Operations (18-24 months) and relatively low magnitude of exceedance for long term WQG, the potential residual effects from copper for Salt Cove Brook is considered *low*. Iron concentrations are modelled to increase by 31-32% during fall for all Project phases and 4% during summer for all Project phases. Existing conditions concentrations during fall are 47% higher than the chronic WQG, with modeled Project cases estimated to be 86% higher than the chronic WQG for iron. The water quality modelling report (Appendix 6.5-3) discusses potential over-predictions of iron from conservatively high source term generation, so there is potential that further source term refinement may lower the projected concentrations of iron in Salt Cove Brook. In summary, the current model results predict increases in iron concentrations during two seasons for all Project phases,

resulting in a *Moderate* potential residual effect to water quality in fish habitat (Table 6.6-8).

Gaps in existing condition modelling source term data have resulted in relatively unintuitive results, especially between the East Branch of Salt Cove Brook and the main reach of Salt Cove Brook (WS-10). Iron is consistently predicted to have a concentration of 1.4 mg/L from existing conditions through to Post-closure; although this concentration is higher than WQGs, it does not increase as a result of the proposed Project activities and thus represents a *low* risk to the aquatic environment. Iron concentrations at Salt Cove Brook (WS-10) increase from existing conditions (0.87 mg/L) to Operations, Closure and Post-closure (1.1 mg/L) (Appendix 6.5-3). This modelling result is unintuitive because there are no additional sources of water that are within the pathway of potential Project effects between those evaluation nodes, and thus the dilution effect of water from the West Salt Cove Brook tributary should result in consistent iron concentrations across all Project phases. Flow contributions between the west and east tributaries to Salt Cove Brook are projected to have a negligible change (Table 6.5-10), so the mass balance of contributing water quality constituents should not change.

The gap in source-term data confidence affects the assessment of potential effects on fish and fish habitat via water quality at Salt Cove Brook (WS-10), as model uncertainty is causing the magnitude of potential effects to be overstated relative to the risk the Project poses to the aquatic environment. If the water quality model had more substantive existing conditions data to inform a more intuitive result (e.g. concentrations of iron become lower/diluted as distance downstream of potential project effects becomes greater), then the magnitude of potential effect would be *low* instead of *moderate,* and the level of confidence would be *moderate* to *high* instead of *low*.

Table 6.6-8: Summary of Residual Effect Characterization Related to Water Quality.

Criteria	Watershed	Rating	Rationale
Magnitude	Salt Cove Brook (WS-10)	Moderate	• High magnitude, seasonal exceedances of chronic WQG (iron) • Low magnitude exceedances of acute WQGs (cadmium, cobalt) in a relatively small subcatchment of the LSA (Hares Ears Pond)
	Shoal Cove Brook (WS-5)	Low	Low magnitude exceedances of chronic WQGs
Geographic Extent	Salt Cove Brook (WS-10)	Within LSA	Within LSA
	Shoal Cove Brook (WS-5)		
Timing	Salt Cove Brook (WS-10)	Moderate Sensitivity	Parameter exceedances vary seasonally
	Shoal Cove Brook (WS-5)		

Criteria	Watershed	Rating	Rationale
Frequency	Salt Cove Brook (WS-10)	Continuous	Residual effect occurs continuously through each project phase into post-closure
	Shoal Cove Brook (WS-5)		
Duration	Salt Cove Brook (WS-10)	Long term	Residual effect extends beyond the life of the Project.
	Shoal Cove Brook (WS-5)	Medium Term	Residual effect extends through project operations but is expected to subside when operations cease.
Reversibility	Salt Cove Brook (WS-10)	Irreversible	Residual effect is unlikely to be reversed.
	Shoal Cove Brook (WS-5)	Reversible	Residual effect is likely to be reversed after activity completion and rehabilitation.
Ecological/Socio-economic Context	Salt Cove Brook (WS-10)	Disturbed	Area has previously been substantially disturbed by human development or human development is still present through historical and current mining operations.
	Shoal Cove Brook (WS-5)		
Level of Confidence	Salt Cove Brook (WS-10)	Low	Uncertainties in water quality model source terms result in unintuitive model results that are likely over-predicting iron concentrations in each project phase. Gaps in existing condition data accuracy are likely leading to over-prediction of multiple parameters.
	Shoal Cove Brook (WS-5)	Moderate	Good understanding of cause-effect relationships using site-specific data, but gaps exist where some WQ detection limits are close to WQGs which causes source term estimates to potentially be higher than the actual conditions

Criteria	Watershed	Rating	Rationale
Significance	Salt Cove Brook (WS-10)	Not significant*	Fish habitat quality/quantity (physical) are unlikely to change as a result of increased flows due to proposed Project activities. When considering the LSA watershed as a whole, fish habitat quality (water quality) changes are considered of low magnitude compared to existing conditions and/or WQGs. [See context above for increases in Iron concentrations.] **Based on water quality modelling output, significant residual effects are predicted within Hares Ears Pond [see discussion above for more context].*
	Shoal Cove Brook (WS-5)	Not significant	Fish habitat quality/quantity (physical) are unlikely to change as a result of proposed Project activities. Fish habitat quality (water quality) changes are of low magnitude compared to existing conditions and/or WQGs, and these changes are mostly limited to the 18-24 month Construction and Operations phases of the Project.

6.6.6.4 Residual Effects: Change in Fish Health and Mortality Risk

Project-related activities present potential risks to fish health and survival through physical and chemical pathways of effect to fish habitat and water quality, described in detail above in Sections 6.6.6.2 and 6.6.6.3. In addition to the effects described above, an acute pathway of potential effect is through construction and operational activities that may occur in or near water, as well as use of explosives in or near water, which could result in instantaneous changes in pressure, and changes to fish health and survival through injury or instantaneous death. However, use of explosives in or near water will follow appropriate mitigation measures and will be used in accordance with applicable approvals. Mitigation and adaptive management will be applied as previously described to limit and manage potential effects of fish health and survival.

Timing of construction should be outside of the DFO timing windows for Newfoundland, as much as possible, to protect fish and avoid mortality of fish larvae or eggs (DFO 2019). Fish health and survival may occur through injuries related to operation of industrial equipment in or near watercourses. If works in watercourses occurs, fish will be relocated from areas of in-water work to avoid the potential death of fish, as required by applicable permits.

Excessive sediment and contaminants from construction work and operation of machinery near watercourses could present risks to fish health and survival. When working near watercourses, mitigation measures described in the Environmental Protection Plan (EPP) will be used in accordance with applicable regulations and approvals.

6.6.7 Potential Cumulative Effects

Cumulative effects are considered as an evaluation of all potential residual effects from Project activities across a larger spatial boundary: the RSA. Sections 6.6.6.2 through 6.6.6.4 predict that residual effects to fish and fish habitat are localized to relatively small portions of Shoal Cove Brook and Salt Cove Brook watersheds. There are not any other factors contributing to the potential pathway of effect to fish and fish habitat across the LSA or RSA, as the majority of the area is associated with the permitted AGS Mine activities or the proposed activities associated with the South Ridge Project. Residual effects at a watershed/LSA spatial level are predicted to be low, thus increasing the spatial scale of evaluation to cumulatively include the larger RSA and already permitted mine area will result in an overall low magnitude of potential effects to fish and fish habitat.

6.6.8 Follow-up and Monitoring Programs

Follow-up and monitoring are intended to verify the accuracy of predictions made during an EA process, to assess the efficacy of mitigation measures, and to initiate adaptive management actions as required. The follow-up program should be refined with input received from stakeholders and provincial and federal regulators as appropriate. Compliance monitoring will be conducted to confirm that mitigation measures are properly implemented. Relative to the Fish and Fish Habitat VC, this is particularly important for those measures outlined in the following plans, practices, and permits:

- Erosion and Sedimentation Control Plan;
- Water Management Plan;
- Blasting Best Management Practices;
- Construction EPP Addendum for the South Ridge Project;
- Operations EPP Addendum for the South Ridge Project;
- Fisheries Offsetting Plan pursuant to *Fisheries Act;* and
- Alteration of a Body of Water permits.

CFI will work closely with regulators to update its EEMP to reflect requirements related to fish and fish habitat for the South Ridge Project. Monitoring opportunities that will verify the accuracy of predictions may include:

- Hydrometric and water quality monitoring in receiving watercourses within the LSA to confirm modelling assumptions and resolve uncertainties, as discussed in Section 6.5.8. Specific attention should be paid to sampling of metals with lower detection limits to update water quality source terms and potentially lower the magnitude of COPC exceedances.
- If further hydrometric and water quality monitoring activities are unable to increase model confidence and lower the magnitude of potential COPC concentration increases, benthic macroinvertebrate monitoring in receiving watercourses within the LSA may be considered to measure existing conditions and potential changes

in benthic invertebrate community composition as a result of changes in water quality.
- Seepage monitoring program designed to validate source term assumptions related to seepage water quality and quantity conveyed into the receiving watercourses.
- QP monitoring of Hares Ears Pond outlet stream channel morphology in response to increased streamflow during Construction and Operations phases should occur to confirm channel resilience to increased flow rates.

6.7 Wetlands and Vegetation (including Rare Plants)

Wetlands and vegetation were selected as a valued component (VC) because of their ecological, hydrological (i.e., groundwater levels, flood control) value in maintaining natural ecosystems and because they provide economic, cultural, aesthetic, and recreational value to the public. Project construction, operation, and closure activities may interact with the surrounding environment in ways that could negatively influence wetlands (i.e. bogs, fens, marshes, swamps, and shallow water habitats that are permanently or seasonally inundated) and vegetation, including species at risk (SAR) and species of conservation concern (SOCC).

For the purposes of this assessment, Species at Risk (SAR) are defined as species that are listed on Schedule 1 of the federal *Species at Risk Act* (SARA) as Extirpated, Endangered, Threatened, or Special Concern, and/or listed as Extirpated, Endangered, Threatened, or Vulnerable under the *Newfoundland and Labrador Endangered Species Act* (NL ESA) (see Section 6.7.1.2.1 and Section 6.7.1.2.2 below). Species of Conservation Concern (SOCC) are defined as those species that have been assessed as Extirpated, Endangered, Threatened, or Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but have not yet been added to Schedule 1 of SARA; those recommended for listing by the Species Status Advisory Committee (SSAC) as Endangered, Threatened, or Vulnerable but are not yet listed under the NL ESA; and those ranked as provincially rare by the Atlantic Canada Conservation Data Centre (AC CDC), including species with provincial conservation status (S-ranks) of S1 (Critically Imperiled), S2 (Imperiled), or combinations thereof (e.g., S1S2), based upon review by the AC CDC.

The following subsections present:

- Regulatory context applicable to the VC;
- Scoping of the VC assessment including boundaries and indicators;
- Existing conditions of the VC;
- Project components or activities that may interact with this VC and the potential effects related to the interactions;
- Proposed mitigation and management measures to manage the potential effects;
- Characterization of identified residual adverse effects of the Project;
- Summary of potential cumulative effects; and
- Overview of follow-up programs related to the monitoring and management of potential effects on this VC as needed.

6.7.1 Regulatory Context for the Management of the VC

The following legislation, regulations, and guidance documents were considered in the effects assessment for the Wetlands and Vegetation VC.

6.7.1.1 Federal Guidelines

There are several federal Acts and associated regulations that apply to wetlands and vegetation as described below.

6.7.1.1.1 Canadian Environment Protection Act (1999)

The Canadian *Environmental Protection Act*, 1999 (CEPA) is legislation designed to prevent pollution and protect the environment including its biological diversity (and human health). Enacted in 1999 and subsequently amended, its primary purpose is to contribute to sustainable development through pollution prevention. CEPA provides the federal government with authority to assess and manage risks posed by toxic substances and other pollutants. It establishes processes to evaluate existing and new substances, regulate toxic substances (including their manufacture, import, use, and release), and control air and water pollution, hazardous waste movements, fuels, vehicle emissions, and disposal at sea. The Act also incorporates key principles such as the precautionary principle, the polluter pays principle, ecosystem-based management, and consideration of vulnerable populations.

6.7.1.1.2 Fisheries Act

Fish and their habitats are protected under the federal *Fisheries Act*, which prohibits works, undertakings, or activities that result in the harmful alteration, disruption, or destruction (HADD) of fish habitat unless authorized. Under the Act, “fish” are defined to include all life stages of fish, including eggs, sperm, spawn, larvae, and juvenile stages. Fish habitat is defined as waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes, including spawning, nursery, rearing, feeding, and migration areas. The *Fisheries Act* also prohibits the deposition of deleterious substances into waters frequented by fish, except as authorized by regulation.

6.7.1.1.2.1 Fish Habitat Compensation Agreement

A *Fisheries Act* Authorization was issued by Fisheries and Oceans Canada (DFO) in 1997 for activities affecting fish habitat within the Shoal Cove watershed, including Shoal Cove Pond, Shoal Cove Brook, and Clarke’s Pond Brook (see Appendix 6.6-2;1997 Fisheries Act Authorization and Agreement). As part of this authorization, a Fish Habitat Compensation Agreement was established to ensure no net loss of fish habitat within the affected system (CFI 2015).

Subsequent project developments required updates to the original authorization. In 2012, an amendment to the 1997 *Fisheries Act* Authorization was requested, and an updated Fish Habitat Compensation Plan (now referred to as an Offset Plan) was submitted to DFO to address impacts associated with the Tailings Management Facility (TMF), Clarke’s Pond cutoff wall, and associated diversion channel (AMEC 2012; CFI 2015). A *Navigation Protection Act* (now the *Canadian Navigable Waters Act*) approval was also issued by Transport Canada in 2012 for the construction of the Clarke’s Pond cutoff wall (CFI 2015).

The amended authorization and associated compensation/offset plans were reviewed and accepted by DFO (AMEC 2012; CFI 2015). While the overall offsetting approach remained consistent with the original plan, updates were required to reflect changes to the *Fisheries Act* and project design (AMEC 2012; CFI 2015). These updates included reassessment of potential serious harm to fish and fish habitat, refinement of offset measures, as well as submission of a Request for Project Review to DFO (AMEC 2012; CFI 2015).

6.7.1.1.3 Federal Policy on Wetland Conservation

A federal mandate for wetland conservation is provided by the Federal Policy on Wetland Conservation (GC 1991) and directs all federal departments to conserve and sustain wetland functions in the delivery of programs and services. This policy was implemented to support the goals of wetland protection as stated in the Canadian Biodiversity Strategy (GC 1995) and the Ramsar Convention Manual, 6th Edition (Ramsar Convention Secretariat 2013).

Its core objective is to promote the conservation of Canada's wetlands to sustain their ecological and socio-economic functions, now and in the future. To achieve this objective, the Policy establishes several key goals, including maintaining wetland functions and values across Canada and achieving no net loss of wetland functions on federal lands and waters. It also calls for the enhancement and rehabilitation of wetlands in areas where loss or degradation has reached critical levels, the integration of wetland considerations into federal planning and economic decision-making, the securement of wetlands of national significance, and the promotion of sustainable management practices in sectors such as forestry and agriculture. Overall, wetlands are to be used in ways that ensure their sustained productivity for future generations.

The Federal Policy on Wetland Conservation: Implementation Guide for Federal Land Managers (Lynch-Stewart et al. 1996) describe processes and measures for the implementation of the Federal Policy on Wetland Conservation. It also describes different approaches to attaining no net loss of wetland function through a number of related mitigation measures. The following is a general order of potential wetland mitigation strategies:

1. Avoidance: this is the process of using project design to eliminate any possible negative effects on wetlands and their functions;
2. Minimisation: by altering projects and/or taking other actions, negative impacts on wetland functions are controlled (reduced and minimised); and
3. Compensation: This is the possibility of restoring unavoidably lost wetland areas and functions by improving or restoring already-existing wetlands or by establishing new wetland areas.

6.7.1.1.4 Federal Guidelines for the Protection of Aquatic Life

Guidelines for the protection of aquatic life that were considered in the assessment included:

- Environment and Climate Change Canada (ECCC) Federal Environmental Quality Guidelines (FEQGs; ECCC 2024).

- Canadian Council of Ministers of the Environment (CCME) long-term chronic and short-term acute water quality guidelines for the protection of aquatic life (CCME 1999) in the absence of an FEQG.

6.7.1.1.5 Species at Risk Act

Federal SAR listed as extirpated, endangered, or threatened under SARA are afforded protections such that it is not permitted to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of that species or any part or derivative of such an individual. Protections under SARA are also afforded to the residence(s) of such species, prohibiting their damage or destruction by any person, if a recovery strategy has recommended the reintroduction of that species into the wild in Canada.

6.7.1.2 Provincial Guidelines

6.7.1.2.1 Newfoundland and Labrador Environmental Protection Act

Under the Newfoundland and Labrador *Environmental Protection Act* (NL EPA), it is prohibited to release substances into the environment that may cause an adverse effect, except by special authorization under the *Act*. In the event of such a release of substances into the environment, the person(s) responsible must immediately report the release to the government of Newfoundland and Labrador Department of Environment, Conservation and Climate Change. It is also prohibited to dispose of waste on land or in water, or to use waste collection and/or disposal facilities or equipment that are not part of an approved waste disposal system. Indeed, the entire environmental assessment process in the province of Newfoundland and Labrador is governed and dictated by the NL EPA and the statutes therein; by these statutes, an undertaking may not proceed in the province until it has been exempted or released under the Act.

6.7.1.2.2 Newfoundland and Labrador Water Resources Act

The NL *Water Resources Act* (NL WRA) provides regulations surrounding the alteration of a body of water within the province, including changing the direction of flow, altering the quantity of water, pollution or changing drainage characteristics. It applies to all surface or subterranean sources of fresh or salt water within the jurisdiction of the province (rivers, streams, brooks, creeks, watercourses, lakes, ponds, springs, lagoons, ravines, gullies, canals, wetlands) as well as water above the seabed within provincial boundaries. The Environmental Control Water and Sewage regulations (ECWSR 65/03) are part of the NL WRA that provide regulations surrounding sewage and other effluent discharge, which outline maximum allowable concentrations for various pollutants (such as biochemical oxygen demand, suspended solids, metals, temperature and pH limits) in discharges to surface water.

6.7.1.2.3 *Newfoundland and Labrador Policy for Development in Wetlands*

Newfoundland and Labrador Policy for Development in Wetlands specifies activities that need permits and identifies developments that are prohibited within wetlands. The developments that are not permitted include:

- Infilling, drainage, dredging, channelization, removal of vegetation cover, or removal of soil or organic cover in wetlands that could exacerbate flooding issues

or have unavoidable negative effects on water quality, quantity, or hydrologic conditions.
- Development in wetlands situated within the recharge zones of private, municipal, or residential groundwater wells.
- Placing, depositing, or releasing any raw sewage, refuse, fuel or fuel containers, municipal or industrial wastes, pesticides, herbicides, or other chemicals or their containers, or any other material that contaminates or could contaminate wetlands' water quality.

Permitting is required for activities that disturb wetlands, such as peat extraction, agricultural and forestry operations, construction of linear corridors, and various forms of infilling or dredging related to residential, commercial, industrial, and institutional developments, as well as the extension and upgrading of existing facilities in wetland areas.

6.7.1.2.4 Newfoundland and Labrador Endangered Species Act

Newfoundland and Labrador Endangered Species Act (NL ESA) provides legal protection for certain species assessed as at-risk by the provincial Species Status Advisory Committee (SSAC) or where relevant, by COSEWIC at the national level. Species may be designated as vulnerable, threatened, endangered, extirpated, or extinct. Under the NL ESA, it is prohibited for a person to disturb, harass, injure, or kill individuals of threatened, endangered, or extirpated species, or to capture, possess, purchase, sell, or trade them or their parts or any derivatives thereof. The residences of individuals of these species are also protected from disturbance and destruction by any person.

6.7.1.2.5 Forestry Act

The *Forestry Act* provides the legislative basis for how NL manages, regulates, and protects forest resources on Crown and public lands, assigning authority to the Minister and Forest Service to oversee sustainable forest management, approve district level management plans and operating plans, regulate timber licences and cutting permits, control the construction and use of forest access roads, and enforce fire protection and compliance measures. The RSA overlaps with Forest Planning Zone 2, Forest Management District 3, and Lawn Domestic harvesting area (CC03504).

St. Lawrence Coastal Management Unit

The St. Lawrence Coastal Management Unit is a land use and conservation agreement between the Town of St. Lawrence and the Government of NL, established under the provincial Municipal Habitat Stewardship Program. The Municipal Habitat Stewardship Agreement was signed in October 2013 (amended in 2021) and it currently encompasses an ~400 m inland coastal buffer from the Town's western boundary at the outflow of Three Stick Pond, covering Little Lawn Harbour and a 100 m buffer along the Little Lawn River, along the southern coastline and then east to Cape Chapeau Rouge, excluding an ~150 m coastal section set aside for mine related infrastructure (Figure 6.7-1). Within this Conservation Area, the town commits to preventing habitat destruction or degradation. As stated in the plan, the Town shall "permit only those activities within the Management Units that have no negative or adverse impact upon the land, or on the wildlife which utilize those areas" and must refer any proposed development within these areas to the Wildlife Division for a mandatory 30-day review. This creates a clear regulatory

expectation that all land use decisions consider potential effects on wetlands, coastal habitats, and associated wildlife, including seabirds, waterfowl, and species linked to the nearby Lawn Islands Archipelago Reserve.

6.7.1.3 Municipal Guidelines

The Town of St. Lawrence's Municipal Plan and Developmental Regulations have been in effect since December 27, 2013 (Town of St. Lawrence 2012). Within the plan, CFI's operations, including the proposed Project Area, have been designated and zoned Mining. Developmental regulations with direct implications for fish and fish habitat are defined in the Use Zone Schedule for Mining; relevant topics include Separation from Adjacent Uses, Water Pollution, Water Ponding, and Erosion Control. Within the Mining Zone the minimum distance from any proposed mining working from a waterbody or watercourse is 50 m unless the Town is satisfied that the mining activity will not adversely affect the natural feature (Town of St. Lawrence 2012).

6.7.2 VC Scoping

This section provides the scope of the VC, which was used to frame the assessment, including the identification of pathway of effects and assessment boundaries. Public and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EARD.

6.7.2.1 Assessment Boundaries

The assessment boundaries for the VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.7.2.1.1 Temporal Boundaries

The temporal boundaries for the Wetlands and Vegetation VC effects assessment are as follows:

- **Construction**: 6 months
- **Operations**: 18 months
- **Closure**: Approximately 24 months, to be determined through development of the reclamation and closure plan

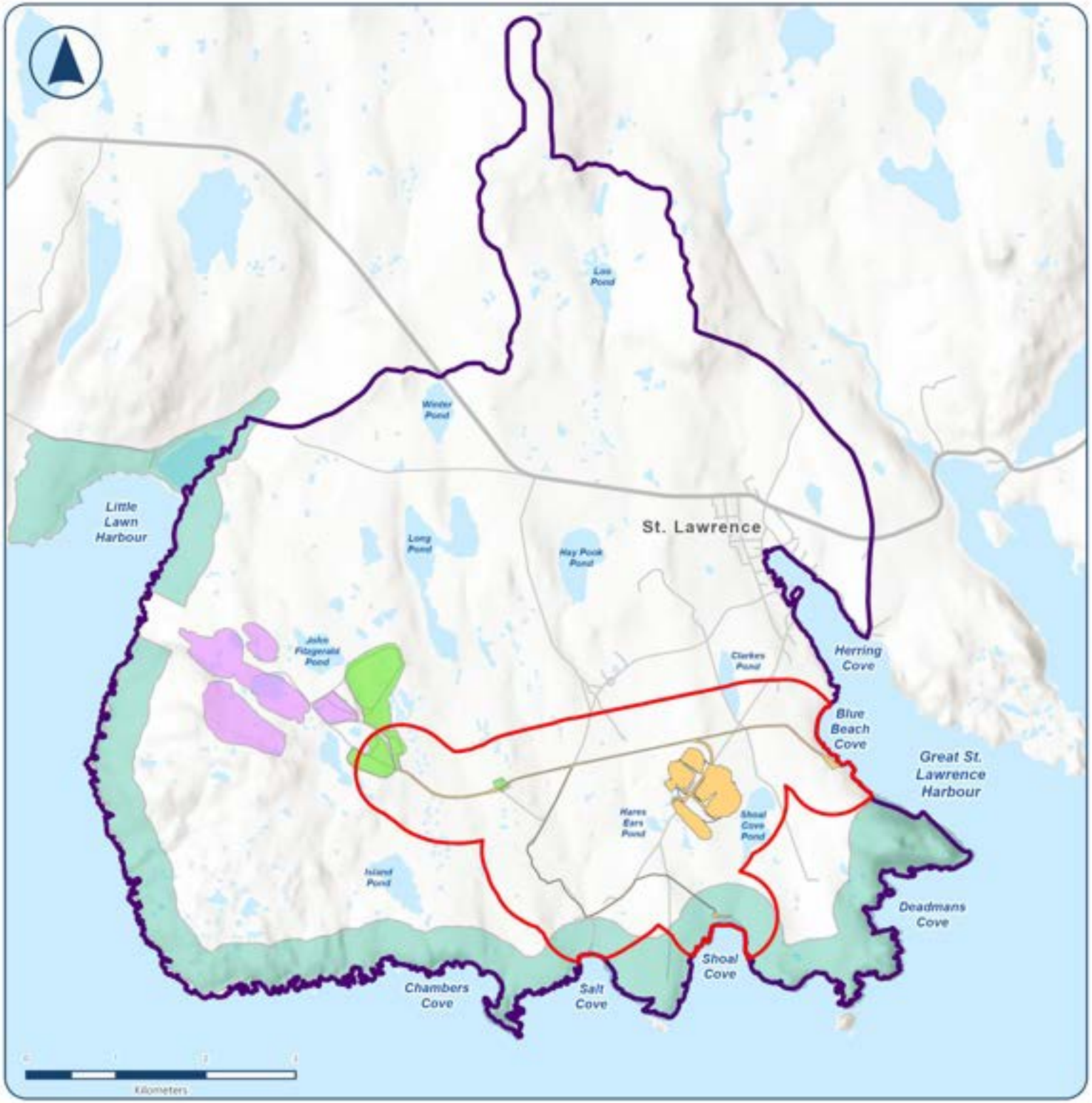
6.7.2.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.7-1.

- **Project Area (PA)**: the physical footprint of Project activities; namely, the Topsoil Stockpile; Overburden Stockpile; Waste Stockpile 1; Waste Stockpile 2; Waste Pad; South Ridge Pit; Access Road Network for the stockpiles and pit; and two Settlement Ponds with associated drainage ditches. In addition, the Project Area includes upgrades to the existing Main Haul Road, Community Access Road, and a new road segment (~250 m) connecting Iron Spring Road with the coastal access road to Hares Ears. The Project Area encompasses 0.58 km^2 as detailed in Section 2.6.1.2.11.
- **Local Study Area (LSA):** this area includes the PA (0.58 km^2) plus an approximate 0.5 km buffer around all components of the Project Area to allow for

potential disturbance effects from Project activities (i.e., airborne dust, sediments) that may affect Wetlands and Vegetation VC. The LSA has a total area of 10.63 km^2.

- **Regional Study Area (RSA):** is based upon the Study Area established for the original AGS assessment and the watersheds that interact with Project activities. It was selected to allow for assessment of potential cumulative effects from the South Ridge Project with the AGS Mine and other relevant activities in the area. The RSA has a total area of 58.2 km^2.



CFI
CANADA FLUORSPAR INC.

FIGURE 6.7-1

ASSESSMENT AREAS: WETLANDS AND VEGETATION

27 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area
- St. Lawrence Coastal Mgmt. Unit

Existing AGS Mine Components:

- Existing
- Shared

Scale: 1:60,000
when printed on 8 1/2 by 11 inch paper

LGL

This map and associated spatial data were prepared by LGL Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Rabich Environmental Consultant Ltd. (REC) and LGL. Data featured in this map has been derived from a variety of digital sources and, as such, REC/LGL does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Data Sources: CFI, IGBE Base Map, CANVEC data (1:50K), and NL Gov. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: CFI_South_Ridge_EIS.aprx Exported on: 2026-04-27 11:19:44 by: SJS

6.7.3 Existing Conditions

This section describes the methods that established the existing conditions of the Wetlands and Vegetation VC and the description of the existing conditions.

6.7.3.1 Methods

To support the EARD, a review of available information and data sources, including the sighting databases, was conducted. No site-specific wetland and vegetation field surveys or modelling were undertaken other than the Fish and Fish habitat field surveys conducted in 2025 (LGL 2026; see Appendix 6.6-1). An Environmental Land Classification (ELC) desktop exercise was conducted to define land cover types within the assessment spatial boundaries with respect to their quantitative area and proportional representation.

6.7.3.1.1 Data Sources

Background information and data that were used to inform the baseline conditions for the Wetlands and Vegetation VC included:

- Reactivation of the St. Lawrence fluorspar mine at St. Lawrence, NL: Project Registration and Project Description (2009)
- Environmental Assessment Registration AGS Fluorspar Project, St. Lawrence, NL (2015)
- Assessment of the Wetlands, Avifauna and Wildlife at Risk in the Proposed Fluorspar Mine Project Footprint Area: Baseline Report (2015)
- St. Lawrence Fluorspar Marine Shipping Terminal Project: Project description and Project registration (2019)
- Environmental Protection Plan: Operations Phase, St. Lawrence Fluorspar Project Rev 0 (2017)
- Atlantic Canada Conservation Data Centre (AC CDC) observation data on SAR/SOCC within 5 km of the Project
- NLDFAL Land Cover spatial database and associated (Forest Resource Inventory) tables (NLDFAL 2025)
- Canadian Wetland Inventory Map, ver. 3A (CWIM3A; NRCan 2024)
- High-resolution satellite imagery (ESRI World Imagery; Scene capture date: 21 September 2024)
- Fish and Fish Habitat Surveys (LGL 2026)
- iNaturalist citizen science records
- Peer-reviewed and published literature

6.7.3.1.2 Environmental Land Classification

Prior ELC products for the St. Lawrence area (i.e., CFI 2015) were based on historical digital National Topographic Service (NTS) data at the 1:50,000 scale that were originally classified in the mid 1980s. Given the landscape-related changes related to the growth of CFI AGS Mine operations in the area, GIS analysis was performed using recent data sources to construct an updated ELC to identify landcover types and hydrological features within the PA, LSA, and RSA. The following data sources were used:

- NLDFAL Land Cover spatial database and associated (Forest Resource Inventory) tables (NLDFAL 2025)

- Canadian Wetland Inventory Map, ver. 3A (CWIM3A; NRCan 2024)
- High-resolution satellite imagery (ESRI World Imagery; Scene capture date: 21 September 2024)

The ELC/land cover dataset was compiled for the PA, LSA, and RSA from NLDFAL forest and non-forest spatial data, which was updated to account for recent changes to cleared areas as a result of mining operations and other industrial developments in the area. Brief descriptions of land cover types that comprise the ELC are provided in Table 6.7-1.

Table 6.7-1: NLDFAL Land Cover Classification Types and Descriptions

NLDFAL Land Cover Classification	Description
Coniferous Scrub	Windswept and stunted coniferous trees, primarily balsam fir with black spruce. Typically, less than 6.5 m in height. Scrub designation is for forested stands comprised of non-commercial timber.
Deciduous Scrub	Thick, stunted deciduous trees and shrubs
Softwood - Regenerating	Softwood forest with dominant and co-dominant trees of the forest with an age between 1 to 20 years
Softwood - Immature	Softwood forest with dominant and co-dominant trees of the forest with an age between 21 to 40 years
Softwood -Semi-mature	Softwood forest with dominant and co-dominant trees of the forest with an age between 41 to 60 years
Small Island	Small Island (<0.5 ha) in waterbodies that do not need to be classified any further than Small Island
Water	Waterbodies including streams, rivers, saltwater and freshwater lakes and ponds
Wetland - Bog	Wet areas of bog or marsh that may include patches of open water. Wetness may be seasonal or close to the surface to prohibiting tree growth
Wetland - Wet Bog	Wet areas of bog or marsh with a large number of open water patches
Cleared Land	Land where vegetation has been removed
Right-Of-Way (Road)	Land cleared for a road
Residential	Land cleared for residential use, commercial purposes or cabin development areas

6.7.3.1.3 Data or Information Limitations

The following data and information limitations were noted for the Wetlands and Vegetation VC:

- The assessment of plant communities and potential presence of SAR/SOCC is based on the known distributions of plant species as described in the list of data

sources above, as well as incidental observations and photographs taken during the November 2025 field site visit to assess fish and fish habitat in and near the Project Area. As such, it is possible that there are additional instances of vascular plant SAR/SOCC within the PA that have not been observed or recorded.

- In lieu of field studies to ground-truth NLDFAL land cover polygons for wetlands, CWIM3A data was used as a proxy for wetland interpretation and wetland functional assessments for the PA. Wetland boundaries delineated by NLDFAL were visually compared to the 10 m resolution CWIM3A product and were found to have acceptable congruence for all EARD spatial boundaries. As a result, the CWIM3A product was not incorporated into the ELC directly, but its wetland classifications were used to supplement NLDFAL polygons, primarily for bogs and fens.

6.7.3.2 Description of Existing Conditions

The PA (as well as the LSA and RSA) lies within the Eastern Hyper-Oceanic Barrens Ecoregion, an ecoregion shaped by its proximity to the ocean and low temperatures due to frequent fog conditions. The landscape is flat to gently rolling, with maximum elevation reaching approximately 200 m above sea level. Eastern Hyper-Oceanic Barrens are dominated by open barrens and bogs with limited tree cover that occurs only in small, discontinuous patches, typically in sheltered locations.

1.1.1.1.1 Land Cover and Associated Vegetation

Land cover within the PA is dominated by forested habitats, which account for 72.7% (42.4 ha) of the total area, primarily consisting of Coniferous Scrub (23 ha; 39.5% of the total PA), followed by regenerating softwood (23% of the total PA) stands (Table 6.7-2; Figure 6.7-3). Disturbed areas represent 19.6% (11.4 ha), largely associated with existing roads and rights-of-way. Wetlands and waterbodies comprise 7.0% (4.1 ha), consisting mainly of bog and wet bog communities, while barrens are limited (0.7%) and consist entirely of barren soil. Within the LSA and RSA, forested lands remain the predominant cover type (56.3% and 40.0%, respectively), followed by wetlands/waterbodies (26.3% and 28.3%) and barrens (10.6% and 23.8%).

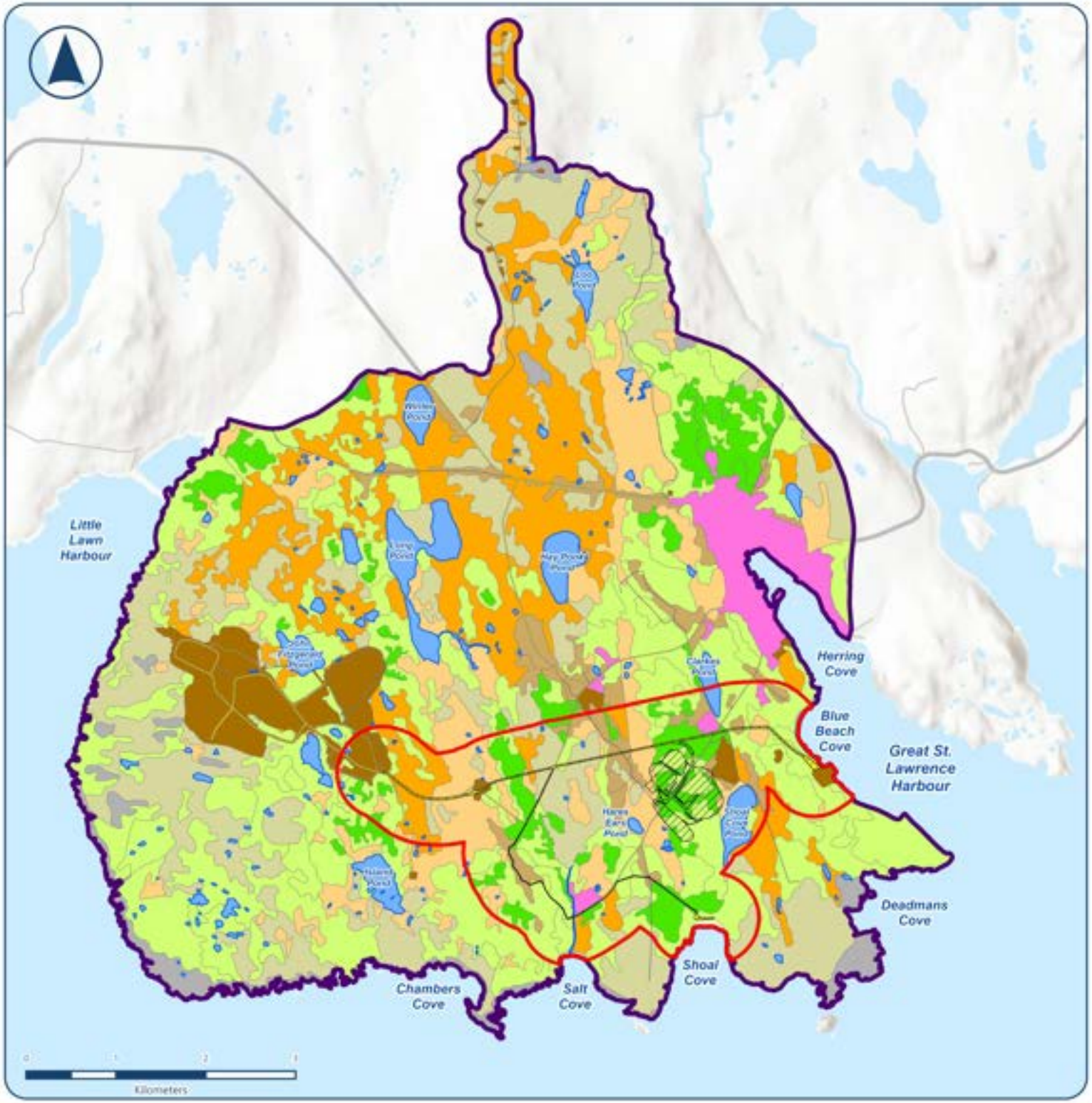


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FIGURE 6.7-2

ELC - LAND COVER TYPES: REGIONAL STUDY AREA

27 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area
- Waterbodies

Forested Areas:
- Coniferous Scrub
- Deciduous Scrub
- Softwood Forest

Non-Forested Areas:
- Barrens - Rock
- Barrens - Soil
- Cleared Land
- Residential
- ROW - Roads
- Sand
- Small Island
- Wetland - Bog
- Wetland - Wet Bog

Scale: 1:60,000
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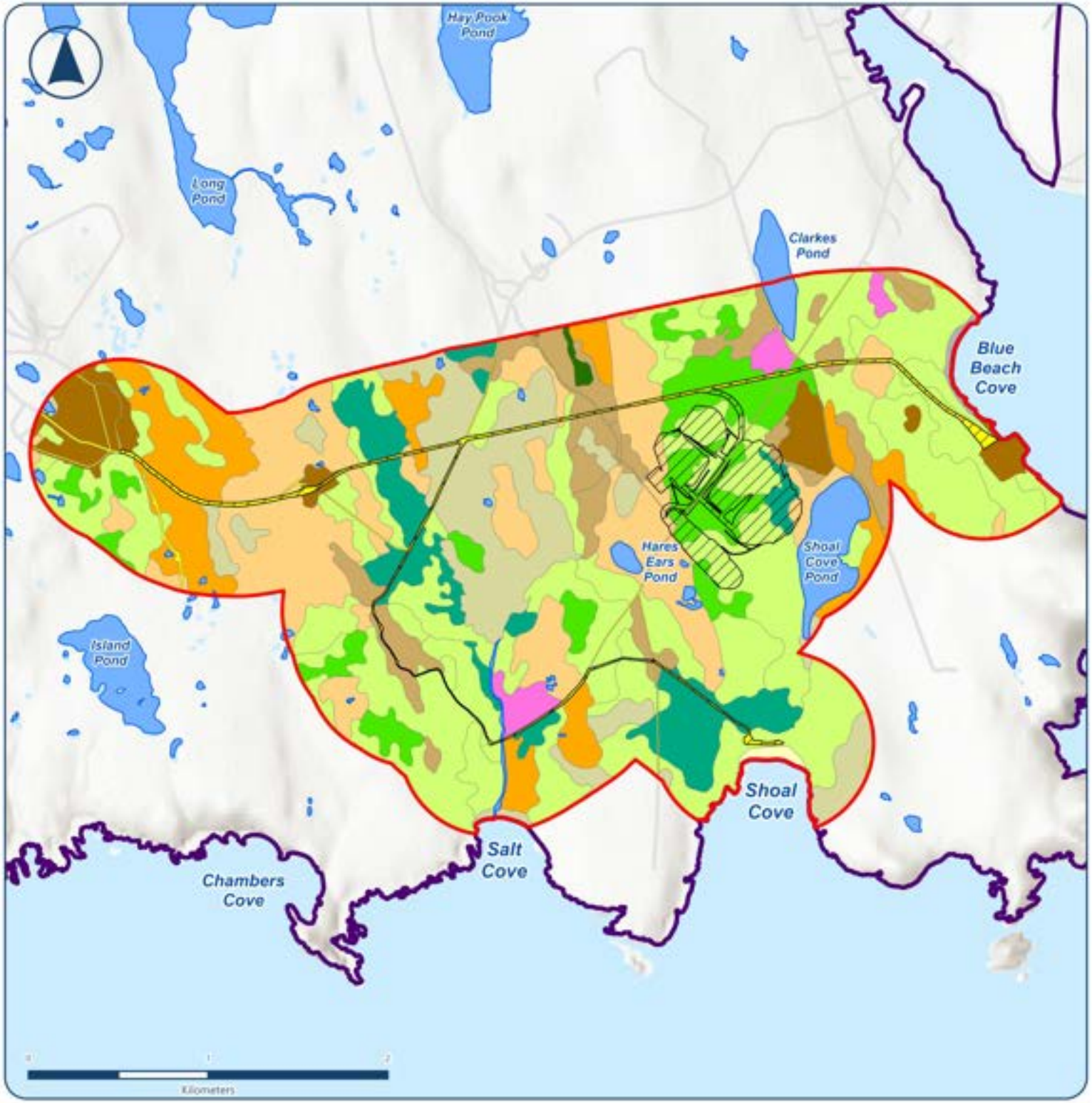

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FIGURE 6.7-3

ELC - LAND COVER TYPES: LOCAL STUDY AREA

27 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area
- Waterbodies

Forested Areas:
- Coniferous Scrub
- Deciduous Scrub
- Softwood, Regen.
- Softwood, Immature
- Softwood, Semi-mat.

Non-Forested Areas:
- Barrens - Rock
- Barrens - Soil
- Cleared Land
- Residential
- ROW - Roads
- Sand
- Wetland - Bog
- Wetland - Wet Bog

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Forest cover is composed primarily of balsam fir (*Abies balsamea*), often occurring as wind-stunted krummholz (tuckamore) (PAANL 2008). The open barrens and bogs are dominated by Heath moss (*Racomitrium lanuginosum*) and *Cladonia* lichen and often consist of plant species such as Cottongrass (*Eriophorum* sp.), Common juniper (*Juniperus communis*), Cloudberry (*Rubus chamaemorus*), Early lowbush blueberry (*Vaccinium angustifolium*), Partridgeberry (*Mitchella repens*), crowberry (*Empetrum* sp.), Northern Blue Flag (*Iris versicolor*), Small purple-fringed orchid (*Platanthera psycodes*), Northern pitcher plant (*Sarracenia purpurea*), Spoonleaf sundew (*Drosera intermedia*), Hooded ladies' tresses (*Spiranthes romanzoffiana*), Bunchberry (*Cornus canadensis*), and Canada burnet (*Sanguisorba canadensis*) (PAANL 2008; NL EHJV 2019; iNaturalist 2026). Shrub species common to the region include Sheep Laurel (*Kalmia angustifolia*), Pale Bog Laurel (*Kalmia polifolia*), Bog Rosemary (*Andromeda polifolia*), Leatherleaf (*Chamaedaphne calyculata*), Sweet Gale (*Myrica gale*), Mountain Ash (*Sorbus* sp.), Virginia Rose (*Rosa virginiana*), Tall Meadow Rue (*Thalictrum pubescens*), and Common Labrador Tea (*Rhododendron groenlandicum*) (NL EHJV 2019).

Information reviewed from the AC CDC Report (Appendix 6.7-1) and iNaturalist citizen science records identified no occurrences of plant SAR or SOCC within the PA or LSA. Fragile Rockbrake (*Cryptogramma stelleri*), which is listed as S2S3 (Imperilled) under AC CDC, was documented in 1998 in the vicinity of Little St. Lawrence. Fragile Rockbrake typically occurs in moist crevices of cliffs and rock outcrops and is not considered globally rare outside Newfoundland and Labrador. Water pygmyweed (*Tillaea aquatica)*, listed as a Vulnerable species under the NL ESA, has not yet been documented within the PA. However, it is known to occur in the Burin Peninsula (SSAC 2008). This species is a very small, annual, succulent herb that is found in intermittently wet and disturbed sites such as quarry pits, roadside edges, ditches, and rutted trails. The nearest recorded population is in Taylor’s Bay, although the species could potentially be present in coastal portions of the LSA (SSAC 2008).

Although there is no official list of invasive species for NL, there is a possibility that several exotic species that are considered potentially invasive in other Canadian jurisdictions (such as Colt's-Foot (*Tussilago farfara*), Purple Loosestrife (*Lythrum salicaria*), Japanese Knotweed (*Reynoutria japonica*), Black Knapweed (*Centaurea nigra*)) may occur in disturbed areas. These species are typically associated with anthropogenic disturbance, transportation corridors, and wetland margins, and could therefore be present where similar habitat conditions occur within the PA or LSA. However, no recent vegetation surveys have been conducted, and there is no available information confirming the presence or absence of exotic or potentially invasive plant species in the PA or LSA.

Table 6.7-2: Land Cover Types within the PA, LSA, and RSA

Land Cover Types1	Area within PA		Area within LSA[2]		Area within the RSA2	
	Hectares	% of total	Hectares	% of total	Hectares	% of total
Barrens						
Barren - Rock	---3	---	2.5	0.2	158.4	2.7
Barren - Soil	0.4	0.7	107.4	10.1	1,225.5	21.1
Sand	---	---	2.5	0.2	2.5	0.04
Total Barrens	0.4	0.7	112.4	10.6	1,386.4	23.8
Forested						
Coniferous Scrub	23.0	39.5	388.0	36.5	1821.4	31.3
Deciduous Scrub	1.0	1.7	68.0	6.4	190.0	3.3
Softwood - Regenerating	13.9	23.8	71.4	6.7	120.9	2.1
Softwood - Immature	4.5	7.7	69.0	6.5	103.7	1.8
Softwood - Semi-mature	---	---	2.0	0.2	89.4	1.5
Small Island4	---	---	---	---	0.1	0.002
Total Forested	42.4	72.7	598.3	56.3	2,325.4	40.0
Wetlands/Waterbodies						
Wetland - Bog	3.8	6.5	167.8	15.8	595.8	10.2
Wetland - Wet Bog	0.3	0.5	82.3	7.8	814.9	14.0
Water	0.01	0.02	29.3	2.8	232.2	4.0
Total Wetlands/Waterbodies	4.1	7.0	279.4	26.3	1,643.0	28.3
Disturbed						
ROW - Road	11.2	19.2	18.6	1.7	45.3	0.8
Cleared Land	0.2	0.3	39.7	3.7	246.0	4.2
Residential	0.1	0.1	13.2	1.2	169.6	2.9
Total Disturbed	11.4	19.6	72.5	6.7	460.9	7.9
TOTAL	**58.3**	**100.0**	**1,062.6**	**100.0**	**5,815.7**	**100.0**

Forested and wetland areas contain historically impacted soils resulting from past activities that have occurred within the Project Area (e.g., Geotechnical works, recreational ATV trails, etc.).

LSA = Local Study Area; RSA - Regional Study Area. The LSA and RSA (and associated numbers presented in the table) are unique to the birds, bats, other wildlife, and vegetation VC chapters.

'---' indicated land cover type was not present within the spatial boundary, relative to the RSA.

Small islands are forested areas within open water but may occasionally be wetlands.

6.7.3.2.1 Wetlands

A wetland is generally defined as land that is saturated with water for a sufficient duration to support wetland or aquatic processes, as evidenced by poorly drained soils, hydrophytic vegetation, and biological communities adapted to wet conditions (National Wetland Working Group, 1997). Under the NL WRA (2002), a wetland is defined as land where the water table occurs at, near, or above the ground surface and includes bogs, fens, marshes, swamps, and other shallow open water areas. In addition to providing habitat for wetland-associated plant and wildlife species, wetlands serve many critical ecosystem functions such as water filtration, carbon storage, run off water storage, flood reduction and control (GC 1991).

Wetlands are a dominant and widespread feature of the Eastern Hyper-Oceanic Barrens ecoregion, shaped by high precipitation, cool temperatures, and poor drainage conditions (PAANL 2008). Bogs are particularly prevalent and occur extensively as blanket bogs and Plateau bogs within the RSA (PAANL 2008). Bogs are characterized by water tables at or slightly below the ground surface, with precipitation, fog, and snowmelt serving as the primary water sources (NWWG 1997). Due to minimal groundwater influence, lack of dissolved minerals in precipitation and accumulation of organic acids produced during decomposition results in acidic and nutrient poor conditions in bog surface water. Peat deposits are dominated by weakly to moderately decomposed sphagnum and woody material, with soils primarily classified as Ferro humic podzols, and vegetation typically consists of sphagnum mosses and low ericaceous shrubs. Plateau bogs are often raised above surrounding terrain, where the buildup of sphagnum mosses 2-10 m deep forms a plateau like gently undulating surfaces, and scattered pools reaching depths of 2–4 m (NWWG 1997; PAANL 2008). Whereas Blanket bogs form extensive, relatively shallow peat deposits (< 2 m) that drape uniformly over gently sloping hills and valleys and lacks pools (NWWG 1997).

Fens are peatlands with a fluctuating water table that is typically at or just above the surface, and they differ from bogs hydrologically in that they receive mineral rich groundwater and surface water inputs, therefore, supporting higher nutrient availability than in bogs. As a result, fens tend to be more biologically productive, support greater plant diversity. The vegetation consists primarily of sedges, grasses, reeds, and brown mosses with some ericaceous shrubs and, often Black Spruce (NWWG 1987; NWWG 1997).

Smaller marshes also occur, particularly in delta areas, where waterways discharge into ponds or lakes with vegetation generally dominated by emergent vegetation (such as rushes, reeds, grasses, and sedges) along with a variety of shrubs, herbaceous plants, and aquatic species (NWWG 1997). Fens and marshes generally have higher vegetative productivity and provide higher quality wetland habitat for wildlife, whereas the region's small lakes and ponds are oligotrophic, offering limited wildlife habitat (LGL 2015).

As noted earlier, wetlands and waterbody landcover types comprise 4.1 ha (7.0%) of the PA, 279.4 ha (26.3%) of the LSA, and 1,643 ha (28.3%) of the RSA, based on the ELC (Table 6.7-2; Figure 6.7-2). According to the independent CWIM3A classification, wetland habitat within the PA primarily consists of bog (2.7 ha, representing 83.3% of total wetlands within the PA) followed by fen (0.5 ha, representing14.3% of total

wetlands within PA), which will be lost/altered due to Project activities (Table 6.7-3; Figure 6.7-4). It is important to note that the ELC, based on updated NLDFAL land cover polygons, is a different dataset with different classifications and spatial resolution than the Canadian Wetland Inventory Map Version 3A (CWIM3A) and therefore, the total area of wetland within the PA, LSA, and RSA are slightly different (3.3 ha of total wetlands within PA according to CWIM3A in Table 6.7-3 versus 4.1 ha of total wetlands within the PA according to the ELC (Table 6.7-2). The Project's ELC was based on NLDFAL data and as such, results in larger values for wetland areas, which is considered precautionary for the purpose of the assessment.

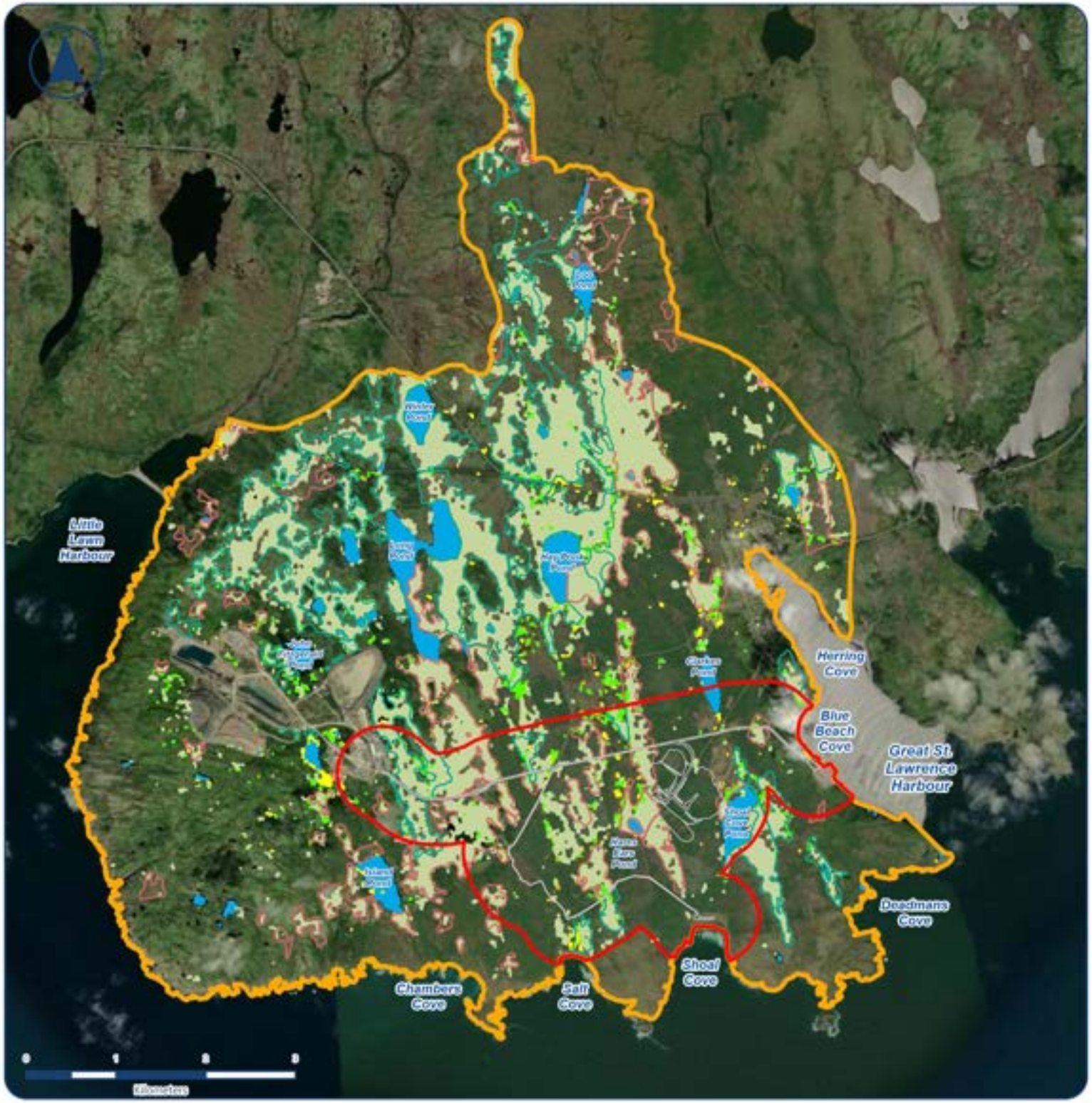

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FIGURE 6.7-4

WETLAND CLASSIFICATION

27 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area

Wetlands - Land Cover Types (NL Gov):

- Wetland - Bog
- Wetland - Wet Bog

Wetlands - Canadian Wetland Inventory (NRCan):

- Bog
- Fen
- Swamp
- Marsh
- Open Water

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Table 6.7-3: Wetland Classes within the PA, LSA, and RSA based on Canadian Wetland Inventory Map (version 3A)

Wetland Class	Area within PA[1]			Area within LSA[1]			Area within RSA[1,3]		
	Hectares	% from total wetlands	% of total area[2]	Hectares	% from total wetlands	% of total area[2]	Hectares	% from total wetlands	% of total area[2]
Bog	2.7	83.3	4.7	242.7	77.8	22.8	1,195.4	77.4	20.6
Fen	0.5	14.3	0.8	34.3	11.0	3.2	113.1	7.3	1.9
Swamp	0.1	2.4	0.1	1.8	0.6	0.2	2.7	0.2	0.0
Marsh	0	0	0	10.4	3.3	1.0	47.1	3.0	0.8
Open Water	0	0	0	22.7	7.3	2.1	186.0	12.0	3.2
TOTAL WETLANDS	3.3	100.0	5.6	311.9	100.0	29.3	1,544.2	100.0	26.6

[1] PA = Project Area; LSA = Local Study Area; RSA - Regional Study Area. The LSA and RSA (and associated numbers presented in the table) are unique to the wetlands and vegetation VC chapter.

[2] FAL- Land Cover - Newfoundland is a different dataset with different classifications and different spatial resolutions than the Canadian Wetland Inventory Map Version 3A (CWIM3A) and as such, the absolute area of given wetland habitat type within the PA, LSA and RSA are slightly different.

[3] No modification to CWI3A raster data was necessary to update anthropogenic landscape level changes for the CFI area of interest (RSA); product deemed useable as provided.

FAL-Land Cover vector dataset was modified to reflect recent landscape level change (e.g. cleared land, etc.) based on World Imagery high-resolution satellite imagery.

Within the LSA there are two watersheds (Figure 6.6-2): Shoal Cove Pond watershed and Salt Cove Brook watershed, both of which are impacted by previous mining activities. The Shoal Cove watershed encompasses Shoal Cove Pond and Clarkes Pond, as well as the Clarkes Pond Inlet, Clarkes Pond Brook, and Shoal Cove Brook. Shoal Cove Pond is a shallow waterbody (generally <1.5 m deep; max ~1.8 m) that supports submerged aquatic vegetation, mainly pondweed (*Potamogeton sp.*), as well as emergent species such as water bulrush (*Schoenoplectus sp.*), and its bottom is uniformly covered by a thick layer of fine silt (CFI 2015; LGL 2026). The pond has been heavily influenced by historical mining activities, including tailings disposal (1930s–1950s) and effluent discharge from a tailing facility (1987–1990), which contributed to substantial sediment accumulation, particularly at the northern end where it may be resuspended during high flows (CFI 2009, 2015). Water sampling in 2009 showed exceedances of CCME guidelines for cadmium, aluminum, copper, and iron. The Salt Cove Brook watershed encompasses two larger ponds (Hay Pook Pond and Long Pond) outside the LSA, one smaller pond (Hares Ears Pond) within the LSA, and Salt Cove Brook. Existing impacts to Salt Cove Brook are primarily due to the diversion of water away from the natural stream channel and into a linear man-made diversion channel (CFI 2009). Field surveys conducted in 2009 recorded that the concentrations of cadmium, aluminum and iron in the Salt Cove Brook watershed exceeded CCME guidelines (CFI 2015). Overall, both watersheds, including the wetlands, have been degraded by past mining, resulting in wetland alteration and impacted water quality.

6.7.4 Effects Assessment

This section provides input and results specific to the Wetlands and Vegetation VC effects assessment. A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as follows:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects;
- Identification of potential cumulative effects; and
- Follow-up commitments and monitoring programs.

6.7.4.1 Identification of Project-VC interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the Wetlands and Vegetation VC within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). An interaction table for the Wetlands and Vegetation VC is presented in Table 6.7-4.

Potential Project-related effects on the Wetlands and Vegetation VC were determined by comparing existing conditions to those expected to result from the Construction, Operations, and Closure phases of the Project. Potential effects are outlined, including an indication of whether they are expected to be direct (i.e., as a result of a Project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another VC). In many cases, changes in the Water Quantity and Water Quality VC (see Section 6.5), can indirectly affect the Wetlands and Vegetation VC.

As indicated in Table 6.7-4, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Wetlands and Vegetation VC in and near the PA. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Mine assessment, and professional judgement. Overall, effects can be categorized into three primary categories: (1) Loss of vegetation, changes in species and community diversity; and (2) Loss of wetland habitats and changes in wetland function.

Table 6.7-4: Identification of Project-VC Interactions and Associated Potential Effects with the Wetlands and Vegetation VC.

Project Activity	Interaction	Nature of Potential Effect
Construction		
Community Access Roads	• Strip, clear, fill, gravel, and grade to accommodate vehicle traffic • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use • Upgrades to Memorial Bridge and Blake's Brook Bridge	Direct: Loss and degradation of vegetation and soils — clearing removes native plant communities (including potential SAR/SOCC), eliminates seedbanks, compacts soils, and reduces regeneration potential.

Project Activity	Interaction	Nature of Potential Effect
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded and berms will be built up to support larger equipment traffic • Strip, clear, fill	Wetland and watercourse alteration — intersecting wetlands or modifying topography, soils, and hydrology can change wetland function, drainage patterns, and flooding potential. Changes to surface hydrology and runoff — watercourse crossings, access roads, ditches, culverts, stockpiles, and water management infrastructure can alter flow paths, increase runoff, reduce infiltration, and elevate flood risk. Increased risk of invasive species spread — vehicle movement and disturbed ground along access roads facilitate the introduction and spread of non-native species. Fugitive dust/contaminants from roads and blasting may alter soil chemistry and cause physiological effects in vegetation by hindering air exchange, reducing photosynthesis. <u>Indirect:</u> Edge effects in adjacent habitats — Clearing creates new habitat edges that alter microclimate, vegetation structure, dispersal patterns, and herbivore access.
Pit Haul Roads	• Strip, fill, gravel, and grade.	
Power Infrastructure upgrades	• Transmission line re-routing and raising along the Blue Beach Haul road to allow Cat 777s to travel to the project area. • The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	
Stockpile Area Development	• Stripping, clearing and preparing stockpile areas for topsoil, overburden, and waste rock.	
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	
Operations		
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment ponds and monitored.	<u>Direct</u> Changes to surface hydrology and runoff — watercourse crossings, access roads, ditches, culverts,

Project Activity	Interaction	Nature of Potential Effect
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	stockpiles, and water-management infrastructure can alter flow paths, increase runoff, reduce infiltration, and elevate flood risk. Increased risk of invasive species spread — vehicle movement and disturbed ground along access roads facilitate the introduction and spread of non-native species. Fugitive dust/contaminants from roads and blasting may alter soil chemistry and cause physiological effects in vegetation by hindering air exchange, reducing photosynthesis. Release of contaminated seepage from the waste rock piles and spills of hazardous materials. Dewatering of the pit could potentially alter groundwater discharge to surface water features that affect wetlands and vegetation. <u>Indirect:</u> Edge effects in adjacent habitats — Clearing creates new habitat edges that alter microclimate, vegetation structure, dispersal patterns, and herbivore access.
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	
Stockpiling	• As mining progresses waste rock will be deposited in the waste rock stockpiles.	

Project Activity	Interaction	Nature of Potential Effect
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, and re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure and post-closure.	Direct: Loss and degradation of vegetation and soils — clearing removes native plant communities (including potential SAR/SOCC), eliminates seedbanks, compacts soils, and reduces regeneration potential. Wetland and watercourse alteration — intersecting wetlands or modifying topography, soils, and hydrology can change wetland function, drainage patterns, and flooding potential. Changes to surface hydrology and runoff — watercourse crossings, access roads, ditches, culverts, stockpiles, and water-management infrastructure can alter flow paths, increase runoff, reduce infiltration, and elevate flood risk. Increased risk of invasive species spread — vehicle movement and disturbed ground along access roads facilitate the introduction and spread of non-native species. Fugitive dust from roads may alter soil chemistry, cause physiological effects in vegetation by hindering air exchange, reducing photosynthesis, and increasing exposure to contaminants. Indirect: Edge effects in adjacent habitats — Clearing creates new habitat edges that alter microclimate, vegetation structure, dispersal patterns, and herbivore access.
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	
Overburden & Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).	

Project Activity	Interaction	Nature of Potential Effect
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required. • Access roads will be maintained to facilitate post-closure monitoring	

6.7.5 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and described throughout Section 6.7.5 were used to inform the design and implementation of the Project mitigation measures. The identified mitigation measures are outlined in more detail in the following sections, including a discussion of their effectiveness and confidence related to avoiding, minimizing, or restoring the VC to prevent residual effects. This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and the proposed mitigations are effective.

Existing mitigation and management measures and contingency plans in place for the AGS Mine will continue to be implemented for the South Ridge Project and will serve to minimize potential effects on the Wetlands and Vegetation VC. Section 2.11 provides a detailed overview of various management and contingency plans. Table 6.7-5 summarizes proposed mitigation measures applicable to Wetlands and Vegetation VC.

6.7.5.1 Loss of vegetation, changes in species and community diversity

Several key mitigation measures will minimize potential changes in plant species and community diversity and loss of vegetation resulting from Project activities. The PA footprint (i.e.,0.58 km^2) was designed to be limited in spatial extent, and to overlap as much as possible with previously disturbed land. Furthermore, the planned Project footprint will be clearly flagged to indicate to Project personnel operating equipment to avoid entry. These planning measures are effective at minimizing the spatial extent of potential effects. To minimize effects of dust on vegetation, CFI will implement several measures to suppress dust generation including watering roads during dry periods, covering stockpiles (to the extent possible), and revegetating areas. To address the increased risk of non-native/invasive vegetation colonization in the PA due to habitat alteration and increased vehicle traffic, equipment used for clearing and construction will be inspected for foreign soil and plant material, washed if necessary, and re-inspected prior to use. If non-native/invasive plants are found in or near the PA at any phase (Construction, Operations, Closure), the extent of colonization will be assessed and a

plan for removal or control will be developed. To replace lost vegetation, haul roads and stockpile areas will be regraded to match the surrounding topography and reseeded with native vegetation similar to the original habitat during Closure. While progressive reclamation will support long-term habitat recovery, some permanent habitat loss within the PA will remain; therefore, a residual effect is anticipated.

6.7.5.2 Loss of wetland habitats and changes in wetland function

The Project has been designed to minimize the loss of wetlands and/or alteration of their functions. A buffer (30 m minimum) will be maintained whenever possible when working and clearing around wetlands, ponds, streams, and bogs in the PA. During Closure, stockpile areas and haul roads will be regraded to match the surrounding topography and restore wetland habitat and surface water flow patterns in those areas. Reseeding of native vegetation in disturbed and cleared areas will further enhance eventual restoration of wetland function. However, some residual effects from the loss and alteration of wetlands are anticipated to remain (e.g., continually altered flow patterns due to raised topography of access roads, which will be maintained after Closure).

Table 6.7-5: Summary of Proposed Mitigation Measures.

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Loss of vegetation, changes in species and community diversity	• Existing disturbed areas will be incorporated into the PA to reduce direct effects on vegetation communities. [All Phases] • A cutting permit shall be obtained prior to the start of any site clearing. Disturbance of vegetation outside designated Project footprint areas will be avoided by clearly flagging the limits for disturbance activities prior to the commencement of work. [All Phases] • Clearing shall consist of cutting to within 15 cm of the ground and disposing of all standing trees; as well as the removal of all shrubs, debris, and other perishable materials from the area. All residual slash shall be stockpiled in windrows for subsequent disposal. [All Phases] • No burning of vegetation and debris. [All Phases] • Stockpiles of topsoil, overburden, and other potentially dust-generating materials will be kept covered, where practical, and used as soon as practical, or will be appropriately temporarily vegetated. [All Phases] • Dust from operations activities and unpaved haul and access roads will be controlled by frequent applications of water during the dry summer months. [All Phases] • Equipment will arrive at the construction site clean and free of soil and vegetative debris, to reduce the risk of introducing or spreading non-native and/or invasive vascular plant species. Equipment will be inspected and either approved for use or cleaned, re-inspected and approved for use. If invasive vascular plant species are noted within or near the PA during construction or operation, the extent of the species will be assessed and a plan for removal and/or control will be developed. [All Phases] • Grubbed material and/or topsoil should be stored in low piles to decrease the effect of compaction on soil structure. Stockpiles should be seeded or otherwise protected to prevent erosion and loss of nutrients. [All Phases] • In Closure Phase, access roads and stockpile areas will be re-graded to be continuous to the surrounding topography, and re-seeded with native vegetation similar in species composition to the original habitat. [Closure]	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Loss of wetland habitats and changes in wetland function	• A minimum buffer zone of natural vegetation of 30 m from the high-water mark of water bodies and watercourses will be maintained around work areas (to the extent possible) where available space poses a constraint. For ecologically sensitive areas (e.g. wetlands) a minimum buffer zone of natural vegetation of 50 m will be maintained around work areas where available space poses a constraint. If available space allows, then wider buffer zones of 100 m shall be maintained between operation areas and watercourses, water bodies, and ecologically sensitive areas. [All Phases] • A buffer of at least 25 m will be maintained between all natural water bodies and waste rock, overburden, and topsoil piles to minimize the risk of sedimentation (to the extent possible). [All Phases] • Sediment runoff control fences shall be constructed at the toe of all slopes outside the buffer zones to control runoff from areas of exposed soils and prevent transport of sediments towards water bodies. Silt fences and buffer strips shall be inspected on a regular basis. Any accumulations of sediment observed shall be removed and disposed of in an area where it will not re-enter any water body. Also, repairs and replacement of damaged silt fences shall be addressed immediately. [All Phases] • Exposed surfaces that are at risk of erosion will be protected by using appropriate slopes and by diverting surface runoff away from disturbed areas. After precipitation events, slopes will be inspected and corrective measures will be implemented to prevent soil erosion. [All Phases]	Y

6.7.6 Identification and Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table 6.7-4, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.7-6.

Table 6.7-6: Residual Effects Characterization Criteria for the Wetlands and Vegetation VC.

Assessment Criteria	Categories/Parameters for Wetlands and Vegetation VC
Nature	The long-term trend of the residual effect. **Positive** – A residual effect that provides benefit to VC relative to baseline. **Negative** – A residual effect that is detrimental to VC relative to baseline. **Neutral** – No net change in measurable parameters for VC relative to baseline.

Assessment Criteria	Categories/Parameters for Wetlands and Vegetation VC
Magnitude	The overall amount or degree of change in a measurable parameter, or variable, related to existing conditions that are expected. **Negligible** – No measurable change to VC relative to baseline. **Low** – Judged to result in <1% change in the size or health of the population or the carrying capacity of its habitat. A change in a population can result from an absolute reduction in population size. **Moderate** – Judged to result in a 1% to <10% change in the size or health of a population or the carrying capacity of its habitat. **High** – Judged to result in a 10%, or greater, change in the size or health of a population or the carrying capacity of its habitat.
Geographic Extent	The range or scale of approximate geographic areas over which any potential interaction and effect is anticipated to occur. • <1 km^2 • 1–10 km^2 • 11–100 km^2 • 101–1,000 km^2 • 1,001–10,000 km^2 • >10,000 km^2
Timing	Refers to the effects of seasonal variability on the VC. **Negligible Sensitivity** – Residual effect is not sensitive to seasonality. **Moderate Sensitivity** – Residual effect may be influenced by seasonality, but the assessment of attribute parameters is unchanged (i.e., magnitude, geographic extent, duration, frequency, reversibility). **High Sensitivity** – The assessment of the residual effect (i.e., magnitude, geographic extent, duration, frequency, reversibility) is changed based on seasonality.
Frequency	How often the residual effect being assessed is expected to occur. **Single Event** – Residual effect occurs once during the Project. **Irregular Events** – Residual effect occurs sporadically at an irregular interval and is not predictable. **Regular Events** – Residual effect occurs regularly and may be at predictable intervals or specific times. **Continuous** – Residual effect occurs continuously.
Duration	The length of time a potential residual effect may occur. **Short-term** – Residual effect restricted to construction or decommissioning/ rehabilitation phases. **Medium-term** – Residual effect extends through project operations but is expected to subside when operations cease. **Long-term** – Residual effect extends beyond the life of the Project.

Assessment Criteria	Categories/Parameters for Wetlands and Vegetation VC
Reversibility	Refers to the ability of the VC to return to its original state once the stressor is removed **Reversible** – Residual effect is likely to be reversed after activity completion and rehabilitation. **Irreversible** – Residual effect is unlikely to be reversed. It should be noted that a biological effect may be irreversible at the individual level (e.g., loss of an individual plant) but reversible at the population level.
Ecological/Socio-economic Context	Existing condition and trends in the area where residual environmental effects occur. **Undisturbed** – Area is relatively undisturbed or not adversely affected by human activity. **Disturbed** – Area has previously been substantially disturbed by human development or human development is still present.
Level of Confidence (Certainty of Knowledge)	The general level of confidence in the knowledge used to describe the potential environmental effect. **High** – Based on good understanding of cause-effect relationships and data specific to the Project Area. **Moderate** – Based on good understanding of cause-effect relationships using data from elsewhere or incompletely understood cause-effect relationships using data specific to the Project Area. **Low** – Based on incomplete understanding of cause-effect relationships and/or incomplete data specific to the Project Area.

Significant biological effects are those that are considered to be of sufficient magnitude, duration, and geographic extent to cause a change in the VC that will alter its status or integrity beyond an acceptable level. Establishment of the criteria is based on professional judgement but should be transparent and repeatable. An effect can be considered significant (negative by definition), not significant, or positive. A significant residual negative effect on biological VCs is defined as a residual Project-related change in the VC in the LSA where recovery to baseline condition is unlikely.

6.7.6.1 Assessment Context

As indicated in Table 6.7-3, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Wetlands and Vegetation VC in and near the PA. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Mine assessment (CFI 2015), and professional judgement. It is also important to provide context for the South Ridge Project and the assessment of potential residual effects on the Wetlands and Vegetation VC:

- The Project is an expansion of the existing CFI AGS Mine and occurs in a designated mine zone, which is considered a disturbed area. To the extent possible, CFI will use previously disturbed/cleared areas to support the South Ridge Project. However, the new proposed footprint represents 0.583 km^2 of new physically disturbed area. To account for disturbance to flora and fauna likely to

occur as the result of Project activities outside of the footprint itself, the LSA was delineated as an area encompassing a 0.5-km buffer around the PA and is approximately 10.6 km^2 in size.

- Based on the location of the Project within the Eastern Hyper-Oceanic Barrens ecoregion, a relatively low diversity of plant taxa is expected to occur in the RSA, and these taxa are not anticipated to experience major negative effects from the Project. There have been no records of plant SAR/SOCC near the PA or LSA, although there is potential that Fragile Rockbrake (SOCC: S2S3 on the island of Newfoundland) and Water Pygmyweed (SAR: Vulnerable under NL ESA) could occur.
- Clearing of vegetation for the development of the Project will result in the removal of 42 hectares of forested habitat, which represents a small percentage of the available habitat of this type in the region; also, the two potential SAR/SOCC plant species with potential to occur in the area do not occupy forest habitats, so risk of their removal from the PA is low.
- Wetlands and water bodies comprise only 7.0% (4.1 ha) of the PA footprint, and as such, the amount of wetland directly disturbed or cleared for Project activities is small compared to, e.g., the total wetland habitat available in the RSA (1,643 ha) and surrounding area.
- Existing mitigation and management measures and contingency plans will continue to be implemented for the South Ridge Project and will serve to minimize potential effects on the Wetlands and Vegetation VC. Section 2.12 provides a detailed overview of various management and contingency plans; this section focuses on key mitigation measures applicable to Wetlands and Vegetation.

6.7.6.2 Residual Effects: Loss of Vegetation, Changes in Species and Community Diversity

Potential residual Project effects, after implementation of mitigation measures, include direct loss of vegetation due to clearing and grading and indirect effects such as edge effects and dust deposition that can alter plant physiology and health (Farmer 1993; Harper et al. 2005; Brown 2009; Supe and Gawande 2013; Watkinson et al. 2021; Neitlich et al. 2022). Project activities may also modify plant species and community diversity through soil disturbance (e.g., compaction, seedbank removal, dust contamination), changes to wetlands and hydrology, and the introduction or spread of invasive plant species (Wick 2009; Luzuriaga et al. 2005; Kyle et al. 2007; Chen et al. 2014; Mariotti et al. 2020; Nazari et al. 2021). Changes to hydrology may alter the volumes and timing of runoff and/or groundwater interaction with wetlands, causing a shift in wetland successional processes and community (Rezanezhad et al. 2020, Zhang et al. 2021).

Edge effects adjacent to cleared areas may cause localized shifts in vegetation composition due to changes in light, temperature, wind exposure, herbivore access, and humidity, favouring disturbance-tolerant or early successional species (Murcia 1995; Harper et al. 2005). Compaction, disturbance, and/or removal of soil (including the seedbank) may decrease the ability of native plants to regenerate following the cessation of disturbance, especially if increased road traffic due to Project activities introduces non-native plant species to the affected areas (Luzuriaga et al. 2005, Kyle et al. 2007, Mariotti et al. 2020, Nazari et al. 2021). The most substantial long-term influence could arise from

the introduction or spread of invasive species along access roads or disturbed edges (Hansen and Clevenger 2005; Vakhlamova et al. 2016), which can displace native vegetation and alter community composition (Sieg et al. 2003). Mitigation will reduce but may not fully eliminate this risk.

Fugitive dust from road use and blasting may alter soil chemistry and plant physiology, affecting the persistence and diversity of native vegetation, including SAR and SOCC, within the LSA (Farmer 1993; Auerbach et al. 1997; Brown 2009; Watkinson et al. 2021). Dust suppression measures are planned to reduce these effects. As described in Section 6.2.5.1, dust deposition is expected to be limited to within approximately 2 km of the PA, although the exact distance varies with weather, traffic volume, vehicle speed, and vegetation structure.

During closure, the Rehabilitation and Closure Plan (RCP) will include revegetation of haul roads and stockpile areas. Although stunted Balsam Fir are slow growing due to the exposure to harsh weather and excessive soil moisture (PAANL 2008) and are not expected to return to pre-Project conditions for many decades. However, only 42.4 hectares of forested area will be cleared within the PA, which accounts for 1.8% of the total forest cover within the RSA.

Table 6.7-7: Summary of Residual Effect Characterization Related to: Loss of vegetation, changes in species and community diversity.

Criteria	Rating	Rationale
Magnitude	Low	The amount of habitat altered, lost, and fragmented is small.
Geographic Extent	11-100 km^2	Main effects are limited to cleared/ altered habitats and their immediate vicinity (e.g., edge effects); however, effects of dust and invasive plant species may expand beyond the PA to varying degrees.
Timing	High Sensitivity	The growing season is the most sensitive; limited winter biological activity.
Frequency	Single event (clearing) Continuous (edge effects, invasive species introduction) Irregular (dust)	Residual effect related to loss of vegetation is a single event during the construction period when the area is cleared to construct stockpiles, open pit, haul roads, access roads, and water management infrastructure. Residual effects related to the edge effect and invasive species introduction may happen continuously throughout the operations and closure. Fugitive dust-related residual effects would occur irregularly when the conditions are favourable for dust generation.
Duration	Long-term	Residual effect is considered long-term as some changes will persist beyond the life of the Project.

Criteria	Rating	Rationale
Reversibility	Reversible to Irreversible	Re-establishment of native plant communities is expected following re-seeding with native species during closure and decommissioning. Although some vegetation communities, such as tuckamore will take many decades to establish, changes in species composition may persist and differ from existing conditions. However, effects from the introduction and spread of non-native invasive plants, if they occur, may be irreversible.
Ecological/Socio-economic Context	Disturbed	Located within a mining zone and previously disturbed landscape.
Level of Confidence	Moderate to low	Limited site-specific vegetation diversity and composition data (including SAR and invasive species presence) within the Project footprint reduce certainty regarding fine-scale community responses. However, general cause–effect relationships between vegetation clearing, edge effects, soil disturbance, and community change are documented elsewhere.
Significance	Not Significant	Low magnitude, small extent, reversible with mitigation measures and best practices.

Residual effects are considered low in magnitude, primarily restricted to the Project footprint and RSA, long-term in duration (as the change in communities will extend beyond the life of the Project), and partially reversible following rehabilitation. Effects may occur as a single primary disturbance event (clearing, grading) and multiple irregular or continuous events (invasive species introduction and spread, fugitive dust, edge effect) throughout Project activities. Timing sensitivity is high, as many vegetation removal activities occur during spring and summer growing seasons. Although most effects are reversible, the establishment of invasive species could result in localized irreversible changes in community composition. Overall, residual effects are predicted to be Not Significant.

6.7.6.3 Residual Effects: Loss of Wetland Habitats and Changes in Wetland Function

After implementation of mitigation measures Project-related residual effects include the loss or modification to wetlands through activities such as construction of roads and ditches, mechanical disturbance and/or compaction of the ground, infilling, drainage, dredging, channelization, and removal of vegetation cover and/or organic matter (Kiffney et al. 2022). Wetland loss may further result in adverse effects to the quality and quantity of surface water, ground water, terrestrial and aquatic habitat, and associated floral and faunal biodiversity (GNL 2001). Additional potential consequences include changes in type and function of wetlands, increased water flows that may contribute to infrastructure damage, riverbed erosion and associated sedimentation, effects on fish resources, and reduced suitability of water bodies for recreational activities (National Wetlands Working Group 1997; GNL 2001, Kiffney et al. 2022). Changes to hydrology may alter the volumes and timing of runoff and/or groundwater interaction with wetlands, which can result in a

change in successional vegetative community and wetland form and function. Changes to water quality may change the biogeochemical processes (nutrient cycling) within the wetlands (Rezanezhad et al. 2020, Zhang et al. 2021).

Wetlands within the PA have been altered due to ongoing AGS mining activities, infrastructure development, and recreational activities. The Project will directly disturb a small area of wetlands (approximately 4.1 ha), representing a minor fraction of wetland habitat available in the RSA (1,643 ha). However, loss of wetland habitats results in permanent loss of associated ecological functions, including water storage, nutrient retention, carbon sequestration, and habitat provision (Zedler and Kercher 2005). North American peatlands accumulate peat at a long-term apparent rate averaging approximately 0.43 mm per year (Gorham, 1991). Given these slow accumulation rates, structural restoration of bog habitats within the PA following decommissioning may not restore the pre-project wetland functions even with the restoration efforts in place (Zedler and Kercher 2005).

Table 6.7-8: Summary of Residual Effect Characterization Related to: Loss of wetland habitats and changes in wetland function.

Criteria	Rating	Rationale
Magnitude	Low	Wetland loss represents a small proportion of wetland area available within the RSA. Functional loss is localized to the Project footprint and LSA.
Geographic Extent	1-10 km^2	Direct loss is confined to the Project footprint; indirect hydrological influence may extend into hydrologically connected wetlands within the LSA.
Timing	Moderate Sensitivity	Wetlands sensitive to hydrological alteration during growing season and while construction may occur during growing season, the magnitude, geographic extent, duration, frequency, reversibility remains unchanged throughout.
Frequency	Single event: loss of wetland habitat Continuous: Wetland alterations	Permanent wetland loss will occur during construction as a one-time infilling and clearing event; although effects persist long-term, the causative disturbance does not recur. Alterations to wetland function (e.g., edge effects, hydrologic modification, and potential invasive species spread) will occur on an ongoing basis throughout Project operations due to the continued project activities.
Duration	Long-term	Wetland loss and functional changes will persist beyond the life of the Project.
Reversibility	Irreversible	Wetland area permanently lost within the footprint will not fully recover to pre-disturbance condition within ecological timeframes. Functional replacement through compensation may occur, but original wetland characteristics cannot be completely restored.

Criteria	Rating	Rationale
Ecological/Socio-economic Context	Disturbed	Occurs within an existing mining landscape influenced by anthropological development.
Level of Confidence	Moderate to low	Wetland functional response generally well understood; however, site-specific functional metrics (e.g., carbon storage, nutrient retention, hydrologic connectivity) are limited, and predictions rely on literature from comparable systems.
Significance	Not Significant	Although irreversible at the site scale, the effect is low in magnitude, localized, and is not significant at the regional scale.

In summary, the Project will result in the permanent loss of approximately 4.1 ha of wetlands and localized changes to wetland function within and immediately adjacent to the Project footprint. While wetland loss represents an irreversible effect due to the slow wetland habitat restoration, the affected area constitutes a small proportion of available wetland habitat within the RSA (1,643 ha). Residual functional changes, including alterations to hydrology, vegetation composition, and ecological processes such as carbon sequestration and nutrient retention, are expected to be localized to the Project footprint and hydrologically connected areas within the LSA. Given the magnitude and geographic extent of wetland loss and alteration, and the implementation of mitigation and compensation measures, the residual effects on wetland habitat loss and wetland function are characterized as low in magnitude, long-term, and irreversible at the site scale, but not significant at the regional scale. Confidence in this conclusion is moderate to low due to limited site-specific wetland assessment and functional data.

6.7.7 Potential Cumulative Effects

Potential cumulative effects on wetlands and vegetation consider the proposed Project in the context of past, present and reasonably foreseeable physical activities within the RSA. The Project is located within a designated mine zone that has been subject to long-term industrial disturbance. Existing anthropogenic influences, including historical and ongoing mining activities (e.g., AGS Mine), associated infrastructure (e.g., access roads, haul roads, transmission corridors), and water management infrastructure have already resulted in habitat loss, fragmentation, alteration of wetland function and changes to ground and surface water regimes. These activities define the current baseline conditions within the RSA.

Ongoing operations at the AGS Mine overlap spatially and temporally with the Project and contribute to similar pathways of effects, including vegetation clearing, soil disturbances, wetland alteration, changes to drainage patterns, dust deposition, and increased potential for invasive species introduction. Existing linear disturbances such as haul roads and utility corridors continue to fragment vegetation communities and alter hydraulic connectivity. Recreational land use (i.e., ATV or other off road vehicle use) may further contribute to the destruction of vegetation such as lichens, mosses, and shrubs through crushing, uprooting and breaking. Domestic wood harvesting within the RSA contributes to localized vegetation removal and habitat alteration, particularly within

accessible forested areas, although these effects are generally small-scale and dispersed.

No other foreseeable development within the RSA has been identified that would introduce new or interacting pathways of effects on wetlands and vegetation beyond those already associated with existing and permitted mining activities. As such, cumulative effects are expected to reflect the incremental contribution of the Project within an already disturbed landscape.

However, with the implementation of proposed mitigation measures (e.g., minimizing clearing, maintaining buffer zones around wetlands and watercourses, erosion and sediment control, invasive species management, and progressive reclamation and revegetation), Project-related residual effects are expected to remain low in magnitude within the regional scale and limited in extent. Accordingly, the Project is not expected to contribute measurably to cumulative effects on wetlands and vegetation within the RSA.

6.7.8 Follow-up and Monitoring Programs

To address uncertainty in effects predictions and ensure effectiveness of implemented mitigation measures, the following follow up activities will be in place:

- Vegetation monitoring including wetland community extent and general species richness and diversity in wetlands receiving (treated) contact water. Vegetation monitoring and management of potentially invasive (non-native) species.
- Changes in hydrology and wetland water budget should be monitored to the extent described in Sections 6.4, 6.5 and 6.6 of this EARD.
- If deemed appropriate by water quality and quantity monitoring in support of Sections 6.4, 6.5 and 6.6 of this EARD, soil chemistry and fate mechanisms of COPCs within wetland soils may be studied to understand the biogeochemistry of wetlands receiving (treated) contact waters.

6.8 Avifauna

The following subsections include the assessment of the Avifauna Valued Component (VC). This VC covers birds, with particular focus on Species at Risk (SAR) and Species of Conservation Concern (SOCC) that may be affected by Project activities. SAR include any species listed as Endangered, Threatened, or Special Concern on Schedule 1 of the federal *Species at Risk Act* (SARA) or on the Newfoundland and Labrador *Endangered Species Act* (NL ESA) (see Sections 6.8.1.1 and 6.8.1.2, below). Species of Conservation Concern are not federally or provincially listed but are rare in the province and/or the long-term sustainability of their population(s) is in question. Avian SOCC include: those species ranked S1 or S2 (or combinations thereof) on insular Newfoundland by the Atlantic Canada Conservation Data Centre (AC CDC); species recommended for listing under SARA Schedule 1 by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); or species recommended for listing under the NL ESA by the Species Status Advisory Committee.

The following subsections present:

- Scoping of the VC assessment including study boundaries;
- Existing conditions of the VC;
- Potential effects of Project activities on the VC;

- Proposed mitigation and management measures to manage the potential effects;
- Characterization of identified residual adverse effects of the Project;
- Summary of potential cumulative effects; and
- Overview of follow-up programs related to the monitoring and management of potential effects on this VC as needed.

6.8.1 Regulatory Context for the Management of Avifauna

The following legislation and regulations were reviewed and considered in the effects assessment for the Avifauna VC.

6.8.1.1 Federal Guidelines

6.8.1.1.1 Migratory Birds Convention Act

Most bird taxa (e.g., migratory songbirds, waterfowl, seabirds, shorebirds, etc.), as well as their nests and eggs, are afforded protection via the federal *Migratory Birds Convention Act* (MBCA). The MBCA prohibits: the possession, purchase, sale, gifting, or exchange of any migratory bird or nest or any part(s) thereof; and the deposition into waters or an area frequented by migratory birds (or into a place that leads to those waters/areas) of any substance that in itself or in combination with any other substance may cause harm to migratory birds. Avifauna not protected under the MBCA are protected provincially under the *Wildlife Act* (see Section 6.8.1.2, below).

6.8.1.1.2 Species At Risk Act

Federal SAR listed as extirpated, endangered, or threatened under SARA are afforded protections such that it is not permitted to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of that species or any part or derivative of such an individual. Protections under SARA are also afforded to the residence(s) of such species, prohibiting their damage or destruction by any person, if a recovery strategy has recommended the reintroduction of that species into the wild in Canada.

6.8.1.2 Provincial Guidelines

6.8.1.2.1 Newfoundland and Labrador Wild Life Act

Avifauna that are not federally protected (see Section 6.8.1.1, above) are afforded protection under the Newfoundland and Labrador (NL) *Wild Life Act*, which prohibits the hunting, taking, or killing of protected avifauna except via a license or permit. This includes a number of non-migratory groups and species such as raptors, crows, ravens, jays, kingfishers, starlings, and upland game birds. With a provincial hunting license and Ptarmigan Shooting License, hunters are allowed to shoot a bag limit of six willow and rock ptarmigan (combined) in the Burin hunting area, with a combined possession limit of 12 birds (six of which may be rock ptarmigan), in the hunting season of September to November (2025). Snaring of ptarmigan is not permitted on the Burin Peninsula at this time. Ruffed and spruce grouse may also be taken by permitted small game hunters anywhere in the province (including the Burin Peninsula) up to a daily bag limit of 20 birds, and a possession limit of 40 birds. The shooting season for ruffed and spruce grouse ran from September to December (2025), while the snaring season is October (2025) to March (2026).

6.8.1.2.2 Newfoundland and Labrador Endangered Species Act

In addition to the *Wildlife Act*, certain species that have been assessed to be provincially at-risk by their respective Species Status Advisory Committee or federally at-risk by COSEWIC may be designated under the Newfoundland and Labrador *Endangered Species Act* (NL ESA) as vulnerable, threatened, endangered, extirpated, or extinct. Under the NL ESA, it is prohibited for a person to disturb, harass, injure, or kill individuals of threatened, endangered, or extirpated species, or to capture, possess, purchase, sell, or trade them or their parts or any derivatives thereof. The residences of individuals of these species are also protected from disturbance and destruction by any person.

6.8.1.2.3 St. Lawrence Habitat Stewardship Agreement

The St. Lawrence Habitat Stewardship Agreement is a land-use and conservation agreement between the Town of St. Lawrence and the Government of Newfoundland and Labrador, established under the provincial Municipal Habitat Stewardship Program. The Municipal Habitat Stewardship Agreement was signed in October 2013 (amended in 2021) and it currently encompasses ~400 m inland coastal buffer from the town's western boundary at the outflow of Three Stick Pond, covering Little Lawn Harbour and a 100-m buffer along the Little Lawn River, along the southern coastline and then east to Cape Chapeau Rouge, excluding a ~150 m coastal section set aside for mine-related infrastructure (Figure 6.8-1). Within this Conservation Area, the town commits to preventing habitat destruction or degradation. As stated in the plan, the town shall "permit only those activities within the Management Units that have no negative or adverse impact upon the land, or on the wildlife which utilize those areas" and must refer any proposed development within these areas to the Wildlife Division for a mandatory 30-day review. This creates a clear regulatory expectation that all land-use decisions consider potential effects on wetlands, coastal habitats, and associated wildlife, including seabirds, waterfowl, and species linked to the nearby Lawn Islands Archipelago Reserve.

6.8.1.3 Municipal Guidelines

The geographic boundary of the St. Lawrence Habitat Stewardship Agreement is as described above (see Section 6.8.1.2; Figure 6.8-1); these are the only municipal guidelines for the area with direct implications for avifauna.

6.8.2 VC Scoping

This section provides the assessment boundaries for the VC. Community and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this Environmental Assessment Registration Document (EARD).

6.8.2.1 Assessment Boundaries

The assessment boundaries for the VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.8.2.1.1 Temporal Boundaries

The temporal boundaries for the Avifauna VC effects assessment are as follows:

- **Construction**: 6 months
- **Operations**: 18 months
- **Closure**: Approximately 24 months, to be determined through development of the reclamation and closure plan

6.8.2.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.8-1.

- **Project Area**: the physical footprint of Project activities; namely, the Topsoil Stockpile; Overburden Stockpile; Waste Stockpile 1; Waste Stockpile 2; Waste Pad; South Ridge Pit; Access Road Network for the stockpiles and pit; and two Settlement Ponds with associated drainage ditches. In addition, the Project Area includes upgrades to the existing Main Haul Road, Community Access Road, and a new road segment (~250 m) connecting Iron Spring Road with the coastal access road to Hares Ears. The Project Area encompasses 0.58 km^2 as detailed in Section 2.6.1.2.11.
- **Local Study Area** (LSA): this area includes the Project Area (0.58 km^2) plus an approximate 0.5 km buffer around all components of the Project Area to allow for potential disturbance effects from Project activities (e.g., airborne dust, noise) that may affect avifauna. The LSA has a total area of 10.63 km^2.
- **Regional Study Area** (RSA): is based upon the Study Area established for the original AGS assessment and the watersheds that interact with Project activities. It was selected to allow for assessment of potential cumulative effects from the Project with the AGS Mine and other relevant activities in the area. The RSA has a total area of 58.16 km^2.

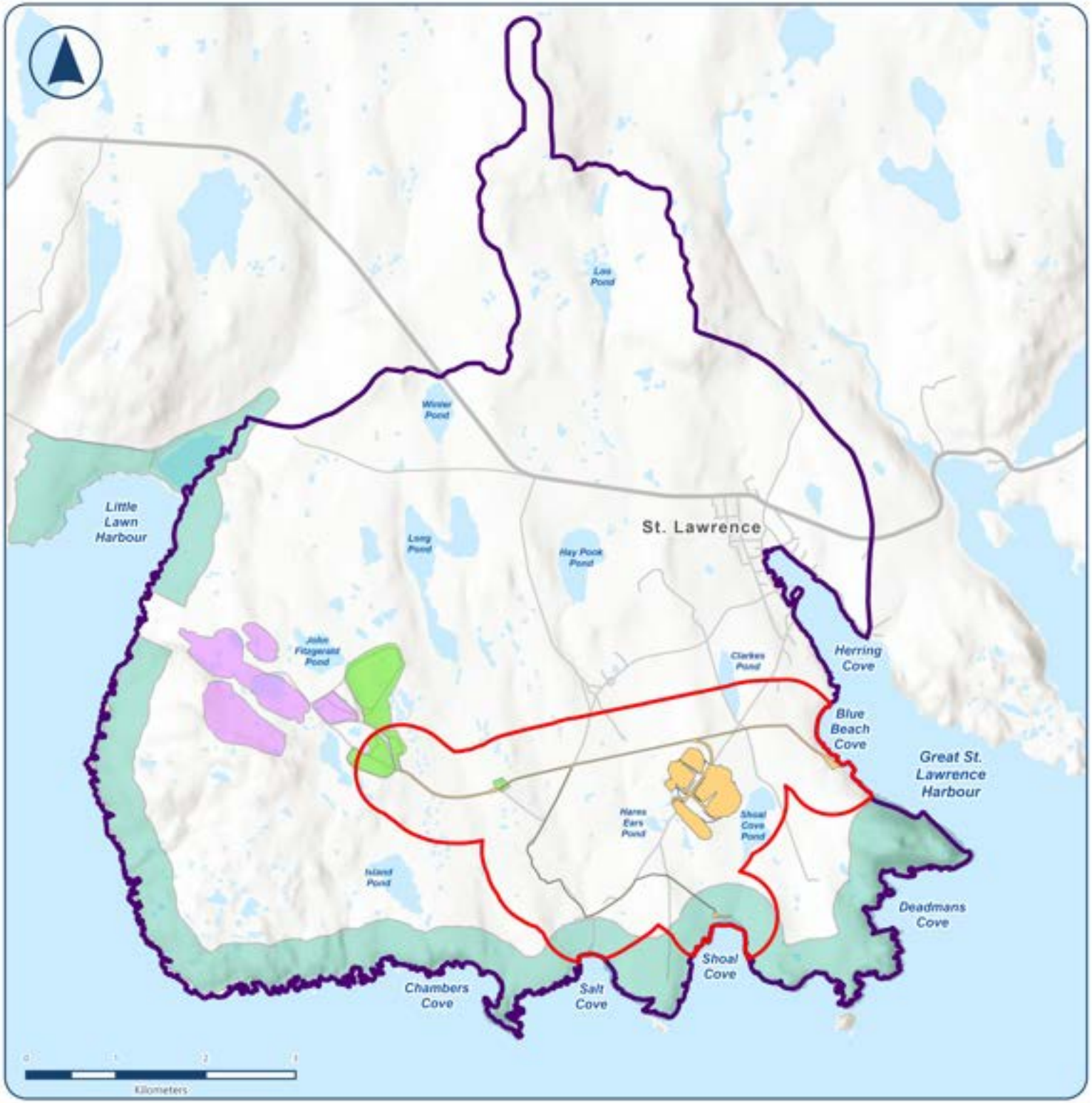

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FIGURE 6.8-1

ASSESSMENT AREAS: BIRDS

27 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area
- St. Lawrence Coastal Mgmt. Unit

Existing AGS Mine Components:

- Existing
- Shared

Scale: 1:60,000
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6.8.3 Existing Conditions

This section describes the methods that established the existing conditions of the Avifauna VC and the description of the existing conditions.

6.8.3.1 Methods

To support the EARD, a review of available information and data sources, including various bird sighting databases, was conducted. No site-specific field surveys or modelling were undertaken. However, incidental observations of birds and bird habitat were recorded during the Fish and Fish Habitat Survey undertaken for the Project (Appendix 6.6-1).

6.8.3.1.1 Data Sources

Background information and data that were used to describe the baseline conditions for the Avifauna VC included the following:

- St. Lawrence Wind Demonstration Project – 2002 Bird surveys.
- Reactivation of the St. Lawrence fluorspar mine at St. Lawrence, NL: Project Registration and Project Description – 2009.
- Reactivation of the St. Lawrence Fluorspar Mine: Environmental Preview Report and the Federal Environmental Assessment Screening Report – 2009.
- Environmental Assessment Registration AGS Fluorspar Project, St. Lawrence, NL – 2015.
- St. Lawrence Fluorspar Marine Shipping Terminal Project: Project description and Project registration – 2019.
- Assessment of the Wetlands, Avifauna and Wildlife at Risk in the Proposed Fluorspar Mine Project Footprint Area: Baseline Report – 2015.
- Regional Bird Monitoring Programs:
  - Newfoundland Breeding Bird Atlas (NF BBA),
  - Atlantic Canada Shorebird Survey,
  - Christmas Bird Count.
- Birdlife International Important Bird and Biodiversity Areas (IBAs).
- Atlantic Canada Conservation Data Centre (AC CDC).
- eBird Database.
- COSEWIC reports, management plans.
- Scientific literature.

6.8.3.1.2 Data or Information Limitations

The following data and information limitations were noted for the Avifauna VC:

- A lack of systematic Newfoundland Breeding Bird Atlas (NF BBA) efforts within the last ten years. Although seven NF BBA point counts have been completed near the Project Area between 2021 and 2024 (four of these in the RSA, plus one inside the LSA; two just outside of the RSA), these were mainly conducted on the roadside and are therefore not applicable to all habitat types in the area.
- Datasets such as eBird, NF BBA, and AC CDC provide valuable regional context on bird species occurring within and around the general project area, but these data are contributed by the public, are largely opportunistic in nature, and vary

widely in survey effort, timing, accuracy, and spatial precision. As a result, these sources do not provide sufficient information to characterize breeding bird communities, habitat use, or abundance within the potential project disturbance area. Without knowing the level of search effort or observer bias, it is difficult to distinguish between true species absence and non-detection. These limitations constrain the ability to calculate reliable abundance indices or to establish meaningful pre-construction baselines for monitoring (if required).

- Existing data sources indicate the presence of federally- and provincially listed avian SAR within 5 km of the Project footprint. There have not been any targeted SAR surveys conducted within the AGS Mine site or the proposed Project to the best of our knowledge.
- Datasets from the Atlantic Canada Shorebird Survey provide spring and fall shorebird survey data from 2010-2017, but no recent (post-2017), site-specific shorebird or waterfowl observations have been recorded adjacent to the Project (particularly for key wetland and coastal habitats such as Hares Ears Pond, Grebes Nest Pond, Northwest Pond, Shoal Cove Pond, and the fen/peatland area associated with Shoal Pond, Shoal Cove, and Salt Cove). This absence of up-to-date information limits understanding of the extent to which these areas may currently support migratory shorebirds, breeding waterfowl, or staging birds.
- To date, no nocturnal monitoring or search programs have been conducted within the existing AGS Mine site to detect or quantify potential light-attraction events or strandings of light-sensitive seabirds (e.g., nearby-nesting Leach's Storm-petrel and Manx Shearwater). This represents a gap for assessing potential operational impacts of the Project, especially because nighttime lighting will be used during Construction and Operations.

6.8.3.2 Description of Existing Conditions

The island of Newfoundland forms part of the boreal shield ecozone of Canada (ESWG 1995). Within this ecozone and near the Town of St. Lawrence, the Project Area specifically is located within the Eastern Hyper-Oceanic Barrens ecoregion of Newfoundland, which caps the southern Burin and Avalon peninsulas (GNL 2007). Due to its coastal location with southern exposure to the north Atlantic Ocean, this ecoregion is subject to relatively cool temperatures and a predominance of fog and wind (Heritage NL 2002). Botanically, it is characterized by moss, lichen, and ericaceous shrubs, as well as dwarf *krummholz* (wind-stunted trees) primarily composed of balsam fir (Heritage NL 2002). Wetlands and ponds also cover a substantial portion of the area (Heritage NL 2002).

A diversity of avian taxa inhabits this ecoregion, including songbirds, raptors, waterfowl, shorebirds, and seabirds, among others (JWEL 2003; eBird 2025). Some common year-round resident birds in the St. Lawrence area include American Herring Gull (*Larus smithsonianus*), Black Guillemot (*Cepphus grylle*), Dark-eyed Junco (*Junco hyemalis*), American Crow (*Corvus brachyrhynchos*), and American Robin (*Turdus migratorius*), which correspond to five out of the six most often-observed species in the area according to citizen science observations (eBird 2025). Dabbling ducks and sea ducks, gamebirds (e.g., Ruffed Grouse *Bonasa umbellus* and Willow Ptarmigan *Lagopus lagopus*), corvids, chickadees, finches, sparrows, and other assorted species are also resident (JWEL 2003;

eBird 2025). Present during the breeding season only (i.e., spring and summer) are geese, terns, shearwaters, flycatchers, vireos, swallows, and various species of warblers (eBird 2025). Most shorebird species observed in the area pass through the region only on migration; only a few (e.g., Wilson's Snipe *Gallinago delicata*; Spotted Sandpiper *Actitis macularius*; Greater Yellowlegs *Tringa melanoleuca*; and possibly Least Sandpiper *Calidris minutilla*) are present for breeding (JWEL 2003; eBird 2025; ECCC 2025). In particular, Shoal Cove Pond and Shoal Cove Beach appear to be important migration staging areas for multiple species of shorebirds (e.g., Black-bellied Plover *Pluvialis squatarola*; American Golden-Plover *Pluvialis dominica*; Semipalmated Plover *Charadrius semipalmatus* (SOCC); Ruddy Turnstone *Arenaria interpres*; Sanderling *Calidris alba* (SOCC); Dunlin *Calidris alpina*; White-rumped Sandpiper *Calidris fuscicollis*; and Pectoral Sandpiper *Calidris melanotos*), especially in fall (JWEL 2003; ECCC 2025).

A number of avian SAR and SOCC have been observed in and near the Project Area either by citizen scientist observers or by professional ornithologists (Table 6.8-1). Still other avian SAR/SOCC have the potential to occur in or near the Project Area based on their habitat requirements and range but have not yet been documented there (Table 6.8-1).

Table 6.8-1: Avifauna Species at Risk/Species of Conservation Concern which may Occur in the Local Study Area

Species[1]	Status[2,3]	Habitat Preferences[4]	Probability of Occurrence in Local Study Area
Harlequin Duck *Histrionicus histrionicus*	**SAR:** Special Concern under SARA; Vulnerable under NL ESA	**Breeding:** fast flowing river systems **Wintering:** rocky coastline, exposed headlands	*Possible*. Observed on ocean from Hares Ears; breeds in NF in small numbers but probably not regularly present near LSA
Semipalmated Plover *Charadrius semipalmatus*	**SOCC:** S1B, S4M (AC CDC)	**Breeding:** Sandy beaches; grassy edges of rivers and ponds/lakes **Foraging:** Sandy beaches; plowed or cultivated land	*Confirmed*. Observed at Shoal Cove Pond, Shoal Cove Beach [including by LGL observers], and elsewhere nearby, but only during fall migration period
Piping Plover *Charadrius melodus* ssp. *melodus*	**SAR:** Endangered under SARA; Endangered under NL ESA	**Breeding:** Sand, gravel, and cobble beaches, sandspits, and peninsulas in marine coastal areas **Foraging:** Intertidal zone on sand, mud, and algal flats; ephemeral pools, wrack	*Confirmed*. Observed at Shoal Cove Beach; breeds in NF in small numbers. Closest probable and recent breeding in Hermitage area. Probably not regularly present near LSA
Sanderling *Calidris alba*	**SOCC:** S2N, S3M (AC CDC)	**Wintering:** Sandy beaches; tidal sand- and mudflats; shores of lakes and rivers **Foraging:** same as wintering	*Confirmed*. Observed at Shoal Cove Beach [including by LGL observers], Salt Cove Beach, and elsewhere nearby, but only during fall migration period

Species[1]	Status[2,3]	Habitat Preferences[4]	Probability of Occurrence in Local Study Area
Caspian Tern *Hydroprogne caspia*	**SOCC:** S2B, SUM (AC CDC)	**Breeding:** Low, flat, sandy or rocky terrain on estuarine, salt marsh, and barrier islands **Migration:** Coastlines, large rivers, large inland freshwater lakes	*Confirmed*. Observed at Shoal Cove Pond and elsewhere nearby, including during breeding season; breeds in NF in small numbers and potentially near or in LSA
Leach's Storm-Petrel *Oceanodroma leucorhoa*	**SAR:** Threatened by COSEWIC; Threatened under NL ESA	**Breeding:** Underground burrows on vegetated/forested islands **Foraging:** Open continental shelf waters	*Possible*. Breeds at nearby Middle Lawn and Corbin islands. Nocturnal and rarely seen, but potential for being attracted by artificial light at night
Snowy Owl *Bubo scandiacus*	**SOCC:** Threatened by COSEWIC	**Wintering:** Open flat areas including tundra, rangelands, farmland, coastlines, marshes, islands, forest clearings	*Probable*. Observed in St. Lawrence and at existing CFI mine site near LSA. Potential visitor, most likely in winter
Short-eared Owl *Asio flammeus*	**SAR:** Special Concern under SARA; Threatened under NL ESA	**Year-round:** Open areas including grasslands, tundra, agricultural fields, and wetlands. In winter, roosts in conifers next to open areas or in tall grasses/forbs	*Possible*. Observed near Herring Cove, on opposite side of St. Lawrence harbour from Project Area. Breeds in NF in small numbers; possibly present near LSA
American Kestrel *Falco sparverius*	**SOCC:** S2B, SUM (AC CDC)	**Breeding:** Open to semi-open habitats including meadows, grasslands, agricultural fields with nest trees and perches **Foraging:** Open habitats with short ground vegetation	*Confirmed*. Observed occasionally in and around LSA; uncommon on Burin Peninsula. Breeds in NF in small numbers but probably not in LSA
Olive-sided Flycatcher *Contopus cooperi*	**SAR:** Special Concern under SARA; Vulnerable under NL ESA	**Breeding:** Coniferous or mixed forest, often near water or wetland; associated with forest openings and edges	*Possible*. Observed approximately 5 km NW of Project Area. Potentially breeds in LSA in appropriate habitat
Barn Swallow *Hirundo rustica*	**SAR:** Threatened under SARA; Vulnerable under NL ESA	**Breeding:** Various habitats. Lake and river shorelines, wetlands, parkland, woodland clearings, sand dunes, tundra, towns, along highways; preferably near open areas with abundant aerial insects (e.g., wetlands, water bodies, meadows, grassland, farmland)	*Possible*. Observed in St. Lawrence and elsewhere on Burin Peninsula; breeds in NF in small numbers but probably not in LSA

Species[1]	Status[2,3]	Habitat Preferences[4]	Probability of Occurrence in Local Study Area
Evening Grosbeak *Coccothraustes vespertinus*	**SAR:** Special Concern under SARA; Vulnerable under NL ESA	**Breeding:** Mature and old mixedwood forest stands with fir, white spruce (*Picea glauca*), or trembling aspen (*Populus tremuloides*) **Wintering:** Poorly studied; areas of higher berry and seed availability	*Confirmed*. Breeds across NF. Observed in LSA at Blue Beach, as well as in St. Lawrence and elsewhere on Burin Peninsula, usually during spring and fall/winter. Probably visits/forages in LSA at those times, but also possibly breeds there
Red Crossbill *Loxia curvirostra* ssp. *percna*	**SAR:** Threatened under SARA; Threatened under NL ESA	**Year-round:** Specialized for coniferous habitat for foraging, roosting, and nesting; black spruce (*Picea mariana*) important for foraging, but will feed on cones of all conifer spp.	*Confirmed*. Observed in LSA and elsewhere on Burin Peninsula year-round. Potentially breeds in LSA in appropriate habitat
Rusty Blackbird *Euphagus carolinus*	**SAR:** Special Concern under SARA; Vulnerable under NL ESA	**Breeding:** sedge meadows, beaver ponds, muskegs, swamps, scrub riparian areas, alder and willow thickets **Foraging:** shallow, slow-moving, and/or ephemeral water bodies; occupancy increased by beaver presence	*Probable*. Observed at Clarke's Pond (partly in LSA), in St. Lawrence, and elsewhere on Burin Peninsula, usually between spring and fall; possibly breeding in LSA

Notes:

1. *English and scientific names for avifauna, and taxonomic order, are based on Clements et al. (2025)*
2. *SAR – Species at Risk; SOCC – Species of Conservation Concern; SARA – Species at Risk Act; NL ESA – Newfoundland and Labrador Endangered Species Act*
3. *S1 = Critically Imperiled, S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure (not of conservation concern), SU = status uncertain, B = Breeding, N = Nonbreeding, M = Migrant (AC CDC 2025).*
4. *Sources: Peters and Burleigh (1951; p.168); EC (2007, 2012); COSEWIC (2016a,b, 2017, 2018, 2020, 2021a,b); Holt et al. (2020); Macwhirter et al. (2020); Smallwood and Bird (2020)*

There is no critical habitat designated by the federal government near the LSA for any SAR. Two Important Bird Areas (IBAs) are located within 20 km of the Project Area, centered on Middle Lawn and Corbin Islands (Figure 6.8-2). These islands host various seabird species during the breeding season, most notably Leach's Storm-Petrel (Middle Lawn Island: ~21,500 mature individuals; Corbin Island: ~200,000 mature individuals; COSEWIC 2020) and Manx Shearwater (*Puffinus puffinus*; Middle Lawn Island: ~200 mature individuals; Fraser et al. 2013). As it is the only location of regular breeding by Manx Shearwater in North America, Middle Lawn Island is now protected by the provincial Lawn Bay Ecological Reserve (Fraser et al. 2013; NLECCC 2025). Both Middle Lawn Island and Corbin Island are approximately 16 km distant from the proposed Project Area, with Middle Lawn Island to the west-southwest and Corbin Island to the northeast. Manx Shearwater has been observed near the LSA, from Hares Ears and Ferryland Head (approximately 3 km to the southwest and southeast of the Project Area, respectively;

JWEL 2003). No individuals of either species have been observed stranded in the Town of St. Lawrence (N. Wilson, local birder, pers. comm., 11 February 2026).

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FIGURE 6.8-2

IMPORTANT BIRD AREAS

27 APRIL 2026

- Important Bird Areas
- Project Area
- Local Study Area
- Regional Study Area

Scale: 1:180,000
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6.8.4 Effects Assessment

This section provides input and results specific to the Avifauna VC effects assessment. A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as following:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects; and
- Follow-up commitments and monitoring programs.

6.8.4.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the Avifauna VC within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). An interactions table for the Avifauna VC is presented in Table 6.8-2.

Potential Project-related effects on the Avifauna VC were determined by comparing existing conditions to those expected to result from the Construction, Operation, and Closure phases of the Project. Potential effects are outlined including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another VC).

As indicated in Table 6.8-2, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Avifauna VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Project assessment, and professional judgement. Overall, effects can be categorized into three primary categories: (1) habitat loss, alteration, and/or fragmentation; (2) behavioural disturbance; and (3) changes in health and mortality risk.

Table 6.8-2: Avifauna VC interactions with Project Activities.

Project Activities		Effect Pathway
Construction		
Community Access Roads	• Strip, fill, gravel, and grade. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use. • Upgrades to Memorial Bridge and Blake's Brook Bridge	Direct: • Habitat destruction, alteration, and fragmentation as the result of earthmoving and construction activities may result in displacement and/or direct mortality of bird species, including SAR/SOCC. Clearing may cause edge effects in remaining habitat, including changes in microclimate and vegetation structure, leading to changes in behaviour and abundance. • Noise and ground vibration generated from earthmoving
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks. • Sections of Blue Beach Haul Road will be regraded, and berms will be built up to support larger equipment traffic. • Strip, clear, fill.	
Pit Haul Roads	• Strip, fill, gravel, and grade.	

Project Activities		Effect Pathway
Power Infrastructure upgrades	• Transmission line re-routing and raising along the Blue Beach Haul road to allow Cat 777s to travel to the project area. • Powerline that follows Iron Springs Road will be re-routed around the pit and extended to provide power to dewatering pumps. • The transmission line that currently follows Iron Springs Road will be rerouted around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	equipment and construction activities may cause disturbance, resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Fugitive dust from earthmoving and construction activities may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use. • Greenhouse gas emissions from equipment may affect health via inhalation. Hydrocarbon and hazardous waste leaks and spills from machinery may affect health via contamination of water or forage/prey. • Human presence and interactions may cause behavioural responses including avoidance or attraction.
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	
Stockpile Area Development	• Stripping, clearing, and preparing stockpile areas for topsoil, overburden, and waste rock.	
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	
Operations		
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment ponds and monitored.	Direct exposure to contaminants in contact water (or indirectly, via contaminated prey/forage) resulting in negative effects on health including potential increase in mortality risk.

Project Activities		Effect Pathway
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting. • Ore will be transported to the existing AGS mill for processing.	Direct: • Continuous operational noise and vibration from mining. Blasting, and hauling equipment as well as rock crushing may cause disturbance, resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Fugitive dust from blasting, earthmoving, hauling, and rock crushing activities may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use. • Greenhouse gas emissions from equipment may affect health via inhalation. Hydrocarbon and hazardous waste leaks and spills from machinery may affect health via contamination of water or forage/prey. • Night operations lighting may interrupt circadian rhythms, cause increased predation, and result in attraction or avoidance behaviour, potentially leading to increased mortality. • Human presence and interactions may cause behavioural responses including avoidance or attraction.
Hauling	• Processed concentrate will be hauled to the Blue Beach Marine Terminal (existing) via the Blue Beach Haul Road (existing) for export.	
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	
Stockpiling	• As mining progresses waste rock will be deposited in the waste rock stockpiles.	
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, then re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure. • Access roads will be maintained to facilitate post-closure monitoring	• Direct: • Noise and ground vibration from heavy equipment operation may cause disturbance, resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Continued use of recreation access roads may cause small

Project Activities		Effect Pathway
Waste Rock Stockpiles	• Waste rock will be processed into saleable aggregate and transported to Blue Beach Marine Terminal for shipment. • Closure to be completed 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	amounts of disturbance (noise, human presence) indefinitely, resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Small amounts of fugitive dust from continued use of recreation access roads may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use. • Greenhouse gas emissions from equipment and civilian vehicles may affect health via inhalation. Hydrocarbon and hazardous waste leaks and spills from machinery and civilian vehicles may affect health via contamination of water or forage/prey.
Overburden & Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decides to pursue underground development (at which point it may be drained and converted into an underground access portal).	
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required.	Maintenance and repairs may cause small amounts of localized disturbance and behavioural effects, depending on magnitude and duration of human presence as well as noise, light, and dust emissions.

6.8.5 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and described in Section 6.8.4 were used to assist with the design and implementation of Project mitigation measures. The identified mitigation measures are outlined in more detail in the following sections, including a discussion of their effectiveness and confidence related to avoiding, minimizing, or restoring the VC to prevent residual effects.

This approach reflects a precautionary approach to the Environmental Assessment (EA) and provides additional confidence and opportunity to ensure the EA predictions are accurate and the proposed mitigations effective.

Existing mitigation and management measures and contingency plans in place for the AGS Mine will continue to be implemented for the Project and will serve to minimize potential effects on the Avifauna VC. Section 2.11 provides a detailed overview of various management and contingency plans. Table 6.8-3 summarizes proposed mitigation measures applicable to avifauna.

6.8.5.1 Habitat Loss/Alteration

There are several key mitigation measures that are designed to minimize potential habitat loss and alteration effects on birds. The Project has been planned to minimize the footprint of the pit, stockpiles, new roads, and road widening. Furthermore, the planned Project footprint boundary will be clearly flagged to indicate to Project personnel operating equipment to avoid entry into areas beyond the footprint. These planning measures are effective at minimizing the geographic extent of potential effects. Measures are in place to avoid sensitive habitat (e.g., wetlands) and times of year to the extent possible. A buffer (30 m minimum) will be used whenever possible around wetlands and water bodies in the Project Area. There is anticipated to be overlap in construction activities and the breeding bird season. As such, bird nest sweeps will be conducted as per ECCC-CWS protocols and any active nests found will have appropriate buffers (in compliance with the MBCA) established. The careful implementation of these measures by qualified biologists will minimize habitat loss effects on breeding birds during the Construction Phase. Dust generated from roads, operating equipment, and stockpiles may alter bird habitat by negatively affecting vegetation/water bodies and ultimately affect bird foraging opportunities. CFI will implement several measures to supress dust generation including watering roads during dry periods, covering stockpiles (to the extent possible), and revegetating areas. These commonly used practices at mine sites have proven effective. During Closure, access roads and stockpile areas will be regraded to match the surrounding topography and reseeded with native vegetation similar to the original habitat. While progressive reclamation will support long-term habitat recovery, some permanent habitat loss within the Project footprint will remain; therefore, a residual effect is anticipated.

6.8.5.2 Behavioural Disturbance

During all Project phases, routine activities have the potential to cause behavioural disturbance of birds in and near the Project Area. Disturbance can be caused by in-air noise and/or visual cues from operation of Project equipment, blasting operations, and interactions with Project personnel. Measures are in place to avoid sensitive habitat (e.g., wetlands) and times of year (breeding season) to the extent possible. A buffer (30 m minimum) will be used whenever possible around wetlands and water bodies in the

Project Area. There is anticipated to be overlap in construction activities (including blasting) and the breeding bird season. Blasting will occur as seldom as possible by using large blast patterns and modern blasting techniques will be implemented to minimize vibration and sound levels (see Section 6.3.4 for details). These measures will reduce sound levels during blasting operations and should minimize the frequency and geographic extent of behavioural disturbance effects on avifauna; however, residual disturbance during active phases is anticipated.

6.8.5.3 Changes in Health and Mortality Risk

The production of tailings (received by AGS at TMF) and contact water may affect the health of birds that forage in and near the Project Area. Effective waste management as detailed in Sections 2.11 and 2.12 and summarized in Table 6.8-3 will minimize these potential effects. Similarly, the accidental release of hazardous wastes (e.g., fuel) will be mitigated via procedures established in CFI's Environmental Protection Plan (EPP) including those measures summarized in Table 6.8-3. If implemented correctly, these measures would minimize potential effects on bird health. Project lighting may attract and subsequently result in injury and mortality of birds, particularly tube-nosed (procellariiform) seabirds. Mitigation measures include minimizing the amount of lighting used, and directing lighting downwards, monitoring for and releasing stranded birds as per established ECCC-CWS protocols. These measures if implemented properly are quite effective at minimizing effects on seabird health and decreasing the risk of mortality; however, there is potential for residual effects.

Table 6.8-3: Summary of Proposed Mitigation Measures.

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Habitat loss, alteration, and/or fragmentation (including potential preferred foraging and breeding areas)	• Disturbance of existing vegetation outside designated Project footprint areas will be avoided by clearly flagging the limits for disturbance activities prior to the commencement of work. [All Phases] • The location of Project components will be optimized to reduce the area of vegetation clearing. [All Phases] • Existing disturbed areas will be incorporated into the Project Area to reduce direct effects on vegetation communities. • Wherever possible, a minimum 30-m undisturbed vegetation buffer around all water bodies and wetlands/bogs within the Project footprint will be maintained. [All Phases] • Avoid construction whenever possible during 15 April-15 August bird breeding season; if avoidance not possible, bird nest sweeps conducted by a Qualified Environmental Professional required within seven days of vegetation clearing. [Construction] • Buffers (in compliance with the MBCA) will be established if any active bird nests are identified during the breeding season. [All Phases] • Stockpiles of topsoil, overburden, and other potentially dust-generating materials will be kept covered, where practical, and used as soon as practical, or will be appropriately temporarily vegetated. [All Phases] • Haul and access roads will be watered during dry weather to suppress dust. [All Phases] • In Closure and Decommissioning Phase, access roads and stockpile areas will be regraded to be continuous to the surrounding topography and re-seeded with native vegetation similar in species composition to the original habitat. [Closure]	Y
Behavioural disturbance (including effects on breeding activities)	• Avoid construction and blasting whenever possible during 15 April-15 August breeding season; if avoidance not possible, bird nest sweeps required within seven days of the start of clearing. [Construction, Operation] • Project activities should adhere to nighttime noise restrictions [Construction, Operation] • Buffers (in compliance with the MBCA and *Wildlife Act*) will be established if active nests are identified during the breeding season. [All Phases] • Project personnel will be advised to not feed birds. [All Phases] • Project personnel will be advised to not chase, catch, divert, follow, or otherwise harass birds. [All Phases]	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Change in health and mortality risk (from tailings/contact water discharge, noise, air pollution, light pollution, other wastes, and contaminated prey)	• Blasting will occur as seldom as possible by using large blast patterns and will not occur at night; modern blasting techniques will be implemented to minimize vibration and flyrock. [Operations] • Stockpiles of topsoil, overburden, and other potentially dust-generating materials will be kept covered, where practical, and used as soon as practical, or will be appropriately temporarily vegetated. [All Phases] • Haul and access roads will be watered during dry weather to suppress dust. [All Phases] • Drainage ditches will collect contact water from mine wastes and be appropriately sized to manage stormflows, considering impacts to on-site downstream watercourses, wetlands, and infrastructure. [Operations, Closure] • Two sediment ponds for contact water will be constructed, monitored, and treated (if necessary) prior to discharge of water to the environment. [Operations] • Surface water sampling will be conducted at 25 sampling stations to ensure that any water flowing away from the mine site meets the minimum guidelines set by Canadian Water Quality Guidelines. [Operations] • Minimize use of machinery to extent possible and turn off when not in use. [All Phases] • Equipment will be maintained in good working order to minimize noise and air/ground pollution. [All Phases] • Fuel, mineral spirits, oil, and other hazardous wastes will be stored to prevent entry into waterways or storm drains and will be disposed of at an approved site. [All Phases] • Provide staff training on hazardous material handling and spill response procedures. [All Phases] • Immediately contain, recover, and remediate any accidental spills to prevent contamination of waterways. [All Phases] • Implement waste management procedures in accordance with the EPP. [All Phases] • Project lighting will be limited to that which is necessary for safe and efficient Project activities. Mobile and permanent lighting will be shielded to shine down and located such that unavoidable light spill of the working area is not directed towards receptors outside the Project Area, to the extent practicable. [All Phases] • Should seabirds become stranded on land, the ECCC—CWS relevant protocols will be followed. [All Phases] • Annually complete a permit application form prior to handling birds as required. [All Phases]	Y

6.8.6 Identification and Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table

6.8-3, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.8-4.

Table 6.8-4: Residual Effects Characterization Criteria for the Avifauna VC.

Assessment Criteria	Categories/Parameters for Avifauna VC
Nature	The long-term trend of the residual effect. **Positive** – A residual effect that provides benefit to biological VC relative to baseline. **Negative** – A residual effect that is detrimental to biological VC relative to baseline. **Neutral** – No net change in measurable parameters for biological VC relative to baseline.
Magnitude	The overall amount or degree of change in a measurable parameter, or variable, related to existing conditions that are expected. Negligible – No measurable change to biological VC relative to baseline. **Low** – Judged to result in <1% change in the size or health of the population or the carrying capacity of its habitat. A change in a population can result from an absolute reduction in population size or from displacement of animals to areas outside the area of consideration. **Moderate** – Judged to result in a 1% to <10% change in the size or health of a population or the carrying capacity of its habitat. **High** – Judged to result in a 10%, or greater, change in the size or health of a population or the carrying capacity of its habitat.
Geographic Extent	The range or scale of approximate geographic areas over which any potential interaction and effect is anticipated to occur. • <1 km^2 • 1–10 km^2 • 11–100 km^2 • 101–1,000 km^2 • 1,001–10,000 km^2 • >10,000 km^2
Timing	Refers to the effects of seasonal variability on the VC. **Negligible Sensitivity** – Residual effect is not sensitive to seasonality. **Moderate Sensitivity** – Residual effect may be influenced by seasonality, but the assessment of attribute parameters is unchanged (i.e., magnitude, geographic extent, duration, frequency, reversibility). **High Sensitivity** – The assessment of the residual effect (i.e., magnitude, geographic extent, duration, frequency, reversibility) is changed based on seasonality.
Frequency	How often the residual effect being assessed is expected to occur. **Single Event** – Residual effect occurs once during the Project. **Irregular Events** – Residual effect occurs sporadically at an irregular interval and is not predictable. **Regular Events** – Residual effect occurs regularly and may be at predictable intervals or specific times. **Continuous** – Residual effect occurs continuously.

Assessment Criteria	Categories/Parameters for Avifauna VC
Duration	The length of time a potential residual effect may occur. **Short-term** – Residual effect restricted to construction or decommissioning/ rehabilitation phases. **Medium-term** – Residual effect extends through project operations but is expected to subside when operations cease. **Long-term** – Residual effect extends beyond the life of the Project.
Reversibility	Refers to the ability of the VC to return to its original state once the stressor is removed **Reversible** – Residual effect is likely to be reversed after activity completion and rehabilitation. **Irreversible** – Residual effect is unlikely to be reversed. It should be noted that a biological effect may be irreversible at the individual level (e.g., mortality of an individual animal) but reversible at the population level.
Ecological/Socio-economic Context	Existing condition and trends in the area where residual environmental effects occur. **Undisturbed** – Area is relatively undisturbed or not adversely affected by human activity. **Disturbed** – Area has previously been substantially disturbed by human development or human development is still present.
Level of Confidence (Certainty of Knowledge)	The general level of confidence in the knowledge used to describe the potential environmental effect. **High** – Based on good understanding of cause-effect relationships and data specific to the Project Area. **Moderate** – Based on good understanding of cause-effect relationships using data from elsewhere or incompletely understood cause-effect relationships using data specific to the Project Area. **Low** – Based on incomplete understanding of cause-effect relationships and/or incomplete data specific to the Project Area.

Significant biological effects are those that are considered to be of sufficient magnitude, duration, and geographic extent to cause a change in the VC that will alter its status or integrity beyond an acceptable level. Establishment of the criteria is based on professional judgement but should be transparent and repeatable. An effect can be considered significant (negative by definition), not significant, or positive. A significant residual negative effect on biological VCs is defined as a residual Project-related change in the VC population and/or habitat in the LSA where recovery to baseline condition is unlikely.

6.8.6.1 Assessment Context

As indicated in Table 6.8-2, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Avifauna VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Project assessment, and professional judgement. It is also important to provide context for the Project and the assessment of potential residual effects on the Avifauna VC:

- The Project is an expansion of the existing CFI AGS Mine and occurs in a designated mine-zone, which is considered a disturbed area. Further to this, waterways within the LSA already contain contamination from past mining activities. To the extent possible, CFI will use previously disturbed/cleared areas to support the Project. However, the new proposed footprint represents 0.58 km^2 of new physically disturbed area. To account for disturbance to flora and fauna likely to occur as the result of Project activities outside of the footprint itself, the LSA was delineated as an area encompassing a 0.5-km buffer around the Project Area and is approximately 10.63 km^2 in size.
- Based on the habitat type and location of the Project, 14 avifauna SAR and SOCC either occur or have the potential to occur in the LSA (Table 6.8-1): five species possibly occur in the LSA, two species probably occur but have not been observed, and seven species have been confirmed to be present (see below).
- Ongoing activities at the CFI AGS Mine site and the Light Vehicle Roads already contribute to existing levels of effects on avifauna including those related to pollution and sensory disturbance (in-air noise, light attraction, wastewater, dust, vibrations, and human presence). Activities associated with the Project, including use of the existing haul road in particular, likely represent incremental increases in the spatial extent and intensity of residual effects.
- Existing mitigation and management measures and contingency plans will continue to be implemented for the Project and will serve to minimize potential effects on the Avifauna VC. Sections 2.11 and Section 2.12 provide a detailed overview of various management and contingency plans; Table 6.8-3 summarizes key mitigation measures applicable to avifauna.

6.8.6.2 Residual Effect: Loss, Alteration, and/or Fragmentation of Habitat

Potential effects of Project activities on avifauna (including SAR/SOCC) include decreased habitat use, food availability and breeding productivity due to habitat removal, fragmentation, and degradation (e.g., Murcia 1995; Schmiegelow and Mönkkönen 2002; Hanson et al. 2008; Tolvanen et al. 2018). The habitat that will be altered includes wetlands, barrens, coniferous scrub, softwood forest, and disturbed land. This may result in the displacement and/or direct mortality of bird species. Furthermore, fugitive dust from roads and blasting may alter terrestrial (e.g., vegetation communities) and aquatic habitat. Fragmentation of habitat may occur via the construction of roads and can have particularly negative effects on species with large ranges, and those that require large patches of homogenous habitat. Edge effects may also occur, and include changes in microclimate, vegetation structure, changes to avifauna presence and/or abundance, and behavioural responses of avifauna. However, the amount of potential bird habitat that will be cleared for the Project is relatively small (~0.58 km^2) and occurs in a 'disturbed' mining area. Non-SAR bird species likely to inhabit the Project Area are those typical of the Eastern Hyper-Oceanic Barrens ecoregion's stunted coniferous scrub, bog, and barrens habitats (see also Section 6.8.2, above). Commonly observed and locally-breeding landbird species include Dark-eyed Junco, American Crow, American Robin, Fox Sparrow (*Passerella iliaca*), Swamp Sparrow (*Melospiza georgiana*), and Savannah Sparrow (*Passerculus sandwichensis*).

Several avian SAR/SOCC have been observed within the LSA including Semipalmated Plover, Piping Plover (ssp. *melodus*), Sanderling, Caspian Tern, American Kestrel, Evening Grosbeak, and Red Crossbill (ssp. *percna*) (Table 6.8-1). The SAR/SOCC most likely to be at risk due to Project-related habitat loss and alteration during the breeding season include Caspian Tern, Olive-sided Flycatcher, Evening Grosbeak, Red Crossbill, and Rusty Blackbird. Red Crossbill, which is confirmed to occur within the LSA, may be especially avoidant of habitat edges created by the clearing of trees (Helle 1983, as cited in Schmiegelow and Mönkkönen 2002). However, it is noted that no critical habitat for birds has been identified in or near the Project Area (or on the Burin Peninsula) and, as noted previously, the amount of habitat that will be cleared represents a small proportion of available habitat in the larger LSA and RSA.

Numerous mitigation measures are in place to avoid and minimize the potential effects of habitat loss and alteration on avifauna (Table 6.8-3). With these measures in place, residual effects of Project activities on the Avifauna VC due to habitat loss and alteration are predicted to be low in magnitude, localized (<1 km^2), long-term in duration (throughout decommissioning and for 5+ years after as habitat regenerates), occur continuously, have moderate sensitivity to seasonality (i.e., bird breeding and migration periods), and are considered reversible. As such, residual effects of Project activities on birds due to habitat loss and alteration are predicted to be not significant. The residual effects characterization is summarized in Table 6.8-5.

Table 6.8-5: Summary of Residual Effect Characterization Related to: Loss, Alteration, and/or Fragmentation of Habitat.

Criteria	Rating	Rationale
Magnitude	Low	Amount of habitat altered, lost, and fragmented is small; carrying capacity of habitat is small due to low productivity; low diversity of avifauna in area.
Geographic Extent	<1 km^2	Effects largely limited to cleared areas and their immediate vicinity (e.g., edge effects).
Timing	Moderate Sensitivity	Effects more pronounced during migration and especially breeding season.
Frequency	Continuous	Effects are ongoing throughout the life of the Project and beyond, on a continuing basis.
Duration	Long-term	Effects begin during Construction phase and persist until habitat fully regenerates following Closure, rehabilitation, and natural regeneration.
Reversibility	Reversible	Habitat returns to pre-Project state after decommissioning, rehabilitation, and natural regeneration.
Ecological/Socio-economic Context	Disturbed	Project Area is located on a previously disturbed site due to past mining activities.

Criteria	Rating	Rationale
Level of Confidence	Moderate	Paucity of local species occurrence data (especially that of SAR/SOCC), but effects generally well-understood from existing AGS Mine and research conducted elsewhere.
Significance	Not Significant	Considered low magnitude, small geographic extent, and high reversibility of residual habitat effects.

6.8.6.3 Residual Effect: Behavioural Disturbance

Despite the use of modern techniques and targeted mitigation measures, residual Project effects are expected to cause behavioural disturbance to local avifauna. Noise from construction, operations, and blasting at the South Ridge Pit, stockpiles, and associated roads will likely cause direct disturbance to some birds during the breeding and migration seasons, potentially impacting breeding success (e.g., Bayne et al. 2008; Duarte et al. 2015; Shannon et al. 2016). Overall sound levels from regular construction and operations activities are predicted to be as high as 70 dBA in close vicinity to the pit and stockpile areas, and between 45-50 dBA as distant as Shoal Cove Beach, the Memorial bridge, and the edge of the Town of St. Lawrence (see Section 6.3.3.4, Figure 6.3-8). Meanwhile, multiple studies have documented behavioural, physiological, and reproductive changes in birds at sound levels ≥45 dBA (Shannon et al. 2016). Sand beaches like Shoal Cove Beach constitute a relatively rare shoreline type in Newfoundland (Sergy 2008) and are used by various shorebird species, including SOCC, for foraging and nesting (JWEL 2003; Warnock et al. 2001; Appendix 6.6-1). There are also occasional records of endangered Piping Plover at Shoal Cove Beach during spring migration (AC CDC 2025; eBird 2025), a species that is highly sensitive to any anthropogenic disturbance on the breeding grounds, including active mining operations (Gratto-Trevor and Abbott 2011).

Introduction of light pollution into the environment during nighttime operations has the potential to cause behavioural disturbance and health impacts, leading to direct and indirect mortality as well as decreases to avian diversity and abundance (Falcón et al. 2020). Of particular concern are effects of nocturnal light pollution on tube-nosed (procellariiform) seabird SAR. Leach's Storm-Petrels (Threatened under COSEWIC and NL ESA; local breeding populations totaling ~220,000) and Manx Shearwaters (not SAR/SOCC; local breeding population totaling ≤200) are known to be disturbed by and attracted to artificial light at night, especially near their colonies and transit routes out to sea, causing disorientation and stranding (Syposz et al. 2018; Wilhelm et al. 2021; Syposz and Padget 2023; Burt et al. 2024). Fledglings are particularly affected during their fledging periods (September through November in Newfoundland) and during periods of low lunar illumination (i.e., new moon) and inclement weather (Syposz et al. 2018; Wilhelm et al. 2021). The two nearby colonies (Middle Lawn and Corbin islands) where these species breed are each located approximately 16 km from the Project site, but individuals of these species can become stranded in coastal anthropogenic sites up to tens of kilometers from their colony locations (Syposz et al. 2018; Wilhelm et al. 2021). That said, it is important to note that no individuals of either species have been observed

stranded in the Town of St. Lawrence to date (N. Wilson, local birder, pers. comm., 11 February 2026) or at the AGS Mine site (G. Kearney, CFI, pers. comm., 11 February 2026).

Modern blasting techniques and targeted mitigation measures will be implemented to minimize the potential effects of behavioural disturbance to avifauna (Table 6.8-3). With these measures in place, residual effects of Project activities on the Avifauna VC due to noise and light emissions are predicted to be low to moderate in magnitude, medium-scale (11-100 km^2), medium-term in duration (ceasing upon completion of operations), occur both irregularly (e.g., blasting) and continuously (e.g., machinery noise; nocturnal operations lighting), have high sensitivity to seasonality (i.e., bird breeding and migration periods), and are considered reversible. Residual effects of Project activities on birds due to noise and light emissions are therefore predicted to be not significant. The residual effects characterization is summarized in Table 6.8-6.

Table 6.8-6: Summary of Residual Effect Characterization Related to: Behavioural Disturbance.

Criteria	Rating	Rationale
Magnitude	Low to Moderate	Airborne noise may displace birds in the LSA, but the effects are predicted to be <10% relative to baseline conditions. Potential behavioural effects related to attraction to lighting are considered low.
Geographic Extent	11–100 km^2	Blasting noise and nocturnal pit operations lighting will likely cause behavioural effects to birds beyond the 500-m buffer zone from the pit that is incorporated in the 10.6 km^2 LSA and may cause behavioural effects to some tube-nosed seabirds beyond the LSA. Noise from haul roads, construction, and regular machinery use may cause behavioural effects up to 500 m from the source.
Timing	High Sensitivity	Effects more pronounced during migration and especially breeding season; effects predicted to be low in magnitude during winter. Any effects on tube-nosed seabirds are predicted to occur almost exclusively during fall fledging season.
Frequency	Irregular Events (blasting noise) Continuous (operations noise; nocturnal lighting)	Blasting will not occur on a set schedule; nor will it occur every day. Noise and light emissions from construction and operational activities will be more continuous throughout the life of the Project.
Duration	Medium-term	Effects are expected to cease when operations and decommissioning are complete.
Reversibility	Reversible	Noise and light conditions return to pre-Project state after cessation of operations.
Ecological/Socio-economic Context	Disturbed	Avifauna in the Project Area already experience some level of disturbance from noise and light pollution due to ongoing AGS Mine operations and human habitation in the area (e.g., Town of St. Lawrence).

Criteria	Rating	Rationale
Level of Confidence	Moderate	Paucity of local species occurrence data (especially that of SAR/SOCC), but effects generally well-understood from existing AGS Mine and research conducted elsewhere.
Significance	Not Significant	Residual effects are considered reversible and are only expected to last for the duration of Project operations.

6.8.6.4 Residual Effect: Change in Health and Mortality Risk

Some residual effects to avifauna health and mortality risk may result from Project activities despite mitigation measures implemented to reduce them. For instance, fugitive dust released into the environment by construction/clearing activities, traffic on the various roads within the Project Area, blasting, aggregate crushing, and stockpile creation/removal may have residual health effects on avifauna via inhalation or the introduction of heavy metals into the environment and prey (Sileo et al. 2003; Isanhart et al. 2011). Heavy metals and other pollutants (e.g., hydrocarbons and other hazardous waste products from machinery) contained in contact water may be deleterious to health and survival, especially of aquatic and semi-aquatic avifauna (Sileo et al. 2003; Isanhart et al. 2011) and of those species more susceptible to biomagnification due to feeding at higher trophic levels (e.g., preying on insects and vertebrates rather than vegetation; Brumbaugh et al. 2010). Birds interacting with contact water drainage ditches, sediment ponds, outflows from sediment ponds into the environment, and any water body or waterway in the vicinity of the Project Area (including, especially, Hares Ears Pond, Shoal Cove Pond, Shoal Cove Beach, and Salt Cove Beach; the latter two being potential outflow sites for contact water originating from the site) are at particular risk of contamination and health effects.

Mitigation measures will be employed to reduce the effects on avifauna of dust, hazardous materials, contact water, noise, and light emissions (Table 6.8-3). Residual effects of Project activities on the health and mortality risk of Avifauna VC after implementation of mitigations are predicted to be low in magnitude, small-scale (1-10 km^2), mostly medium-term in duration (ceasing upon completion of operations), occur continuously as well as irregularly, have high sensitivity to seasonality (i.e., bird breeding and migration periods), and are considered reversible. Residual health and mortality effects of Project activities on birds are therefore predicted to be not significant. The residual effects characterization is summarized in Table 6.8-7.

Table 6.8-7: Summary of Residual Effect Characterization Related to: Change in Health and Mortality Risk.

Criteria	Rating	Rationale
Magnitude	Low	Mitigation measures are expected to be effective in reducing effects from pollutants and contaminants to a <1% change in the size/health of the bird population.
Geographic Extent	1–10 km^2	Dust expected to cause effects over localized geographic area. Effects mediated via contact water may extend to affect waterways and wetlands adjacent/attached to Project water management infrastructure (potentially up to and including Shoal Cove Beach), depending on amount of water actually discharged to local watersheds and contaminant concentrations.
Timing	High Sensitivity	Effects more pronounced during migration and especially breeding season; effects predicted to be low in magnitude during winter when bird diversity and abundance are much lower.
Frequency	Irregular Events (hazardous material spills) Continuous (dust, contact water discharge)	Spills of hydrocarbons or hazardous materials will be rare, and mitigation measures are expected to be highly effective, with minimal residual effects. Dust and contact water discharges from construction and operational activities will be relatively continuous throughout the life of the Project.
Duration	Medium-term (dust) Long-term (hazardous material spills, contact water)	Dust emissions are expected to cease when operations and decommissioning are complete. Heavy metals, hydrocarbons, and sediments could remain suspended in contact water for some time after discharge into sediment ponds and the environment; settled heavy metals and sediments could cause effects for several years after Project decommissioning and rehabilitation.
Reversibility	Reversible	Dust conditions return to pre-Project state after cessation of operations. Heavy metals and sediments persist longer in environment, but effects diminish over time and may be considered reversible at the population level.
Ecological/Socio-economic Context	Disturbed	The Project Area is already influenced by industrial activity due to ongoing AGS Mine operations, traffic, artificial lighting, and human habitation in the area.

Criteria	Rating	Rationale
Level of Confidence	Moderate	Paucity of local species occurrence data (especially that of SAR/SOCC); moderate understanding of potential health effects based on literature; dependent on actual quantities of dust and contact water emitted, as well as sediment and heavy metal loads/composition in dust and contact water.
Significance	Not Significant	Mitigation measures (including monitoring) expected to be largely effective; low magnitude and reversibility of residual effects.

6.8.7 Potential Cumulative Effects

Potential cumulative effects on birds consider the proposed Project in the context of past, present, and reasonably foreseeable activities within the RSA. The Project is located within a designated mine zone that has been subject to long-term industrial disturbance. Aside from mining activities, existing anthropogenic influences including residential and recreational development associated with the Town of St. Lawrence, domestic resource use, transmission corridors, and the St. Lawrence Wind Farm have already resulted in habitat alteration, sensory disturbance (e.g., noise, vibration, and artificial light), and increased mortality risk for birds. These activities shape the current baseline conditions within the RSA.

Ongoing operations at the AGS Mine overlap spatially and temporally with the Project and contribute similar pathways of effect, including vegetation clearing, habitat fragmentation, noise, dust, blasting-related vibration, artificial lighting, increased vehicle traffic, and human presence. Existing linear features such as roads and transmission corridors continue to fragment habitat and may increase collision risk. Residential and recreational activities may further contribute to localized disturbance. Light, noise, and contaminant/waste emissions from the Town of St. Lawrence, with a population of approximately 1,000 people (Statistics Canada 2025), likely contribute to cumulative effects on behavioural disturbance and health/mortality. The St. Lawrence Wind Farm, which has been operational since late 2008, represents a long-term source of anthropogenic influence northwest of the project area within the RSA. Wind energy facilities are associated with bird mortality due to turbine collision (Thaxter et al. 2017), as well as potential displacement or avoidance behaviour (Marques et al. 2021). As an established feature of the landscape, the wind farm contributes to the existing baseline of mortality risk and sensory disturbance affecting birds in the region.

Additional disturbance and pollution effects created during Construction, Operation, and Closure of the South Ridge Pit will likely represent incremental increases in the spatial extent and intensity of effects, with the potential exception of effects on water bodies and their associated avifauna. Freshwater-associated birds such as ducks, geese, loons, gulls, and shorebirds may experience greater cumulative effects than other avifauna due to the multiple avenues of potential contamination (direct contact with wastewater effluent in sediment ponds and waterways; ingestion of contaminants in aquatic prey/forage; inhalation and ingestion of contaminated sediments and dust) and the resulting potential

for bioaccumulation and biomagnification. However, due to limited bird survey data in the immediate area and uncertainty in exact wastewater discharge rates, routes, and heavy metal/sediment loads, it is difficult to predict cumulative effects of pollutants on avifauna with much certainty.

However, with the implementation of proposed mitigation measures (e.g. habitat retention where feasible, lighting and dust suppression, noise management, water and waste management practices, adherence to the EEMP and EPP), the potential effects of the Project activities on the Avifauna VC are not expected to contribute measurably to cumulative effects of other anthropogenic activities in the area.

6.8.8 Follow-up and Monitoring Programs

Given the uncertainty in water quality predictions (see Section 6.5) associated with potential South Ridge discharges, if water quality monitoring demonstrates exceedances that may affect bird prey in and near the Project Area, CFI will work with regulators to develop an EEMP that addresses these uncertainties.

6.9 Bats

Bats were selected as a VC due to their ecological and economical importance, sensitivity to habitat disturbance and alteration, and the potential presence of SAR in the region. Refer to Section 6.8 for definitions of SAR and SOCC for the purposes of Project assessment.

The Bat VC includes two resident bat species in Newfoundland (Little Brown Myotis, *Myotis lucifugus* and Northern Myotis, *M. septentrionalis*), both of which are federally and provincially listed as Endangered. Their population declines are primarily caused by white-nose syndrome (WNS), a dermatophyte fungal disease that infects hibernating bats. The disease was first detected in Canada in 2010 and has since caused an estimated 94% overall decline in known numbers of hibernating Myotis bats in Eastern Canada (ECCC 2018). Population declines due to WNS have heightened the conservation importance of these two bat species and highlight the need to protect their habitats and minimize additional stressors. In addition to resident bats, Hoary Bat (*Lasiurus cinereus*) is considered a rare migrant in Newfoundland and is listed as Endangered by NL ESA and COSEWIC; this species faces population declines driven by widespread reductions in prey availability and habitat quality, as well as elevated mortality associated with wind energy developments (COSEWIC 2023).

6.9.1 Regulatory Context for the Management of Bats

The following legislation and regulations were reviewed and considered in the effects assessment for the Bats VC.

6.9.1.1 Federal Guidelines

6.9.1.1.1 Species at Risk Act

Federal SAR listed as extirpated, endangered, or threatened under SARA are afforded protections such that it is not permitted to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of that species or any part or derivative of such an individual. Protections under SARA are also afforded to the residence(s) of such species,

prohibiting their damage or destruction by any person, if a recovery strategy has recommended the reintroduction of that species into the wild in Canada.

6.9.1.2 Provincial Guidelines

6.9.1.2.1 Newfoundland and Labrador Wild Life Act

Bats that are not federally protected (see Section 6.9.1.1, above) are afforded protection under the Newfoundland and Labrador (NL) *Wild Life Act*, which prohibits the hunting, taking, or killing of protected wildlife, including bats, except via a license or permit.

6.9.1.2.2 Newfoundland and Labrador Endangered Species Act

In addition to the *Wildlife Act*, certain species that have been assessed to be provincially at-risk by their respective Species Status Advisory Committee or federally at-risk by COSEWIC may be designated under the Newfoundland and Labrador *Endangered Species Act* (NL ESA) as vulnerable, threatened, endangered, extirpated, or extinct. Under the NL ESA, it is prohibited for a person to disturb, harass, injure, or kill individuals of threatened, endangered, or extirpated species, or to capture, possess, purchase, sell, or trade them or their parts or any derivatives thereof. The residences of individuals of these species are also protected from disturbance and destruction by any person.

6.9.1.2.3 Habitat Stewardship Agreement for the Town of St. Lawrence

The St. Lawrence Habitat Stewardship Agreement is a land-use and conservation agreement between the Town of St. Lawrence and the Government of Newfoundland and Labrador, established under the provincial Municipal Habitat Stewardship Program. The Municipal Habitat Stewardship Agreement was signed in October 2013 (amended in 2021) and it currently encompasses ~400 m inland coastal buffer from the town's western boundary at the outflow of Three Stick Pond, covering Little Lawn Harbour and a 100-m buffer along the Little Lawn River, along the southern coastline and then east to Cape Chapeau Rouge, excluding a ~150 m coastal section set aside for mine-related infrastructure (Figure 6.9-1). Within this Conservation Area, the town commits to preventing habitat destruction or degradation. As stated in the plan, the town shall "permit only those activities within the Management Units that have no negative or adverse impact upon the land, or on the wildlife which utilize those areas" and must refer any proposed development within these areas to the Wildlife Division for a mandatory 30-day review. This creates a clear regulatory expectation that all land-use decisions consider potential effects on wetlands, coastal habitats, and associated wildlife, including seabirds, waterfowl, and species linked to the nearby Lawn Islands Archipelago Reserve.

6.9.2 VC Scoping

This section provides the scope of the Bat VC, which was used to frame the assessment, including the identification of indicators, pathway of effects, and assessment boundaries. Community and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EARD.

6.9.2.1 Assessment Boundaries

The assessment boundaries for the VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This

section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.9.2.1.1 Temporal Boundaries

The temporal boundaries for the Bat VC effects assessment are as follows:

- **Construction**: 6 months
- **Operations**: 18 months
- **Closure**: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.9.2.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.9-1.

- **Project Area**: the physical footprint of Project activities; namely, the Topsoil Stockpile; Overburden Stockpile; Waste Stockpile 1; Waste Stockpile 2; Waste Pad; South Ridge Pit; Access Road Network for the stockpiles and pit; and two sediment ponds with associated drainage ditches. In addition, the Project Area includes upgrades to the existing Main Haul Road, Community Access Roads, and a new road segment (~250 m) connecting Iron Spring Road with the coastal access road to Hares Ears. The Project Area encompasses 0.58 km^2.
- **Local Study Area** (LSA): this area includes the Project Area (0.58 km^2) plus an approximate 0.5 km buffer around all components of the Project Area to allow for potential disturbance effects from Project activities (e.g., airborne noise, dust) that may affect bats. The LSA has a total area of 10.63 km^2.
- **Regional Study Area** (RSA): is based upon the Study Area established for the original AGS assessment and the watersheds that interact with Project activities. It was selected to allow for assessment of potential cumulative effects from the South Ridge Project with the AGS Mine and other relevant activities in the area. The RSA has a total area of 58.16 km^2.

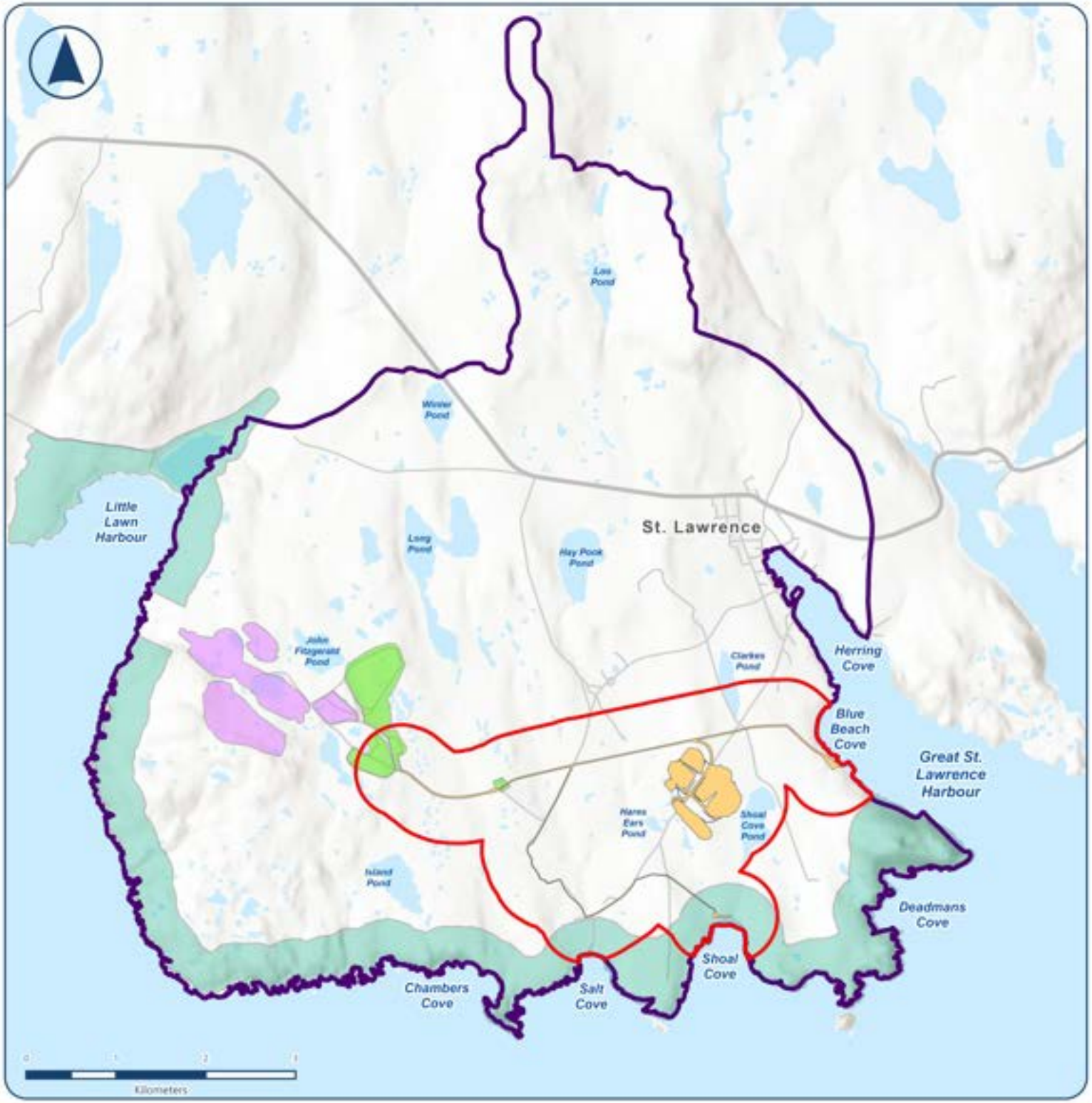

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FIGURE 6.9-1

ASSESSMENT AREAS: BATS

27 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area
- St. Lawrence Coastal Mgmt. Unit

Existing AGS Mine Components:

- Existing
- Shared

Scale: 1:60,000
when printed on 8 1/2 by 11 inch paper

LGL

This map and associated spatial data were prepared by LGL Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Fisheries Environmental Consultant Ltd. (FEC) and LGL. Data featured in this map has been derived from a variety of digital sources and, as such, FEC/LGL does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Data Sources: CFI, ESRI Base Map, CANVEC data (1:50K), and NL Gov. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: CFI_South_Ridge_BLC.aprx, Exported on: 2026-04-27 12:19 PM by: DD

6.9.3 Existing Conditions

This section describes the methods that established the existing conditions of the Bat VC and the description of the existing conditions.

6.9.3.1 Methods

To support the EARD, a review of available information and data sources, including the sighting databases, was conducted. No site-specific field surveys or modelling were undertaken. However, incidental observations of potential bat habitats were recorded during the Fish and Fish Habitat Survey undertaken for the Project (Appendix 6.6-1).

6.9.3.1.1 Data Sources

Background information and data to inform the baseline conditions for the Bats VC included:

- Environment Protection Plan: Addendum for the Blue Beach Marine Terminal Construction Project – 2020.
- Environmental Protection Plan: Operations Phase, St. Lawrence Fluorspar Project Rev 0 – 2017.
- Reactivation of the St. Lawrence fluorspar mine at St. Lawrence, NL: Project Registration and Project Description – 2009.
- Reactivation of the St. Lawrence Fluorspar Mine: Environmental Preview Report and the Federal Environmental Assessment Screening Report – 2009.
- St. Lawrence Fluorspar Mine Reactivation Environmental Effects Monitoring Program Project Construction Phase – 2012.
- Environmental Assessment Registration AGS Fluorspar Project, St. Lawrence, NL – 2015.
- St. Lawrence Fluorspar Marine Shipping Terminal Project: Project description and Project registration – 2019.
- Assessment of the Wetlands, Avifauna and Wildlife at Risk in the Proposed Fluorspar Mine Project Footprint Area: Baseline Report – 2015.
- Atlantic Canada Conservation Data Centre (AC CDC) observation data on SAR/SOCC within 5 km of the Project.
- Forest and non-forest spatial data from the government of Newfoundland and Labrador's Forest Ecosystem Management Division, Department of Forestry, Agriculture and Lands.
- COSEWIC Assessment and Status Update Reports.
- SARA Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), the Northern Myotis (*Myotis septentrionalis*), and the Tri-colored Bat (*Perimyotis subflavus*) in Canada.
- iNaturalist citizen science records.
- Guide for Bat Monitoring in Atlantic Canada.
- Peer-reviewed and published literature.

6.9.3.1.2 Data or Information Limitations

There are no publicly available bat data for the St. Lawrence area or Burin Peninsula (T. Leonard, Manager, Forest Research and Habitat, Wildlife Division, pers. comm., 14 October 2025). Species such as Northern Myotis and Little Brown Myotis, both of which

are listed as Endangered under SARA and NL ESA, as well as Hoary Bat (designated Endangered by NL ESA and COSEWIC), are likely to use open wetland habitats and ponds for foraging during spring, summer, and fall. The absence of acoustic monitoring from the area represents a data gap in the existing knowledge. Without such data, it is not possible to accurately determine species presence, activity levels, or seasonal habitat use.

6.9.3.2 Description of Existing Conditions

The Project Area and immediate vicinity are characterized primarily by coniferous scrub, deciduous scrub, softwood forest (predominantly balsam fir *Abies balsamea*), bog, open water, and small areas of soil barrens (GNLFAL 2025). Much of the softwood forest occurs as wind-stunted krummholz (locally referred to as “tuckamore”), which is characteristic of the Eastern Hyper-Oceanic Barrens ecoregion (Heritage NL 2002). As a result, stands within the Project Area are generally composed of small trees (average diameter at breast height less than 10 cm), with minimal cavity development, and a low abundance of standing deadwood (i.e., snags) (S. Munro, LGL biologist, pers. obs., November 2025). No buildings are located within the Project Area. The nearest structures are located within the LSA, north of the Blue Beach Haul Road at the southern end of Clarke’s Pond. Iron Springs Campsite is located within the LSA near the intersection of Iron Spring Road and the trailhead of Chambers Cove hiking trail. The nearest dwellings are adjacent to Blake’s Pond (Salt Cove Brook Road), approximately 2 km from the proposed South Ridge Pit. These properties, and other residential areas of the Town of St. Lawrence are located within the RSA. Historical mine shafts and workings within the Project Area have been capped with timber or concrete and subsequently covered with fill, and former underground workings are either backfilled or flooded to near-surface levels (F. Pitman, Alltech Consulting, pers. comm., 19 January 2026). No natural caves or underground openings suitable for bat hibernation are known or expected to occur within Project Area. Accordingly, no suitable winter hibernacula are present within the Project Area.

As described previously, no information on bat occupancy or habitat use is available for the Project Area or the surrounding region. Five bat species have been recorded on the island of Newfoundland: Little Brown Myotis, Northern Myotis, Hoary Bat, Silver-haired Bat (*Lasionycteris noctivagans*), and Eastern Red Bat (*Lasiurus borealis*) (McBurney and Segers 2021; COSEWIC 2023). Of these species, Northern Myotis and Little Brown Myotis are resident in Newfoundland, and Hoary Bat has been documented only as a vagrant and is not considered a summer resident (Washinger et al. 2020; COSEWIC 2023; Table 6.9-1). Both resident species are listed as Endangered under SARA due to significant population declines associated primarily with WNS (ECCC 2018). Critical habitat for Little Brown Myotis and Northern Myotis has been delineated within Newfoundland; but does not occur within the Project Area or the RSA (ECCC 2018).

Roosting habitat availability within the Project Area and immediate vicinity is considered low. In general, forested stands within the LSA exhibit limited structural features described suitable for supporting summer day roosts or maternity colonies of Northern Myotis, Little Brown Myotis or Hoary Bats (COSEWIC 2013,2023). The Project Area and surrounding landscape provide potential foraging habitat in the form of open bogs, barrens, forest edges, and water bodies (GNLFAL 2025; Table 6.9-1). However, bat activity is presumed

limited in the region due to the winds associated with coastal barrens, combined with oceanic influence on seasonal temperatures. Buildings and other anthropogenic structures in the surrounding area may provide potential roosting or maternity habitat for *Myotis* spp. (COSEWIC 2013; Table 6.9-1); however, use of such structures by bats in the vicinity of the Project Area has not been documented.

Table 6.9-1: Bat Species that may Occur in the Project Area, Along with their Federal and Provincial Status and Habitat Preferences

Species	Status[1]	Habitat Preferences[2]	Probability of Occurrence in Local Study Area
Northern Myotis *Myotis septentrionalis*	SAR: Endangered under SARA; Endangered under NL ESA	**Breeding/Roosting**: Lactating females prefer large-diameter snags with stable microclimates. Roost in cavities and under exfoliating bark of snags and live trees **Foraging**: Mature interior forests; less reliant on open water or edge habitats than other *Myotis* **Wintering**: Caves, abandoned/inactive mines	Species detected in Frenchman's Cove (approx. 30 km north of the Project Area, on opposite side of peninsula) in 2008 trapping surveys; possible that the species uses the LSA and surrounding open water habitat and forest edges for foraging and transiting.
Little Brown Myotis *Myotis lucifugus*	SAR: Endangered under SARA; Endangered under NL ESA	**Breeding/Roosting**: Maternity colonies are located in human structures (such as buildings, barns, attics, under bridges), tree cavities, rock crevices, and bat boxes. Males roost in raised bark, foliage, tree cavities, and rock crevices **Foraging**: Forest edges, open areas near lakes, ponds, and slow-moving streams, especially close to roost sites **Wintering**: Cold and humid caves, wells, abandoned/inactive mines	Possible that the species uses the LSA and surrounding open water habitat and forest edges for foraging and transiting.
Hoary Bat *Lasiurus cinereus*	SAR: Not listed under SARA; Endangered by COSEWIC; Endangered under NL ESA	***Not known to breed in Newfoundland** **Roosting**: Roosts in foliage of deciduous and coniferous trees, often in dense forest stands. **Foraging**: Open habitats including forest edges, clearings, and above forest canopy ***Migrate south for winter**	Occasional migratory vagrant to Newfoundland in late summer and fall; unlikely but possible that rare vagrant individuals may temporarily use the LSA for foraging as they travel along migratory pathways

Notes:

1. *SAR – Species at Risk; SARA – Species at Risk Act; NL ESA – Newfoundland and Labrador Endangered Species Act*
2. *Sources: Barbour and Davis 1969; Cáceres and Barclay 2000; Park and Broders 2012; COSEWIC 2013, 2023; Randall et al. 2014; Fabianek et al. 2015; ECCC 2018; Washinger et al. 2020.*

6.9.4 Effects Assessment

This section provides input and results specific to the Bats VC effects assessment. A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as following:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects; and
- Follow-up commitments and monitoring programs.

6.9.4.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the Bats VC within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). An interaction table for the Bats VC is presented in Table 6.9-2.

Potential Project-related effects on the Bats VC were determined by comparing existing conditions to those expected to result from the Construction, Operation, and Closure phases of the Project. Potential effects are outlined, including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another VC).

As indicated in Table 6.9-2, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Bat VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Project assessment, and professional judgement. Overall, effects can be categorized into three primary categories: (1) habitat loss, alteration, and/or fragmentation; (2) behavioural disturbance; and (3) changes in health and mortality risk.

Table 6.9-2: Identification of Project-VC Interactions and Associated Potential Effects with the Bats VC.

Project Activities		Effect Pathway
Construction		
Community Access Roads	• Strip, clear, fill, gravel, and grade to accommodate vehicle traffic • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use • Upgrades to Memorial Bridge and Blake's Brook Bridge	Direct: • Habitat destruction and alteration as a result of earthmoving and construction activities may result in the direct loss of foraging habitats, alteration of habitat connectivity with linear structures such as roads and/or direct mortality of bat species, including SAR. • Project activities may result in sensory disturbance (i.e., in-air noise, vibration, artificial lighting, and human presence) resulting in avoidance behaviour, altered
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded and berms will be built up to support larger equipment traffic • Strip, clear, fill	

Project Activities		Effect Pathway
Pit Haul Roads	• Strip, fill, gravel, and grade.	movement patterns, and/or increased stress. Indirect: • Fugitive dust from earthmoving and construction activities, as well as leaching of contaminants from waste material, may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use.
Power Infrastructure upgrades	• Transmission line re-routing along the Blue Beach haul road lines will be lifted to allow Cat 777s to travel to the Project area.	
	• The transmission line that currently follows Iron Springs Road will be rerouted around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	
Stockpile Area Development	• Strip, clear and preparing stockpile areas for topsoil, overburden, and waste rock stockpiles.	
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	

Project Activities		Effect Pathway
Operations		
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting. • Ore will be transported to the existing AGS mill for processing.	Direct: • Habitat destruction and alteration as a result of earthmoving and construction activities may result in the direct loss of foraging habitats, alteration of habitat connectivity with linear structures such as roads and/or direct mortality of bat species, including SAR. • Project activities may result in sensory disturbance (i.e., in-air noise, vibration, artificial lighting, and human presence) resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Short-term noise and ground vibration may cause disturbance to nearby bat colonies (if there are any), located in both natural and anthropogenic structures resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Greenhouse gas emissions from equipment may affect health via inhalation. Hydrocarbon and hazardous waste leaks and spills from machinery may affect health via contamination of water or forage/prey. Indirect: • Fugitive dust from earthmoving, blasting, hauling, and rock crushing activities and leaching of contaminants from waste material may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use.
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr • Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	
Stockpiling	• As mining progresses waste rock will be deposited in the waste rock stockpiles.	
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment ponds and monitored.	Direct exposure to contaminants in contact water (or indirectly, via contaminated prey/forage) resulting in negative effects on health including potential increase in mortality risk.

Project Activities		Effect Pathway
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, then re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure. • Access roads will be maintained to facilitate post-closure monitoring	Direct: • Noise from heavy equipment operation and road construction may result in sensory disturbance (i.e., in-air noise, vibration, artificial lighting, and human presence) resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Continued use of recreation access roads may cause small amounts of disturbance (noise, human presence) indefinitely, resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Small amounts of fugitive dust from continued use of recreation access roads may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use.
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	
Overburden & Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).	

Project Activities		Effect Pathway
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required.	Maintenance and repairs may cause small amounts of localized disturbance and behavioural effects, depending on magnitude and duration of human presence as well as noise, light, and dust emissions.

6.9.5 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and described throughout Section 6.9.3 were used to inform the design and implementation of the project mitigation measures. The identified mitigation measures are outlined in more detail in the following sections, including a discussion of their effectiveness and confidence related to avoiding, minimizing, or restoring the VC to prevent residual effects.

This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and the proposed mitigations are effective.

Existing mitigation and management measures and contingency plans in place for the AGS Mine will continue to be implemented for the Project and will serve to minimize potential effects on the Bats VC. Section 2.12 provides a detailed overview of various management and contingency plans. Table 6.9-3 summarizes proposed mitigation measures applicable to bats.

6.9.5.1 Habitat Loss/Alteration

The Project has been designed to minimize habitat loss, alteration, and fragmentation, including potential bat foraging and commuting areas. The Project footprint has been optimized to reduce vegetation clearing, and existing disturbed areas will be used where feasible to limit effects on undisturbed habitats. Prior to construction, limits of disturbance will be clearly flagged to prevent clearing outside approved areas. These measures will reduce the geographic extent of habitat loss during all Project phases. A minimum 30-m buffer will be maintained around wetlands, ponds, streams, and bogs where practicable. Forest edges, riparian areas, wetlands, and other linear landscape features (e.g., shrub cover at road crossings) will be retained where feasible to encourage higher flight heights across infrastructure and to help maintain habitat connectivity. Dust from and contaminants may indirectly affect water sources and insect prey. To mitigate this, a combination of preventative procedures (i.e. roadway watering, optimized blast design, stockpile covering, and use of dust collection systems for crushing operations) and reactive controls during adverse conditions (dry and windy periods) will be implemented. During Closure and Decommissioning, access roads and stockpile areas will be regraded to match the surrounding topography and reseeded with native vegetation similar to the

original habitat. While progressive reclamation will support long-term habitat recovery, some permanent habitat loss within the Project footprint will remain; therefore, a residual effect is anticipated.

6.9.5.2 Behavioural Disturbances

During all Project phases, routine Project activities may disturb bats through lighting, vehicle movement, equipment operation, vibration from blasting, and human presence. There is anticipated to be overlap between construction and operation activities (including blasting) and the periods when bats are active. As a result, temporary disruption of foraging and commuting activity may occur within and near the Project Area. Measures are in place to avoid these sensitive habitats (e.g., wetlands and riparian areas) where bats are likely to occur to the extent possible. A buffer (30 m minimum) will be used whenever possible around wetlands and water bodies in the Project Area to reduce disturbance to key foraging areas.

Lighting will be limited to that required for safe operations. Continuous night-time lighting near identified foraging habitats will be avoided where feasible. Mobile and permanent lighting will be directed downward and shielded to minimize light spill into adjacent wetlands, forest edges, and open water bodies. High-intensity lights will be turned off outside working hours where possible. These measures will reduce disruption to natural light regimes and bat activity patterns.

Blasting will occur as seldom as possible by using large blast patterns and will not occur at night; modern blasting techniques will be implemented to minimize vibration and sound levels (see Section 6.3 for details). Equipment will be maintained in good working order to minimize noise, vibrations and air pollution, and machinery will be turned off when not in use where feasible. These measures will reduce the frequency and intensity of disturbance events. Staff will receive awareness training to minimize wildlife interactions. Personnel will be instructed not to harass bats and to report injured, sick, or dead individuals to the provincial Wildlife Division. With the implementation of these measures, behavioural disturbance effects are expected to be localized within the RSA and temporary; however, residual disturbance during active phases is anticipated.

6.9.5.3 Change in Health and Mortality Risk

Project activities could affect bat health through exposure to tailings, contact water, air pollution, light pollution, hazardous materials, or contaminated prey. Effective waste and water management, as described in Section 2.6.2.8, Section 6.4 and Section 6.5, will minimize these potential effects. The site water management system will collect contact water from mine wastes and direct them to two sediment ponds where the water will be monitored, and treated, if necessary, prior to discharge. These measures will protect downstream water quality and associated insect prey communities. Hazardous materials (e.g., fuel, oils) will be stored to prevent entry into waterways and disposed of at approved facilities and Employees and subcontractors will receive training in spill prevention, response, and reporting. Equipment will be maintained in good working order to minimize emissions and fluid leaks, and dust suppression measures will be implemented to reduce air quality effects. A designated equipment washing area with water catchment and treatment will be established, and washing will not occur within 100 m of water bodies. Waste will be managed in accordance with the Waste Management Plan. Similarly, the

accidental release of hazardous wastes (e.g., fuel, oils, or other chemicals) will be mitigated via procedures established in CFI's Spill prevention and response plan (Section 2.12.12).

Project lighting may alter bat behaviour and increase risk of injury or mortality through disorientation or attraction to lit areas. Mitigation measures include minimizing the amount of lighting used, directing lighting downward, shielding lights to reduce off-site spill, and turning off high-intensity lights outside working hours where possible. Collectively, these measures will reduce risks to bat health and mortality, but residual effects are still possible.

Table 6.9-3: Summary of Proposed Mitigation Measures.

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Loss, alteration, and/or fragmentation of habitat including potential preferred foraging areas.	• Disturbance of existing vegetation outside designated Project footprint areas will be avoided by clearly flagging the limits for disturbance activities prior to the commencement of work. [All Phases] • The location of Project components will be optimized to reduce the area of vegetation clearing. [All Phases] • Retain existing vegetation cover and linear landscape features (e.g., forest edges, shrub cover) at road crossings, where feasible, to encourage higher flight heights. [All Phases] • Existing disturbed areas will be incorporated into the Project Area to reduce direct effects on vegetation communities. • Maintain a minimum 30-m buffer around wetlands, ponds, streams, and bogs where practicable. Retain forest edges, wetlands (small and large) and riparian areas where feasible to maintain foraging habitats and flight transit corridors. [All Phases] • Stockpiles of topsoil, overburden, and other potentially dust-generating materials will be kept covered, where practical, and used as soon as practical, or will be appropriately temporarily vegetated. [All Phases] • Haul and access roads will be watered during dry weather to suppress dust. [All Phases] • In Closure and Decommissioning Phase, haul roads and stockpile areas will be regraded to be continuous to the surrounding topography and re-seeded with native vegetation similar in species composition to the original habitat. [Closure]	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Behavioural disturbance (disruption of foraging, commuting, and roosting activity).	• Limit lighting to that required for safe operations and avoid continuous night-time lighting near any identified foraging habitats, where feasible. [All Phases] • Direct lights downward and shield where practicable to minimize light spill into adjacent wetlands, forest edges, and open water bodies. [All Phases] • Project personnel will be advised to not catch, divert, follow, or otherwise harass bats. [All Phases] • Implement staff awareness training to reduce the risk of wildlife collisions and promote reporting of injured, sick or dead bats to the provincial Wildlife Division. • Equipment will be maintained in good working order to minimize noise and air pollution. [All Phases] • Vehicles will adhere to posted speed limits to minimize engine noise within LSA, and horns will only be used when required for safety purposes. [All Phases] • Stockpiles of topsoil, overburden, and other potentially dust-generating materials will be kept covered, where practical, and used as soon as practical, or will be appropriately temporarily vegetated. [All Phases] • Haul and access roads will be watered during dry weather to suppress dust. [All Phases]	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Change in health (from tailings/contact water discharge, noise, air pollution, light pollution, other wastes, and contaminated prey) and mortality risk.	• The site water management system will include sediment ponds designed to collect contact water from mine wastes and sized appropriately to manage stormflows, considering potential impacts on downstream watercourses and wetlands within the LSA. [Operations, Closure] • Two sediment ponds for contact water will be constructed, monitored, and treated (if necessary) prior to discharge of water to the environment. [Operations] • Surface water sampling will be conducted at 25 sampling stations to ensure that any water flowing away from the mine site meets the minimum guidelines set by Canadian Water Quality Guidelines. [Operations] • Implement dust suppression measures (e.g., water spraying, stockpile stabilization) to minimize dust emissions. • Fuel, mineral spirits, oil, and other hazardous wastes will be stored to prevent entry into waterways or storm drains and will be disposed of at an approved site. [All Phases] • A designated equipment washing location with water catchment and treatment system shall be established to treat and disposal of contaminated water and equipment washing will not take place within 100m of water bodies. [All phases] • Provide training to CFI employees and its subcontractors on spill prevention, response and reporting [All Phases] • All personnel who handle, store, use chemicals must be trained in WHMIS. Personnel involved in the transportation of dangerous goods must also be trained in this subject. [All Phases] • Select employees will be trained in spill response to contain, recover, and remediate any accidental spills to prevent contamination of waterways. [All Phases] • Implement waste management procedures in accordance with the Waste Management Plan. [All Phases] • Blasting will occur as seldom as possible by using large blast patterns and will not occur at night; modern blasting techniques will be implemented to minimize vibration and flyrock. [Operations] • Project activities will adhere to nighttime noise restrictions [Construction, Operations] • Minimize the use of machinery to the extent possible and turn off when not in use. [All Phases] • Equipment will be maintained in good working order to minimize noise, avoid fuel/operating fluid spills and air pollution. [All Phases] • Project lighting will be limited to that which is necessary for safe and efficient Project activities. Mobile and permanent lighting will be shielded to shine down and located such that unavoidable light spill of the working area is not directed towards receptors outside the Project Area, to the extent practicable. [All Phases] • High intensity lights, including floodlights, will be turned off at night outside of working hours, if possible. [All Phases]	Y

6.9.6 Identification and Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table 6.9-3, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.9-4.

Table 6.9-4: Residual Effects Characterization Criteria for the Bats VC.

Assessment Criteria	Categories/Parameters for Avifauna VC
Nature	The long-term trend of the residual effect. **Positive** – A residual effect that provides benefit to biological VC relative to baseline. **Negative** – A residual effect that is detrimental to biological VC relative to baseline. **Neutral** – No net change in measurable parameters for biological VC relative to baseline.
Magnitude	The overall amount or degree of change in a measurable parameter, or variable, related to existing conditions that are expected. **Negligible** – No measurable change to biological VC relative to baseline. **Low** – Judged to result in <1% change in the size or health of the population or the carrying capacity of its habitat. A change in a population can result from an absolute reduction in population size or from displacement of animals to areas outside the area of consideration. **Moderate** – Judged to result in a 1% to <10% change in the size or health of a population or the carrying capacity of its habitat. **High** – Judged to result in a 10%, or greater, change in the size or health of a population or the carrying capacity of its habitat.
Geographic Extent	The range or scale of approximate geographic areas over which any potential interaction and effect is anticipated to occur. • <1 km^2 • 1–10 km^2 • 11–100 km^2 • 101–1,000 km^2 • 1,001–10,000 km^2 • >10,000 km^2
Timing	Refers to the effects of seasonal variability on the VC. **Negligible Sensitivity** – Residual effect is not sensitive to seasonality. **Moderate Sensitivity** – Residual effect may be influenced by seasonality, but the assessment of attribute parameters is unchanged (i.e., magnitude, however, seasonal variation does not alter the magnitude ility). **High Sensitivity** – The assessment of the residual effect (i.e., magnitude, geographic extent, duration, frequency, reversibility) is changed based on seasonality.

Assessment Criteria	Categories/Parameters for Avifauna VC
Frequency	How often the residual effect being assessed is expected to occur. **Single Event** – Residual effect occurs once during the Project. Irregular Events – Residual effect occurs sporadically at an irregular interval and is not predictable. **Regular Events** – Residual effect occurs regularly and may be at predictable intervals or specific times. **Continuous** – Residual effect occurs continuously.
Duration	The length of time a potential residual effect may occur. **Short-term** – Residual effect restricted to construction or decommissioning/ rehabilitation phases. **Medium-term** – Residual effect extends through project operations but is expected to subside when operations cease. **Long-term** – Residual effect extends beyond the life of the Project.
Reversibility	Refers to the ability of the VC to return to its original state once the stressor is removed **Reversible** – Residual effect is likely to be reversed after activity completion and rehabilitation. **Irreversible** – Residual effect is unlikely to be reversed. It should be noted that a biological effect may be irreversible at the individual level (e.g., mortality of an individual animal) but reversible at the population level.
Ecological/Socio-economic Context	Existing condition and trends in the area where residual environmental effects occur. **Undisturbed** – Area is relatively undisturbed or not adversely affected by human activity. **Disturbed** – Area has previously been substantially disturbed by human development or human development is still present.
Level of Confidence (Certainty of Knowledge)	The general level of confidence in the knowledge used to describe the potential environmental effect. **High** – Based on good understanding of cause-effect relationships and data specific to the Project Area. **Moderate** – Based on good understanding of cause-effect relationships using data from elsewhere or incompletely understood cause-effect relationships using data specific to the Project Area. **Low** – Based on incomplete understanding of cause-effect relationships and/or incomplete data specific to the Project Area.

Significant biological effects are those that are considered to be of sufficient magnitude, duration, and geographic extent to cause a change in the VC that will alter its status or integrity beyond an acceptable level. Establishment of the criteria is based on professional judgement but should be transparent and repeatable. An effect can be considered significant (negative by definition), not significant, or positive. A significant residual negative effect on biological VCs is defined as a residual Project-related change in the VC population and/or habitat in the LSA where recovery to baseline condition is unlikely.

6.9.6.1 Assessment Context

As indicated in Table 6.9-2, During the Construction, Operations, and Closure phases, various routine Project activities may affect the Bat VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL and other parts of Canada, and professional judgement. It is important to note that the Project represents an expansion of the existing CFI AGS Mine and is located within a designated mine zone that is already subject to ongoing industrial disturbance (Section 6.8.3)

Based on habitat characteristics, landscape context, and known regional distributions, bat use of the Project Area is expected to be limited (Section 6.9.2.1) primarily to foraging and transits by Little Brown Myotis, Northern Myotis, and migrating Hoary Bats. No maternity colonies, day roosts, or hibernacula are known to occur within the Project footprint.

CFI's existing mining operations at the AGS site and ongoing use of light-vehicle and haul roads currently contribute to baseline levels of disturbance to bats (if they are present), including habitat loss and alteration, sensory effects associated with noise, artificial lighting, and human presence. Activities associated with the Project, including increased use of the existing haul road and development of new infrastructure, are therefore expected to represent incremental increases in the spatial extent and intensity of residual effects. In addition to coastal environmental factors, ongoing mining activities in the area could have resulted in partial avoidance of, or habituation to, the Project Area by bats.

Existing mitigation and management measures and contingency plans will continue to be implemented for the Project and will serve to minimize potential effects on the Bats VC. Section 2.12 provides a detailed overview of various management and contingency plans; Table 6.9-3 summarizes key mitigation measures applicable to bats.

6.9.6.2 Residual Effect: Loss, Alteration, and/or Fragmentation of Habitat

With the implementation of the proposed mitigation measures (Table 6.9-3), residual effects on bats related to habitat loss, alteration, and fragmentation are expected to be limited in magnitude and spatial extent. Vegetation clearing will be confined to the approved Project footprint, with project infrastructure strategically sited to minimize new vegetation removal and to preferentially use previously disturbed areas within the active mine site. Where feasible, buffers around wetlands, ponds, streams, and bogs will be maintained, and existing forest edges and linear landscape features will be retained to support bat foraging activity and commuting routes.

Project activities will result in the clearing or alteration of approximately 0.58 km² of vegetation across all phases. This may lead to the direct loss of potential foraging habitat for Little Brown Myotis, Northern Myotis, and migrating Hoary Bats, particularly within open barren, wetland, and forest-edge habitats. These habitat types occur extensively throughout the surrounding landscape, and similar foraging opportunities are abundant beyond the Project Area. Stunted conifer scrub within the Project footprint is not expected to provide suitable roosting habitat, and no known maternity colonies, day roosts, or hibernacula occur within or near the Project Area.

Indirect effects may also occur as a result of vegetation clearing and soil disturbance. These activities can alter surface hydrology, lower local water tables, and modify airflow and temperature regimes, potentially influencing insect prey abundance and availability in localized areas adjacent to disturbance (BC Ministry of Environment 2016). Such microclimatic changes may reduce habitat quality in the immediate vicinity of Project activities.

Habitat fragmentation and associated changes in landscape connectivity may influence bat movement patterns, particularly where linear infrastructure intersects commuting routes (Voigt and Kingston 2016; Theobald et al. 2020). However, most linear features associated with the Project, including the Blue Beach Haul Road and light-vehicle roads, already exist within the active mine site. The Project therefore represents an incremental expansion within a previously disturbed landscape. Although some widening of existing roads will occur, this is not expected to meaningfully increase habitat fragmentation or impede connectivity between roosting and foraging areas. Retained buffers around wetlands and riparian features will further support the maintenance of commuting corridors.

Following the application of mitigation, residual effects on bats related to habitat loss, alteration, and fragmentation are predicted to be negative in nature, low in magnitude, localized (<1 km²), continuous during active phases, long-term in duration, and reversible through progressive reclamation and post-closure revegetation. The ecological context of the Project Area is considered disturbed due to existing mining operations. Based on available information and professional judgement, residual effects related to habitat loss, alteration, and fragmentation on bats are not significant. The residual effect characterization is summarized in Table 6.9-5.

Table 6.9-5: Summary of Residual Effect Characterization Related to: Loss, Alteration, and/or Fragmentation of Habitat.

Criteria	Rating	Rationale
Magnitude	Low	Low magnitude due to the small disturbance footprint, use of existing disturbed areas, retention of buffers and use of already existing linear landscape features. The carrying capacity of the habitat is small due to already disturbed existing habitat; low availability in suitable roosting habitats, therefore, displacement from roosting habitats is unlikely
Geographic Extent	<1 km^2	Effects are largely limited to cleared/ altered habitats and their immediate vicinity (e.g., edge effects).
Timing	Moderate Sensitivity	Effects are more pronounced during the spring, summer and fall when the bats are active. However, seasonal variation does not alter the magnitude, geographic extent, duration, frequency, or reversibility.
Frequency	Continuous	Effects are ongoing throughout the life of the Project and beyond, on a continuing basis.
Duration	Long-term	Effects begin during the Construction phase and persist through the Operations phase, expected to diminish following closure but will persist until habitat is fully regenerated following revegetation and biological restoration efforts.

Criteria	Rating	Rationale
Reversibility	Reversible	Habitat returns to pre-Project state after decommissioning, rehabilitation, and revegetation using native species.
Ecological/Socio-economic Context	Disturbed	The Project Area is located within an existing, actively disturbed mine site subject to ongoing industrial activity along with other wind energy and human developments present.
Level of Confidence	Moderate	Paucity of bat species occurrence data within the Project area or existing AGS Mine, but effects are generally well-understood from research conducted elsewhere.
Significance	Not Significant	Not significant, as residual effects are low in magnitude, localized, reversible, and unlikely to affect bat populations at the LSA or RSA scale.

6.9.6.3 Residual Effect: Behavioural Disturbance

With the implementation of proposed mitigation measures (Table 6.9-3), residual behavioural effects on bats associated with sensory disturbance are expected to be limited. Project activities across all phases may generate in-air noise, vibration, artificial lighting, dust, and increased human presence, all of which have the potential to influence bat behaviour. Such disturbances may result in temporary avoidance of localized areas, altered activity patterns, or short-term displacement from preferred foraging habitats (Voigt and Kingston 2016; Theobald et al. 2020; Cory-Toussaint and Taylor 2022). Artificial lighting associated with nighttime construction or operations may alter insect aggregation patterns and influence bat foraging behaviour (Stone et al. 2015; Cory-Toussaint and Taylor 2022). Noise and vibration from blasting and equipment/vehicles during construction and operations could affect nearby roosting colonies if present (BC Ministry of Environment 2016); however, no known maternity colonies, day roosts, or hibernacula occur within the Project footprint.

Mitigation measures will be applied to reduce the intensity and spatial extent of sensory disturbance. These include limiting lighting to that required for safe operations, using downward-shielded fixtures to reduce light spill into adjacent habitats, minimizing unnecessary nighttime lighting, maintaining equipment in good working order to reduce noise emissions, implementing controlled blasting schedules, enforcing speed limits, and providing staff awareness training. Dust suppression measures will also be implemented to reduce airborne particulates that may influence insect prey availability.

Bats in the region are expected to use the Project Area primarily for foraging and transit rather than roosting, and baseline conditions already include ongoing industrial activity. As a result, Project related sensory disturbances are anticipated to represent incremental increases relative to existing conditions. While some short-term avoidance of localized areas may occur, suitable alternative open wetland foraging habitats are abundant within the surrounding landscape.

With modern blasting techniques and targeted mitigation measures in place to minimize the potential effects of behavioural disturbance to bats, residual behavioural disturbance effects of Project activities due to noise, lighting, dust generation, and increased human

activity are predicted to be negative in nature, low in magnitude, medium-scale (11-100 km^2), medium-term in duration (expected to subside when operations cease), occur both irregularly (e.g., blasting) and continuously (e.g., machinery noise; nocturnal operations lighting), have high sensitivity to seasonality and are considered reversible. Residual effects of Project activities on bats due to behavioural disturbances are therefore predicted to be not significant. The residual effect characterization is summarized in Table 6.9-6.

Table 6.9-6: Summary of Residual Effect Characterization Related to: Behavioural Disturbance.

Criteria	Rating	Rationale
Magnitude	Low	Behavioural disturbances represent incremental increases over existing baseline conditions and are partially mitigated through best practices and proposed mitigation.
Geographic Extent	11–100 km^2	Behavioural disturbance related to blasting noise, equipment noise, artificial lighting, and increased human activity will likely cause effects beyond the physical project footprint and its 500-m buffer zone (LSA) and into the adjacent habitats.
Timing	High Sensitivity	Effects can be more pronounced during spring, summer and fall months when bats are active; effects predicted to be negligible to low in magnitude during winter due to no evidence of known winter hibernacula within the LSA and therefore no bat activity.
Frequency	Irregular Events (blasting noise) Continuous (operations noise; nocturnal lighting)	Blasting will not occur on a set schedule; nor will it occur every day. Noise and light emissions from construction and operational activities will be more continuous throughout the life of the Project.
Duration	Medium-term	Effects are expected to cease when operations and decommissioning are complete.
Reversibility	Reversible	Noise and light conditions and potential effects on bats return to pre-Project state after cessation of operations.
Ecological/Socio-economic Context	Disturbed	The Project Area is already influenced by industrial activity due to ongoing AGS Mine operations, traffic, artificial lighting, and human habitation in the area.
Level of Confidence	Moderate	Paucity of bat species occurrence data within the Project area or existing AGS Mine, but effects are generally well-understood from research conducted elsewhere.
Significance	Not Significant	Effects are reversible and are expected to occur for the duration of Project operations.

6.9.6.4 Residual Effect: Change in Health and Mortality Risk

Bats may be exposed to a range of Project-related stressors, including dust, noise, artificial lighting, contaminants, and increased vehicle traffic. While these stressors have

the potential to affect individual health or survival, the Project design and mitigation measures (i.e. dust suppression, proper storage and handling of fuels and hazardous materials, spill prevention and response procedures, treatment of contact water prior to discharge, waste management protocols) are expected to substantially reduce the likelihood and severity of such effects.

Contaminant exposure in bats may occur through both direct and indirect pathways. Stockpiles and pit development associated with the Project have the potential to affect nearby waterbodies through acidification or contaminant leaching. Bats may ingest contaminants directly by drinking from affected water sources such as Shoal Cove Pond or indirectly by foraging on emergent aquatic insects that have bioaccumulated contaminants from these environments (BC Ministry of Environment 2016; Voigt and Kingston 2016). In addition to contaminant exposure, bats may face direct and indirect mortality risks from increased vehicle traffic and sensory disturbance. Although documented bat collision rates are generally low, individuals foraging or commuting along roadways may be vulnerable to collisions, particularly where roads intersect known flyways or where suitable habitat exists on both sides of the road (Lesiński 2007; Voigt and Kingston 2016). Chronic exposure to noise, vibration, and artificial lighting may also contribute to physiological stress or behavioural changes, potentially reducing fitness or reproductive success. Artificial lighting has been linked to altered activity patterns and reduced reproductive output in some bat species (Stone et al. 2015).

With mitigation measures in place to reduce contaminant exposure, manage contact water and drainage infrastructure, and minimize vehicle collision risk, residual effects of Project activities on bats related to health and mortality are predicted to be negative in nature, low in magnitude, medium-scale in geographic extent (11–100 km²), and medium-term in duration, occurring throughout Construction and Operations. These effects may occur both intermittently (e.g., accidental spills, blasting) and continuously (e.g., traffic, operational lighting, background contaminant levels), with higher sensitivity during active seasons when bats are foraging. Effects are expected to be reversible following Closure, as environmental conditions return toward baseline. Given the disturbed ecological context, the absence of known roosts or hibernacula, and the availability of alternative habitats, residual health and mortality risks to bats are predicted to be not significant. The residual effect characterization is summarized in Table 6.9-7.

Table 6.9-7: Summary of Residual Effect Characterization Related to: Change in Health and Mortality Risk.

Criteria	Rating	Rationale
Magnitude	Low	Health and mortality risks represent incremental increases over existing baseline industrial conditions. Measurable changes to bat population size, distribution, or viability are not expected.
Geographic Extent	11-100 km^2	Potential exposure pathways including noise propagation, light spill, airborne particulates, effluent discharge, and indirect food-web transfer of contaminants may extend beyond the physical Project footprint and the 500-m LSA buffer into adjacent habitats. Effects are expected to attenuate with distance.

Criteria	Rating	Rationale
Timing	High Sensitivity	Effects may be more pronounced during spring, summer, and fall when bats are active and foraging. During winter, effects are predicted to be negligible due to the absence of known hibernacula within the LSA and limited bat activity.
Frequency	Irregular Events (accidental spills; blasting) Continuous (traffic; operational noise; lighting)	Accidental contaminant releases are considered low probability events. Blasting will occur intermittently during construction and operations. In contrast, traffic, operational noise, and nocturnal lighting will occur more continuously throughout active Project phases.
Duration	Medium-term	Effects are expected to occur during Construction and Operations and will cease following Closure and reclamation. Long-term effects are not anticipated.
Reversibility	Reversible	Health and mortality risks are expected to decline following cessation of operations. Environmental conditions (noise, light, traffic levels, and contaminant pathways) will return toward baseline conditions post-closure.
Ecological/Socio-economic Context	Disturbed	The Project Area is located within an active industrial landscape influenced by ongoing AGS Mine operations, traffic, artificial lighting, and human presence.
Level of Confidence	Moderate	While contaminant pathways, traffic volume, and mitigation measures are well defined, the precise behavioural and physiological responses of bats to combined stressors can vary depending on species, local habitat conditions, and environmental factors. The assessment is based on available literature and professional judgement.
Significance	Not Significant	Effects are reversible, and measurable changes in bat population size or viability are not expected.

6.9.7 Potential Cumulative Effects

Potential cumulative effects on bats consider the proposed Project in the context of past, present, and reasonably foreseeable activities within the RSA. The Project is located within a designated mine zone that has been subject to long-term industrial disturbance. Aside from mining activities, existing anthropogenic influences, including residential and recreational development associated with the Town of St. Lawrence, domestic resource use, transmission corridors, and the St. Lawrence Wind Farm, have already resulted in habitat alteration, sensory disturbance (e.g., noise, vibration, and artificial light), and increased mortality risk for bats. These activities shape the current baseline conditions within the RSA.

Ongoing operations at the AGS Mine overlap spatially and temporally with the Project and contribute similar pathways of effect, including vegetation clearing, habitat fragmentation, noise, dust, blasting-related vibration, artificial lighting, increased vehicle traffic, and human presence. Existing linear features such as roads and transmission corridors continue to fragment habitat and may increase collision risk. Residential and recreational activities may further contribute to localized disturbance. The St. Lawrence

Wind Farm, which has been operational since late 2008, represents a long-term source of anthropogenic influence northwest of the Project Area within the RSA. Wind energy facilities are associated with bat mortality due to turbine collision and barotrauma, as well as potential displacement or avoidance behaviour. As an established feature of the landscape, the wind farm is assumed to contribute to the existing baseline of mortality risk and sensory disturbance affecting bats in the region.

However, with the implementation of proposed mitigation measures (e.g. habitat retention where feasible, lighting and dust suppression, noise management, water and waste management practices, adherence to the EEMP and EPP), the potential effects of the Project activities on the Bat VC are not expected to contribute measurably to the cumulative effects of other anthropogenic activities in the area.

6.9.8 Follow-up and Monitoring Programs

Given the absence of area-specific bat survey data, pre-construction acoustic monitoring during the bat active season (May to October) will be carried out at representative habitat sites in the LSA (e.g., wetlands, forest edges, open water bodies, and access roads) to confirm species presence, activity patterns, and potential. Project interactions with bats, and to evaluate overall activity levels and the need for additional mitigation measures.

6.10 Other Wildlife

The following subsections include the assessment of the Other Wildlife VC. “Other Wildlife” for the purpose of evaluating this VC is defined as wildlife species other than fish, birds, or bats which have the potential to occur in the Project Area, LSA, or RSA. Other Wildlife, including such mammal species as Moose (*Alces alces*) and Red Fox (*Vulpes vulpes*), as well as the various invertebrate taxa that occur in the area, were selected as a VC due to their ecological and economical importance, as well as their role as indicator species in an otherwise relatively low-biodiversity area. We also consider the slight possibility of the occurrence of Other Wildlife Species At Risk (SAR) and Species of Conservation Concern (SOCC) in the area. For the purposes of this Project, SAR are defined as species that are listed on Schedule 1 of the federal *Species At Risk Act* (SARA) and/or listed under the NL *Endangered Species Act* (ESA). SOCC are defined as those species that have been assessed as Extirpated, Endangered, Threatened, or Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but have not yet been added to Schedule 1 of SARA; those recommended for listing by the provincial Species Status Advisory Committee (SSAC) as Endangered, Threatened, or Vulnerable but are not yet listed under the NL ESA; and those ranked as provincially rare by the Atlantic Canada Conservation Data Centre (AC CDC), including species with provincial conservation status (S-ranks) of S1 (Critically Imperiled), S2 (Imperiled), or combinations thereof (e.g., S1S2), upon review by the AC CDC. We also consider species of special interest on the island of Newfoundland in our VC assessment.

6.10.1 Regulatory Context for the Management of Other Wildlife

6.10.1.1 Federal Guidelines

6.10.1.1.1 Species at Risk Act

Federal SAR listed as extirpated, endangered, or threatened under SARA are afforded protections such that it is not permitted to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of that species or any part or derivative of such an individual. Protections under SARA are also afforded to the residence(s) of such species, prohibiting their damage or destruction by any person, if a recovery strategy has recommended the reintroduction of that species into the wild in Canada.

6.10.1.2 Provincial Guidelines

6.10.1.2.1 Newfoundland and Labrador Endangered Species Act

In addition to the *Wildlife Act*, certain species that have been assessed to be provincially at-risk by their respective SSAC or federally at-risk by COSEWIC may be designated under the Newfoundland and Labrador *Endangered Species Act* (NL ESA) as vulnerable, threatened, endangered, extirpated, or extinct. Under the NL ESA, it is prohibited for a person to disturb, harass, injure, or kill individuals of threatened, endangered, or extirpated species, or to capture, possess, purchase, sell, or trade them or their parts or any derivatives thereof. The residences of individuals of these species are also protected from disturbance and destruction by any person.

6.10.1.2.2 Newfoundland and Labrador Wild Life Act

The Newfoundland and Labrador *Wild Life Act* protects wildlife (including moose, caribou, beaver, fisher, fox, lynx, marten, mink, muskrat, otter, squirrel, weasel, wolf, and wolverine) and prohibits hunting, taking, or killing of wildlife or classes of wildlife, in any location, season, or by any method unless authorized through a licence or permit. It allows for the management and the regulation of activities related to the taking and trading of wildlife, primarily game animals and furbearer species.

The Project Area overlaps with the following management areas;

- Moose Management Area 38;
- Caribou Management Area 74;
- Black Bear Management Area 38;
- Lynx Zone B; and
- Beaver Trapline 24 Fur Zone 3.

6.10.1.2.3 Habitat Stewardship Agreement for the Town of St. Lawrence

The St. Lawrence Habitat Stewardship Agreement is a land-use and conservation agreement between the Town of St. Lawrence and the Government of Newfoundland and Labrador, established under the provincial Municipal Habitat Stewardship Program. The Municipal Habitat Stewardship Agreement was signed in October 2013 (amended in 2021) and it currently encompasses ~400 m inland coastal buffer from the town's western boundary at the outflow of Three Stick Pond, covering Little Lawn Harbour and a 100-m buffer along the Little Lawn River, along the southern coastline and then east to Cape Chapeau Rouge, excluding a ~150 m coastal section set aside for mine-related infrastructure (Figure 6.10-1). Within this Conservation Area, the town commits to

preventing habitat destruction or degradation. As stated in the plan, the town shall "permit only those activities within the Management Units that have no negative or adverse impact upon the land, or on the wildlife which utilize those areas" and must refer any proposed development within these areas to the Wildlife Division for a mandatory 30-day review. This creates a clear regulatory expectation that all land-use decisions consider potential effects on wetlands, coastal habitats, and associated wildlife, including seabirds, waterfowl, and species linked to the nearby Lawn Islands Archipelago Reserve.

6.10.1.3 Municipal Guidelines

The St. Lawrence municipal plan outlines that the Environmental Protection designations establish strict limits on development to safeguard sensitive natural features such as streams, wetlands, steep terrain, and treed areas and Environmental Protection Management Unit designation applies an even higher level of protection to areas identified under the Municipal Stewardship Agreement and Habitat Management Plan (see Section 6.10.1.2.3 above) as important for the conservation of specific plant and animal species. In this zone, only conservation is permitted, with recreational open space as the sole discretionary use, and all development must be approved by the provincial Wildlife Division.

6.10.2 VC Scoping

This section provides assessment boundaries. Public and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EARD.

6.10.2.1 Assessment Boundaries

The assessment boundaries for the VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.10.2.2 Temporal Boundaries

The temporal boundaries for the Other Wildlife VC effects assessment are as follows:

- **Construction**: 6 months
- **Operations**: 18 months
- **Closure**: Approximately 24 months, to be determined through development of the reclamation and closure plan

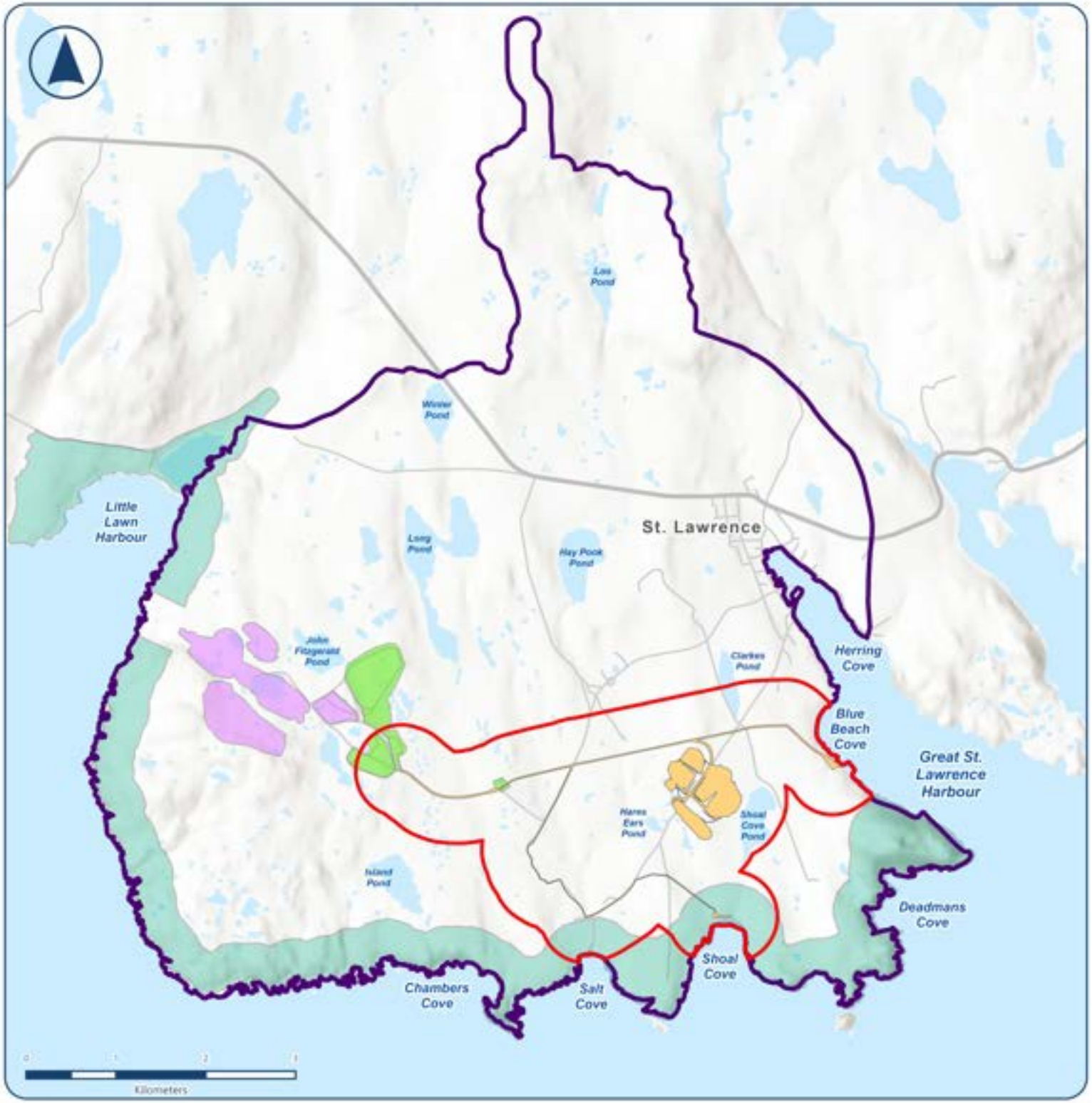
6.10.2.3 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.10-1.

Project Area: the physical footprint of Project activities; namely, the Topsoil Stockpile; Overburden Stockpile; Waste Stockpile 1; Waste Stockpile 2; Waste Pad; South Ridge Pit; Access Road Network for the stockpiles and pit; and two Settlement Ponds with associated drainage ditches. In addition, the Project Area includes upgrades to the existing Main Haul Road, Community Access Road, and a new road segment (~250 m) connecting Iron Spring Road with the coastal access road to Hares Ears. The Project Area encompasses 0.58 km^2 as detailed in Section 2.6.1.2.11.

Local Study Area (LSA): this area includes the Project Area (0.58 km^2) plus an approximate 0.5 km buffer around all components of the Project Area to allow for potential disturbance effects from Project activities (e.g., airborne noise, dust) that may affect Other Wildlife. The LSA has a total area of 10.62 km^2.

Regional Study Area (RSA): is based upon the Study Area established for the original AGS assessment and the watersheds that interact with Project activities. It was selected to allow for assessment of potential cumulative effects from the South Ridge Project with the AGS Mine and other relevant activities in the area. The RSA has a total area of 58.16 km^2.



CFI
CANADA FLUORSPAR INC.

FIGURE 6.10-1

ASSESSMENT AREAS:
OTHER WILDLIFE

27 APRIL 2026

- Project Area
- Local Study Area
- Regional Study Area
- St. Lawrence Coastal Mgmt. Unit

Existing AGS Mine Components:

- Existing
- Shared

Scale: 1:60,000
when printed on 8 1/2 by 11 inch paper

LGL

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6.10.3 Existing Conditions

This section describes the methods that established the existing conditions of the Other Wildlife VC and provides a description of the existing conditions.

6.10.3.1 Methods

To support the EARD, a review of available information and data sources was conducted. No site-specific field surveys or modelling were undertaken. However, incidental observations of mammals and mammal habitat were recorded during the Fish and Fish Habitat Survey undertaken for the Project (see Appendix 6.6-1).

6.10.3.2 Data Sources

Background information and data that were used to describe the baseline conditions for the Other Wildlife VC included the following:

- St. Lawrence Wind Demonstration Project – 2002 Bird surveys.
- Reactivation of the St. Lawrence fluorspar mine at St. Lawrence, NL: Project Registration and Project Description – 2009.
- Environmental Assessment Registration AGS Fluorspar Project, St. Lawrence, NL – 2015.
- St. Lawrence Fluorspar Marine Shipping Terminal Project: Project description and Project registration – 2019.
- Assessment of the Wetlands, Avifauna and Wildlife at Risk in the Proposed Fluorspar Mine Project Footprint Area: Baseline Report – 2015.
- Atlantic Canada Conservation Data Centre (AC CDC) records of rare flora and fauna.
- COSEWIC reports and management plans.
- Scientific literature.
- iNaturalist citizen science observations.

6.10.3.3 Data or Information Limitations

The following data and information limitations were noted for the Other Wildlife VC:

- There are few to no data site-specific data available on the occupancy of the Other Wildlife (predominantly mammalian and invertebrate) species that may occur in and near the Project Area.
- Surveys completed as part of baseline studies for the 2015 EA serve as the primary data source for this VC.

6.10.3.4 Description of Existing Conditions

The potential for occupancy of fish, birds, and bats (including SAR/SOCC) within the Project Area, LSA, and RSA was assessed in previous VC chapters. Other wildlife that have the potential to be seasonally or permanently resident within the LSA include mammals such as woodland caribou (*Rangifer tarandus*; Special Concern on SARA Schedule 1), American black bear (*Ursus americanus*), coyote (*Canis latrans*), Canada lynx (*Lynx canadensis*), red fox (*Vulpes vulpes*), American beaver (*Castor canadensis*), North American river otter (*Lontra canadensis*), muskrat (*Ondatra zibethicus*; not SAR or SOCC but species of interest in the province), American ermine (*Mustela richardsonii*), and voles (*Microtus* sp.). Several exotic mammal species may also occur, such as moose

(*Alces alces*), snowshoe hare (*Lepus americanus*), American mink (*Neogale vison*), red squirrel (*Tamiasciurus hudsonicus*), and *Clethrionomys* voles. Many of these populations/species are managed by the Newfoundland and Labrador Department of Forestry, Agriculture, and Lands (NLDFAL) through management plans as well as hunting and trapping regulations. Despite the lack of available data on occupancy of these species in the LSA/RSA, their habitat requirements are well studied, and we can deduce that the RSA and ecoregion at large provide little suitable habitat for most of the aforementioned species. Because the LSA is fully contained within the RSA and represents a subset of the same habitat mosaic, RSA-scale information is considered representative of likely wildlife occurrence within the LSA. The only mammal species with confirmed records of occurrence inside the RSA are moose (including an observation of three individuals near Hares Ears Pond, and a harvested carcass west of the PA footprint, by LGL biologists in November 2025; see Appendix 6.6-1) and red squirrel (Appendix 6.6–1); red fox, river otter, and snowshoe hare have also been observed near the RSA (JWEL 2003). The island of Newfoundland has no native amphibians, but some exotic amphibian species may reside in the RSA (e.g., green frog *Lithobates clamitans*). Due to its importance in subsistence harvesting and despite its status as an exotic species on insular Newfoundland, moose are of particular interest in the evaluation of potential Project effects on Other Wildlife.

There are no mammal SAR or SOCC that are expected to occur in or near the LSA. American Marten (Newfoundland population, *Martes americana atrata*; designated Vulnerable on NL ESA and Threatened on SARA Schedule 1 [but under consideration for downgrading to Special Concern]) is unlikely to occur in the RSA because there is little appropriate habitat available, and the species has never been recorded on the Burin Peninsula (Hearn and Durocher 2023). The Burin foot population of woodland caribou was historically present on the southwestern portion of the Burin Peninsula, but their range was never known to overlap with the RSA, and there have been no recorded observations of this population in recent years (W. Barney, Government of NL Wildlife Division, pers. comm. May 2023). Muskrat is considered a species of interest in Newfoundland and Labrador, following population declines as the result of the introduction of mink (Soper 1995). LGL biologists surveyed ponds and wetlands in the LSA for fish and fish habitat in November 2025 (Appendix 6.6-1) and observed no evidence of muskrat (scat, clippings, burrows, trails, tracks, feed beds, or houses). It is expected that no muskrat currently or recently have occupied the LSA, although some suitable habitat is present.

In addition to evaluating the potential use of the LSA by mammals, the Other Wildlife VC included an assessment of invertebrate taxa that may inhabit the region. Non-listed insect taxa recorded in and proximate to the RSA include mayflies (order Ephemeroptera; JWEL 2003) and moths of several families including Noctuidae, Erebidae, and Geometridae (AC CDC 2025). Insect SAR/SOCC that have ranges which overlap with the LSA (but which likely do not occur within the LSA in any great density) include Gypsy Cuckoo Bumble Bee (*Bombus bohemicus*; designated Endangered on both SARA Schedule 1 and NL ESA), Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*; designated Threatened under the NL ESA and by COSEWIC), Yellow-banded Bumble Bee (*Bombus terricola*; designated Vulnerable under the NL ESA and Special Concern on SARA Schedule 1),

and Transverse Lady Beetle (*Coccinella transversoguttata*; designated Vulnerable under the NL ESA and Special Concern on SARA Schedule 1) (Table 6.10-1).

Table 6.10-1: Other Wildlife Species at Risk/Species of Conservation Concern which may occur in and near the Project Area.

Species	Status[1]	Habitat Preferences[2]	Probability of Occurrence in Project Area[3]
Insects			
Gypsy Cuckoo Bumble Bee *Bombus bohemicus*	SAR: Endangered under SARA; Endangered under NL ESA	Nesting: Abandoned underground rodent burrows in various habitats including meadows, old fields, farmlands, and open woodlands Foraging: Associated with food plants flowering close to wooded areas Overwintering: in the ground, in mulch, rotting logs or decomposing vegetation	Possible; unlikely. No recorded sightings within the Project Area or RSA, but little search effort.
Yellow-banded Bumble Bee *Bombus terricola*	SAR: Special Concern under SARA; Vulnerable under NL ESA	Nesting: Nest underground in abandoned rodent burrows Foraging: In open coniferous, deciduous, and mixed-wood forests, prairie grasslands, meadows bordering riparian zones, along roadsides, gardens, and agriculture lands Overwintering: Burrowed in loose soil or rotting trees	Probable. No recorded sightings within the Project Area or RSA, but little search effort. Species has been observed at Bonavista, Cape Race and Cape St. Mary's, also part of Eastern Hyper-Oceanic Barrens ecoregion, with similar vegetation and geology.
Suckley's Cuckoo Bumble Bee *Bombus suckleyi*	SAR: Threatened under NL ESA; Threatened under COSEWIC	Nesting: Abandoned underground rodent burrows in various habitats such as meadows, old and fallow fields, farmlands, urban areas, and woodlands Foraging: generalist nectar foragers on members of Asteraceae Overwintering: Burrowed in the ground, in mulch, decomposing vegetation and rotting logs near nesting sites.	Possible; unlikely. No recorded sightings within the Project Area or RSA, but little search effort.

Species	Status[1]	Habitat Preferences[2]	Probability of Occurrence in Project Area[3]
Transverse Lady Beetle *Coccinella transversoguttata*	SAR: Special Concern under SARA; Vulnerable under NL ESA	General: Known to occur within agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, and riparian areas. Overwintering: Aggregate in well-ventilated microhabitats such as under stones, rock crevices, in grass tussocks, in leaf litter, or in tree bark.	Possible; unlikely. No recorded sightings within the Project Area or RSA, but little search effort.
Mammals			
Woodland Caribou *Rangifer tarandus caribou*	SAR: Special Concern under SARA	Prefers coniferous forest with some shrub land, peatlands, and barrens.	Possible; unlikely. No records of the Burin foot population anywhere in their range in recent years.
American Marten (Island of Newfoundland Population) *Martes americana arata*	SAR: Threatened under SARA Vulnerable under NL ESA	Occupies a wide variety of habitat types, including immature regenerating forests, recent cuts, 20- to 30-year-old pre-commercially thinned forests, conifer scrub forest, insect-defoliated forest stands, and areas of mature and overmature forests.	Possible; unlikely. No records of Marten in the Burin Peninsula.
Arctic Hare *Lepus arcticus*	SOCC: S2 (AC CDC)	Arctic hares prefer open upland and coastal barrens with wind-swept, low conifer scrub (tuckamoor) and boulder fields that provide cavities for escape and shelter. They also use forested edges closely adjacent to upland barren regions in winter.	Possible; unlikely. Recorded in areas of higher elevation.

Notes:

1. *SAR – Species at Risk; SOCC – Species of Conservation Concern; SARA – Species at Risk Act; NL ESA – Newfoundland and Labrador Endangered Species Act*
2. *Sources: COSEWIC (2002, 2014a, 2014b, 2015, 2016, 2019, 2022); EC 2013; Hearn et al. 2010; Gosse et al. 2005; Small et al. (1991, 1992); SSAC 2012*
3. *Sources: CFI 2009; GNL 2007; Hearn and Durocher 2023; PAANL 2008*

6.10.4 Effects Assessment

This section provides input and results specific to the Other Wildlife VC effects assessment. A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as following:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects; and
- Follow-up commitments and monitoring programs.

6.10.4.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the Other Wildlife VC within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). An interaction table for the Other Wildlife VC is presented in Table 6.10-2.

Potential Project-related effects on the Other Wildlife VC were determined by comparing existing conditions to those expected to result from the Construction, Operations, and Closure phases of the Project. Potential effects are outlined, including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another VC).

As indicated in Table 6.10-2, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Other Wildlife VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS Project assessment, and professional judgement. Overall, effects can be categorized into three primary categories: (1) habitat loss, alteration, and/or fragmentation; (2) behavioural disturbance; (3) health effects, and (4) change in direct mortality risk.

Table 6.10-2: Identification of Project-VC Interactions and Associated Potential Effects with the Other Wildlife VC

Project Activities		Effect Pathway
Construction		
Community Access Roads	• Strip, fill, gravel, and grade. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use. • Upgrades to Memorial Bridge and Blake's Brook Bridge	Direct: • Habitat destruction and alteration as a result of earthmoving and construction activities will result in direct loss of foraging and potential breeding habitats, alteration of habitat connectivity via linear structures such as roads, and/or direct mortality of Other Wildlife species, including potential SAR. • Project activities may result in sensory disturbance (i.e., via in-air noise, vibration, artificial
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks • Sections of Blue Beach Haul Road will be regraded, and berms will be built up to support larger equipment traffic. • Strip, clear, fill, installation of culvert.	

Project Activities		Effect Pathway
Pit Haul Roads	• Strip, fill, gravel, and grade.	lighting, and human presence) and avoidance behaviour, increased predation, altered movement patterns, and/or increased stress. • Greenhouse gas emissions and noise from equipment may affect terrestrial fauna health via inhalation of emissions and potential auditory impairment. Hydrocarbon and hazardous waste leaks and spills from machinery may affect health via contamination of water or forage/prey. • Exposure to waste may attract opportunistic scavengers (e.g., coyote, fox, bear), which could lead to human-wildlife conflict and negative effects on wildlife health. Indirect: • Improved access and associated habitat changes could lead to elevated risks of predation and hunting. • Fugitive dust from earthmoving and construction activities, as well as leaching of contaminants from waste material, may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use.
Power Infrastructure upgrades	• Transmission line re-routing along the Blue Beach haul road lines will be lifted to allow Cat 777s to travel to the Project area. • The transmission line that currently follows Iron Springs Road will be rerouted around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.	
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.	
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.	
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	
Stockpile Area Development	• Strip, clear and preparing stockpile areas for topsoil, overburden, and waste rock stockpiles.	
Upper Bench Access	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.	
Water Management Infrastructure	• Excavation and construction of contact and non-contact collection ditches and culverts. • Excavation and installation of HDPE liners in two sediment ponds. Construct berms surrounding sediment ponds.	
Operations		
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment ponds and monitored.	Direct exposure to contaminants in contact water (or indirectly, via contaminated prey/forage) resulting in negative effects on health including potential increase in mortality risk.

Project Activities		Effect Pathway
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting	Direct: • Project activities may result in sensory disturbance (i.e., via in-air noise, vibration, artificial lighting, and human presence) and avoidance behaviour, increased predation, altered movement patterns, and/or increased stress. • Greenhouse gas emissions and noise from equipment may affect terrestrial fauna health via inhalation of emissions and potential auditory impairment. Hydrocarbon and hazardous waste leaks and spills from machinery may affect health via contamination of water or forage/prey. • Exposure to waste may attract opportunistic scavengers (e.g., coyote, fox, bear), which could lead to human-wildlife conflict and negative effects on wildlife health. Indirect: • Fugitive dust from blasting, earthmoving, hauling, and rock crushing activities and leaching of contaminants from waste material may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use.
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr • Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.	
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.	
Stockpiling	• As mining progresses waste rock will be deposited in the waste rock stockpiles.	

Project Activities		Effect Pathway
Closure		
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, then re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure and post-closure.	Direct: • Project activities may result in sensory disturbance (i.e., via in-air noise, vibration, artificial lighting, and human presence) and avoidance behaviour, increased predation, altered movement patterns, and/or increased stress. • Continued use of recreation access roads may cause small amounts of disturbance (noise, human presence) indefinitely, resulting in avoidance behaviour, altered movement patterns, and/or increased stress. • Small amounts of fugitive dust from continued use of recreation access roads may alter terrestrial (e.g., vegetation communities) and aquatic habitat, thereby affecting prey and habitat use. • Greenhouse gas emissions and noise from equipment may affect terrestrial fauna health via inhalation of emissions and potential auditory impairment. Hydrocarbon and hazardous waste leaks and spills from machinery may affect health via contamination of water or forage/prey.
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export. • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.	
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).	

Project Activities		Effect Pathway
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required. • Access roads will be maintained to facilitate post-closure monitoring	Maintenance and repairs may cause small amounts of localized disturbance and behavioural effects, depending on magnitude and duration of human presence as well as noise, light, and dust emissions.

6.10.5 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and described throughout Section 6.10.4 were used to inform the design and implementation of the Project mitigation measures. The identified mitigation measures are outlined in more detail in the following sections, including a discussion of their effectiveness and confidence related to avoiding, minimizing, or restoring the VC to prevent residual effects.

This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and the proposed mitigations are effective.

Existing mitigation and management measures and contingency plans in place for the AGS Mine will continue to be implemented for the Project and will serve to minimize potential effects on the Other Wildlife VC. Section 2.12 provides a detailed overview of various management and contingency plans. Table 6.10-3 summarizes proposed mitigation measures applicable to Other Wildlife.

6.10.5.1 Habitat Loss, Alteration, and Fragmentation

The Project has been designed to minimize the loss, alteration, and fragmentation of Other Wildlife habitat, including potential foraging areas. The Project footprint has been optimized to reduce vegetation clearing, and existing disturbed areas will be used where feasible to limit effects on undisturbed habitats. Prior to construction, limits of disturbance will be clearly flagged to prevent clearing outside of approved areas. These measures will reduce the geographic extent of habitat loss during all Project phases. A minimum 30-m buffer will be maintained around wetlands, ponds, streams, and bogs where practicable. Forest edges, riparian areas, wetlands, and other linear landscape features (e.g., shrub cover at road crossings) will be retained where feasible to help maintain habitat connectivity. Dust and contaminants may indirectly affect water sources and insect prey. To mitigate this, a combination of preventative procedures (i.e. roadway watering, optimized blast design, stockpile covering, and use of dust collection systems for crushing

operations) and reactive controls during adverse conditions (dry and windy periods) will be implemented. During Closure, access roads and stockpile areas will be regraded to match the surrounding topography and reseeded with native vegetation similar to the original habitat. While progressive reclamation will support long-term habitat recovery, some habitat loss within the Project footprint will remain apparent for a number of years until vegetation regrows; therefore, a residual effect is anticipated.

6.10.5.2 Behavioural Disturbances

During all Project phases, routine activities may cause behavioural disturbances to Other Wildlife via artificial lighting, noise, and vibration (from continuous operations as well as high-intensity blasting), equipment operation, and human presence. There is anticipated overlap between the timing of Construction and Operation activities (including blasting) and the periods when Other Wildlife are most active (e.g., spring breeding period). Blasting will occur as seldom as possible by using large blast patterns, and modern blasting techniques will be implemented to minimize vibration and sound levels. Lighting emissions will be limited in temporal and spatial extent to that required for safe operations, to reduce disruption to natural light regimes and activity patterns of Other Wildlife.

Equipment will be maintained in good working order to minimize noise, vibrations and air pollution, and machinery will be turned off when not in use where feasible. Staff will receive wildlife awareness training to minimize wildlife interactions, and will be instructed to report injured, sick, or dead individuals to the provincial Wildlife Division. All caribou and other SAR/SOCC observations will be recorded and reported to the NLDFAL – Wildlife Division. With the implementation of these measures, behavioural disturbance effects are expected to be localized and temporary; however, residual disturbance effects during active phases are anticipated.

6.10.5.3 Effects on Health

Project activities could affect the health of Other Wildlife through exposure to noise, contact water, air pollution, light pollution, hazardous materials, or contaminated prey. Effective waste and water management, as detailed in Section 2.12.16 and Section 2.12.7, will minimize these potential effects. Contact water will be monitored and treated, if necessary, prior to discharge, to prevent contamination of downstream receptors and possible health effects to wildlife. Hazardous materials (e.g., hydrocarbons, chemicals) and other wastes will be stored and disposed of at approved facilities in accordance with the Waste Management Plan. Employees and subcontractors will receive training in spill prevention, response, and reporting; accidental release of hazardous wastes will be mitigated via procedures established in CFI's Spill Prevention and Response Plan (Section 2.12.12). Equipment will be maintained in good working order to minimize emissions and fluid leaks, and dust suppression measures will be implemented to reduce effects on air quality, water quality, vegetation, and prey. A designated equipment washing area with water catchment and treatment will be established, and washing will not occur within 100 m of water bodies. These measures, when implemented properly, are quite effective at minimizing effects on Other Wildlife health; however, there is potential for residual effects.

6.10.5.4 Change in Direct Mortality Risk

Other Wildlife may experience direct mortality as a result of Project activities; namely, due to vehicle traffic collisions, human-wildlife conflicts, and increased hunting and predation pressure due to improved access. Measures will be employed to counteract these potential sources of direct mortality, such as enforced speed limits and giving wildlife right-of-way on roads within the Project Area; the prohibition of hunting, trapping, and fishing within the LSA; wildlife awareness training for staff; and adaptive management actions. It is expected that these measures will largely prevent any residual effects causing direct mortality to Other Wildlife.

Table 6.10-3: Summary of Proposed Mitigation Measures

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Loss, alteration, and/or fragmentation of habitat including potential preferred foraging, resting, and breeding areas.	• Existing disturbed areas will be incorporated into the Project Area to reduce the area of vegetation clearing and resulting effects on vegetation communities. [Construction] • Maintain a minimum 30-m buffer around wetlands, ponds, streams, and bogs where practicable. [All Phases] • Water management ditches will be designed to allow wildlife crossing opportunities, aligned with wildlife trails where practicable. [Construction] • Disturbance of existing vegetation outside designated Project footprint areas will be avoided by clearly flagging the limits for disturbance activities prior to the commencement of work. [All Phases] • Stockpiles of topsoil, overburden, and other potentially dust-generating materials will be kept covered, where practical, and used as soon as practical, or will be appropriately temporarily vegetated. [All Phases] • Implement dust suppression (e.g., water spraying, stockpile stabilization). [All Phases] • In Closure Phase, access roads and stockpile areas will be regraded to be continuous to the surrounding topography and re-seeded with native vegetation similar in species composition to the original habitat. [Closure]	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Behavioural disturbances (disruption of foraging, movement patterns, and breeding activity).	• Minimize use of machinery to extent possible and turn off when not in use. Maintain in good working order to minimize noise and air pollution. [All Phases] • Project activities will adhere to nighttime noise restrictions [Construction, Operations] • Limit lighting to essential safety needs; Use downward-shielded lighting to reduce light spill. [All Phases] • Project personnel will be advised not to feed, chase, catch, divert, follow, or otherwise harass or interact with any wildlife. Caribou and other SAR observations will be reported to the provincial Wildlife Division. [All Phases] • Implement staff awareness training to reduce the risk of wildlife collisions and promote reporting of injured, sick or dead wildlife to the provincial Wildlife Division. [All Phases] • Vehicles will adhere to posted speed limits to minimize engine noise within LSA, and horns will only be used when required for safety purposes. [All Phases] • During the Operations phase, if any caribou are observed within 1 km of the blast site, the on-site environmental manager will be notified and blasting operations will be suspended until the animal(s) leave the area. If caribou are observed within 500 m of the Project Area during any Project activities other than blasting (e.g., vegetation clearing, loading, hauling), the on-site environmental manager will be notified, and the Project activities in the area will be delayed until the animal(s) leave the area and are outside the 500 m buffer. [All Phases]	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Effects on health from noise, air pollution, dust, light pollution, waste, and/or release of deleterious substances.	• The site water management system will include sediment ponds designed to collect contact water from mine wastes and sized appropriately to manage stormflows, considering potential impacts on downstream watercourses and wetlands within the LSA. [Operations, Closure] • Surface water sampling will be conducted at 25 sampling stations to ensure that any water flowing away from the mine site meets the minimum guidelines set by Canadian Water Quality Guidelines. [Operations] • If water is unsafe for consumption and contains toxic materials, ensure that these contaminated water sources are inaccessible to wildlife. Embankments of the sediment ponds will be maintained free of vegetation to limit the attraction of wildlife to these ponds for foraging or staging. [Operations] • Implement dust suppression (e.g., water spraying, stockpile stabilization). [All Phases] • Fuel, mineral spirits, oil, and other hazardous wastes will be stored to prevent entry into the environment, including soils and waterways, and will be disposed of at an approved site. [All Phases] • Staff will be trained in spill response and hazardous material handling. Immediately contain, recover, and remediate any accidental spills to prevent contamination of soil or waterways. [All Phases] • A designated equipment washing location with water catchment and treatment system shall be established to treat and dispose of contaminated water; equipment washing will not take place within 100 m of water bodies. [All Phases] • Implement waste management procedures in accordance with the Waste Management Plan. [All Phases] • Blasting will occur as seldom as possible by using large blast patterns and will not occur at night; modern blasting techniques will be implemented to minimize vibration and flyrock. [Operations] • Minimize the use of machinery to the extent possible and turn off when not in use. [All Phases] • Equipment will be maintained in good working order to minimize noise, avoid fuel/operating fluid spills and air pollution. [All Phases] • Project lighting will be limited to that which is necessary for safe and efficient Project activities. Mobile and permanent lighting will be shielded to shine downward and located such that unavoidable light spill of the working area is not directed towards receptors outside the Project Area, to the extent practicable. [All Phases] • High intensity lights, including floodlights, will be turned off at night outside of working hours, if possible. [All Phases]	Y

Potential Effect	Proposed Mitigation/Best Practices [Phase]	Potential Residual Effect? (Y/N)
Change in direct mortality risk to wildlife	• Enforce speed limits within PA. [All Phases] • Equipment and vehicles will yield the right-of-way to wildlife. [All Phases] • Prohibit hunting, trapping, and fishing within LSA. [All Phases] • Open buckets, bins, tubs, or containers will be kept covered where practicable. [All Phases] • Implement wildlife awareness training for the staff to reduce the risk of wildlife collisions and human-wildlife conflict. [All Phases] • Wildlife-vehicle collisions, near misses or observations of injured, sick, or dead wildlife incidents will be reported to provincial Wildlife Division. Adaptive management actions will be put in place if areas with wildlife–vehicle collisions are identified. [All Phases]	N

6.10.6 Identification and Characterization of Residual Effects

Residual effects are the effects that are expected to remain after all feasible mitigation measures have been implemented. For each potential residual effect identified in Table 6.10-3, a characterization of the residual effect is provided. The characterization criteria used for this assessment are presented in Table 6.10-4.

Table 6.10-4: Residual Effects Characterization Criteria for the Other Wildlife VC

Assessment Criteria	Categories/Parameters for Other Wildlife VC
Nature	The long-term trend of the residual effect. **Positive** – A residual effect that provides benefit to biological VC relative to baseline. **Negative** – A residual effect that is detrimental to biological VC relative to baseline. **Neutral** – No net change in measurable parameters for biological VC relative to baseline.
Magnitude	The overall amount or degree of change in a measurable parameter, or variable, related to existing conditions that are expected. **Negligible** – No measurable change to biological VC relative to baseline. **Low** – Judged to result in <1% change in the size or health of the population or the carrying capacity of its habitat. A change in a population can result from an absolute reduction in population size or from displacement of animals to areas outside the area of consideration. **Moderate** – Judged to result in a 1% to <10% change in the size or health of a population or the carrying capacity of its habitat. **High** – Judged to result in a 10%, or greater, change in the size or health of a population or the carrying capacity of its habitat.

Assessment Criteria	Categories/Parameters for Other Wildlife VC
Geographic Extent	The range or scale of approximate geographic areas over which any potential interaction and effect is anticipated to occur. <1 km^2 1–10 km^2 11–100 km^2 101–1,000 km^2 1,001–10,000 km^2 >10,000 km^2
Timing	Refers to the effects of seasonal variability on the VC. **Negligible Sensitivity** – Residual effect is not sensitive to seasonality. **Moderate Sensitivity** – Residual effect may be influenced by seasonality, but the assessment of attribute parameters is unchanged (i.e., magnitude, geographic extent, duration, frequency, reversibility). **High Sensitivity** – The assessment of the residual effect (i.e., magnitude, geographic extent, duration, frequency, reversibility) is changed based on seasonality.
Frequency	How often the residual effect being assessed is expected to occur. **Single Event** – Residual effect occurs once during the Project. Irregular Events – Residual effect occurs sporadically at an irregular interval and is not predictable. **Regular Events** – Residual effect occurs regularly and may be at predictable intervals or specific times. **Continuous** – Residual effect occurs continuously.
Duration	The length of time a potential residual effect may occur. Short-term – Residual effect restricted to Construction or Closure/ rehabilitation phases. Medium-term – Residual effect extends through project operations but is expected to subside when operations cease. Long-term – Residual effect extends beyond the life of the Project.
Reversibility	Refers to the ability of the VC to return to its original state once the stressor is removed. **Reversible** – Residual effect is likely to be reversed after activity completion and rehabilitation. **Irreversible** – Residual effect is unlikely to be reversed. It should be noted that a biological effect may be irreversible at the individual level (e.g., mortality of an individual animal) but reversible at the population level.

Assessment Criteria	Categories/Parameters for Other Wildlife VC
Ecological/Socio-economic Context	Existing condition and trends in the area where residual environmental effects occur. **Undisturbed** – Area is relatively undisturbed or not adversely affected by human activity. **Disturbed** – Area has previously been substantially disturbed by human development or human development is still present.
Level of Confidence (Certainty of Knowledge)	The general level of confidence in the knowledge used to describe the potential environmental effect. **High** – Based on good understanding of cause-effect relationships and data specific to the Project Area. **Moderate** – Based on good understanding of cause-effect relationships using data from elsewhere or incompletely understood cause-effect relationships using data specific to the Project Area. **Low** – Based on incomplete understanding of cause-effect relationships and/or incomplete data specific to the Project Area.

Significant biological effects are those that are considered to be of sufficient magnitude, duration, and geographic extent to cause a change in the VC that will alter its status or integrity beyond an acceptable level. Establishment of the criteria is based on professional judgement but should be transparent and repeatable. An effect can be considered significant (negative by definition), not significant, or positive. A significant residual negative effect on biological VCs is defined as a residual Project-related change in the VC population and/or habitat in the LSA where recovery to baseline condition is unlikely.

6.10.6.1 Assessment Context

As indicated in Table 6.10-2, during the Construction, Operations, and Closure phases, various routine Project activities may affect the Other Wildlife VC in and near the Project Area. Potential effects and pathways were selected based on a review of similar projects in NL, the original AGS assessment (CFI 2015a), and professional judgement. It is also important to provide context for the Project and the assessment of potential residual effects on the Other Wildlife VC:

- The Project is an expansion of the existing AGS Mine and occurs in a designated mine-zone, which is considered a disturbed area. To the extent possible, CFI will use previously disturbed/cleared areas to support the Project. However, the new proposed footprint represents 0.58 km^2 of new physically disturbed area. To account for disturbance to flora and fauna likely to occur as the result of Project activities outside of the footprint itself, the LSA was delineated as an area encompassing a 0.5 km buffer around the Project Area and is approximately 10.6 km^2 in size.
- Based on the location of the Project within the Eastern Hyper-Oceanic Barrens ecoregion, a relatively low diversity of mammalian and invertebrate taxa (i.e., “Other Wildlife”) is expected to occur in the RSA, and these taxa are not anticipated to experience major negative effects from the Project.

- Ongoing activities at the AGS Mine site and the light vehicle roads already contribute to existing levels of effects on wildlife including those related to pollution and sensory disturbance (noise, vibrations, light, dust, contact water, and human presence). Activities associated with the Project, including use of the existing Blue Beach Haul Road in particular, likely represent incremental increases in the spatial extent and intensity of residual effects.
- Clearing of vegetation for the development of the Project will result in the removal of 42.4 hectares of forested habitat, which represents a small percentage of the available habitat of this type in the region, and is therefore expected to have a minimal effect on wildlife.
- Existing mitigation and management measures and contingency plans will continue to be implemented for the Project and will serve to minimize potential effects on the Other Wildlife VC. Sections 2.11 and 2.12 provide a detailed overview of various management and contingency plans; Table 6.10-3 provides key mitigation measures applicable to Other Wildlife.

6.10.6.2 Residual Effect: Loss, Alteration, and/or Fragmentation of Habitat

Effects of Project activities on Other Wildlife may include decreased habitat use, food availability and breeding productivity due to habitat removal, fragmentation, and degradation (Hornseth et al. 2014; Venier et al. 2014; Gómez-Martínez et al. 2020). Fragmentation can have particularly negative effects on species with large ranges, and those that require large patches of homogenous habitat. Edge effects may also occur, and include changes in microclimate, vegetation structure, changes to wildlife presence and/or abundance, and behavioural responses. Much of the habitat that will be lost (i.e., Project Area footprint) is composed of various types of forest (73%), with smaller proportions of impacted wetlands (7%) and barrens (<1%); the remaining Project Area will be developed on already-disturbed land (20%). In addition to direct habitat effects, the Project may have indirect effects on Other Wildlife habitat, e.g., fugitive dust from roads and blasting may alter terrestrial (e.g., vegetation communities) and aquatic (e.g., wetland) habitat. Non-SAR wildlife species likely to inhabit the Project Area are those regularly found on the Burin Peninsula, and which are also relatively tolerant of habitat loss and alteration (given the existing mining influence and residential/recreational land use locally); namely, moose, red squirrel, red fox, river otter, and snowshoe hare, among other (mostly exotic) species.

There have been no recorded observations of “Other Wildlife” (invertebrate, fish, or mammal; there are no amphibians native to Newfoundland) SAR/SOCC within the RSA. The only probable SAR to occur within the RSA is Yellow-banded Bumble Bee, due to its observed presence in other portions of the Eastern Hyper-Oceanic Barrens ecoregion elsewhere on insular Newfoundland (Table 6.10-1). Woodland caribou, which historically resided in the region, have not been observed in the area for a number of years (Table 6.10-1). It is noted that no critical habitat for any wildlife SAR/SOCC has been identified in or near the Project Area (or on the Burin Peninsula) and, as noted previously, the amount of habitat that will be cleared represents a small proportion of available habitat in the larger LSA and RSA.

With the application of the mitigation measures outlined in Table 6.10-3, the residual effects on Other Wildlife related to habitat loss, alteration, and fragmentation are predicted

to be negative in nature, low in magnitude, small-scale (1-10 km²), continuously occurring, long-term in duration, and reversible through progressive reclamation and post-closure revegetation. The ecological context of the Project Area is considered disturbed due to existing mining operations. Based on available information and professional judgement, residual effects related to habitat loss, alteration, and fragmentation on Other Wildlife are therefore predicted to be not significant. Table 6.10-5 summarizes the potential residual effect characterization.

Table 6.10-5: Summary of Residual Effect Characterization Related to: Loss, Alteration, and/or Fragmentation of Habitat

Criteria	Rating	Rationale
Magnitude	Low	Amount of habitat altered, lost, and fragmented is small; carrying capacity of habitat is small due to low productivity; low diversity of native wildlife in area.
Geographic Extent	1-10 km^2	Main effects are limited to cleared/ altered habitats and their immediate vicinity (e.g., edge effects); however, some native mammal (e.g., Canada lynx) home ranges require large tracts of unfragmented habitat (especially for breeding), which expands effective geographic extent of residual effect.
Timing	Moderate Sensitivity	Residual effects are more pronounced during the spring, summer and fall when invertebrates and other wildlife are most active and breeding.
Frequency	Continuous	Effects are ongoing throughout the life of the Project and beyond, on a continuing basis.
Duration	Long-term	Effects begin during the Construction phase and persist until habitat fully regenerates following Closure, rehabilitation, and natural regeneration.
Reversibility	Reversible	Habitat eventually returns to pre-Project state after Closure, rehabilitation, and revegetation using native species (timeframe to complete reversal of residual effects is dependent upon original forest stand age).
Ecological/Socio-economic Context	Disturbed	The Project Area is located within an existing, actively disturbed mine site subject to ongoing industrial activity.
Level of Confidence	Moderate	Paucity of Other Wildlife species occurrence data within the RSA and surrounding area, but effects are generally well-understood from research conducted elsewhere.
Significance	Not Significant	Low magnitude, relatively small geographic extent, low local biological productivity/diversity, and existing disturbance indicate that the Project is unlikely to cause significant residual effects.

6.10.6.3 Residual Effect: Behavioural Disturbance

Project activities across all phases may generate in-air noise, vibration, artificial lighting, dust, vehicle traffic, and increased human presence, all of which have the potential to influence animal behaviour. Such disturbances may result in altered movement patterns, increased alertness, avoidance of disturbance areas and therefore short-term displacement from preferred habitats (Shannon et al. 2016; Trombulak and Frissell 2000; Doherty et al. 2021). Noise and vibration from blasting and equipment/vehicles during construction and operations could trigger startle responses or cause temporary movement away from the disturbance source (Francis and Barber 2013; Duarte et al. 2015; Shannon et al. 2016). Although relatively little research has been conducted on responses of terrestrial mammals and insects to anthropogenic noise (Duquette et al. 2021), behavioural effects in terrestrial mammals can begin at noise levels exceeding 52 dBA (in limited studies on those taxa; Shannon et al. 2016), and functional habitat loss can occur in cervids at 70 dBA (Drolet et al. 2016). For reference, overall sound levels are predicted to reach 60 dBA on the opposite side of Shoal Cove Pond from the pit, 45-50 dBA at Shoal Cove Beach, and 40 dBA as far as the Town of St. Lawrence, while blasting overpressure is predicted to reach 115-121 dBA at receptor locations as far as 2.0 km from the pit (see Section 6.3.3). Artificial lighting associated with nighttime activities may disrupt diel activity patterns and habitat use for species that are sensitive to light (Longcore and Rich 2004; van Geffen et al. 2015). Airborne particulates, including dust and vehicle emissions, can interfere with sensory perception and foraging cues and may alter behaviour in species that rely heavily on olfaction for navigation or foraging (Wang et al 2023).

Mitigation measures will be implemented to limit both the magnitude and spatial extent of sensory disturbance. These include restricting lighting to what is necessary for safe operations, using downward-shielded fixtures to prevent light spill into nearby habitats, avoiding unnecessary nighttime illumination, and ensuring equipment is properly maintained to reduce noise. Additional measures include controlled blasting schedules and adherence to vehicle speed limits. Measures to control dust and particulate emissions (e.g., dust suppression) will reduce airborne particulates that could impair wildlife sensory systems.

Baseline conditions in the Project Area and LSA already include existing industrial activity and human presence, and therefore, project-related disturbances represent incremental increases over current conditions. Species such as moose, snowshoe hare, and red fox within the Project Area are expected to avoid active disturbance zones and relocate to nearby suitable habitats. Such habitats are abundant in the surrounding landscape, and behavioural responses are anticipated to be temporary and reversible once activities cease.

With mitigation measures (Table 6.10-3), residual behavioural effects on other wildlife from Project activities are anticipated to be negative in nature, low in magnitude, medium-scale (11-100 km^2), medium-term in duration (expected to subside when operations cease), occur both irregularly (e.g., blasting) and continuously (e.g., machinery noise; lighting), have high sensitivity to seasonality and are considered reversible. Residual effects of Project activities on Other Wildlife due to behavioural disturbances are therefore

predicted to be not significant. Table 6.10-6 summarizes the potential residual effect characterization.

Table 6.10-6: Summary of Residual Effect Characterization Related to: Behavioural Disturbance

Criteria	Rating	Rationale
Magnitude	Low	Residual effects on Other Wildlife are expected to be low, representing minor behavioural disruptions above existing baseline conditions. Noise, dust, emissions, and artificial lighting may temporarily alter movement, foraging, and predator-prey interactions for mammals and activity patterns for insects, but these effects are partially mitigated through best practices and proposed mitigation.
Geographic Extent	11–100 km^2	Some blasting and equipment-related noise could elicit behavioural responses beyond the LSA. Similarly, disturbances associated with artificial lighting, air emissions, and increased human activity may extend beyond the immediate project footprint and its 500-m buffer (LSA), potentially influencing wildlife use of adjacent habitats.
Timing	High Sensitivity	Effects can be more pronounced during spring, summer, and fall when mammals are more active, defending their territories, reproducing, and foraging, and when insect populations are at their peak.
Frequency	Irregular Events (blasting noise) Continuous (operations noise; nocturnal lighting)	Blasting and related behavioural responses in Other Wildlife will not occur on a set schedule, nor will it occur every day. Operational noise and nocturnal lighting are continuous and may lead to persistent behavioural changes over the duration of the project.
Duration	Medium-term	Effects persist through Construction and Operational phases but are expected to cease following closure.
Reversibility	Reversible	Wildlife behaviour and habitat use are expected to return to pre-project conditions after operations cease, with the implementation of mitigation and habitat restoration measures during the closure.
Ecological/Socio-economic Context	Disturbed	The area already experiences industrial and human disturbance from ongoing AGS mining, traffic, and residential activity. Additional effects are considered incremental relative to these existing pressures.
Level of Confidence	Moderate	Exact magnitude, geographic extent, and frequency of behavioural effects are difficult to estimate precisely given lack of wildlife occurrence data, and relative lack of research on behavioural responses to noise in insects and mammals.
Significance	Not Significant	Behavioural disturbances are temporary, reversible, and expected to remain non-significant with proper mitigation and monitoring.

6.10.6.4 Residual Effect: Change in Health

With the implementation of waste and water management plans, spill response procedures, surface water monitoring, and adherence to the Canadian Council of Ministers of the Environment water quality guidelines, the risk of wildlife exposure to harmful contaminants and thus negative effects on health is expected to be low. Although some residual effects on wildlife health may occur despite the implementation of mitigation measures designed to reduce exposure pathways. For example, fugitive dust generated by vegetation clearing, road traffic, blasting, aggregate crushing, and stockpile handling may result in residual health effects through inhalation or through the deposition of particulates and associated metals onto vegetation, soils, and surface waters. These contaminants may subsequently enter terrestrial and aquatic food webs, potentially affecting herbivores, insectivores, and higher trophic level predators through dietary exposure and bioaccumulation (Grantz et al 2003; Brumbaugh et al. 2009; Ali and Khan 2018). While dust suppression and equipment maintenance will substantially reduce emissions, localized exposure within and immediately adjacent to active areas may still occur, particularly under dry and windy conditions. Heavy metals, hydrocarbons, and other hazardous substances contained in contact water may adversely affect wildlife health if exposure occurs, especially for aquatic and semi-aquatic species and for predators susceptible to biomagnification (Ali and Khan 2018; Sánchez et al. 2020). Although sediment ponds, routine surface water monitoring in accordance with guidance from the Canadian Council of Ministers of the Environment, wildlife access controls, and spill response procedures are intended to prevent contaminant release and exposure, wildlife interacting with drainage features, sediment ponds, treated outflows, wetlands, and nearby watercourses may remain at some residual risk. Chronic exposure to sublethal contaminant concentrations has been associated with impaired reproduction, altered immune function, and reduced survival in wildlife (Sánchez et al. 2020).

Additional residual health effects may arise from intermittent noise, vibration, and artificial lighting associated with Project activities. Anthropogenic noise has been shown to elevate stress hormones and alter behaviour in wildlife (Barber et al. 2010; Shannon et al. 2016), while artificial light at night can disrupt circadian rhythms, movement patterns, and predator–prey interactions (Longcore and Rich 2004).

With the application of the mitigation measures outlined in Table 6.10-3, the residual effects on Other Wildlife related to changes in health are predicted to be negative in nature, low in magnitude, medium scale in geographic extent (11-100 km^2), and medium-term in duration, occurring throughout Construction and Operations. These effects may occur both intermittently (e.g., accidental spills, blasting) and continuously (e.g., traffic, operational lighting, contaminant levels) and are reversible through progressive reclamation and post-closure site restoration. The ecological context of the Project Area is considered disturbed due to existing mining operations and associated infrastructure. Based on available information and professional judgement, residual effects related to Other Wildlife health are therefore predicted to be not significant. Table 6.10-7 summarizes the potential residual effect characterization.

Table 6.10-7: Summary of Residual Effect Characterization Related to: Change in Health.

Criteria	Rating	Rationale
Magnitude	Low	Residual effects are expected to result primarily in localized, sublethal responses (e.g., short-term physiological stress, minor contaminant exposure). Implementation of mitigation measures substantially reduces exposure pathways.
Geographic Extent	11-100 km^2	Potential effects are largely confined to the Project Area and adjacent LSA, where exposure to noise, dust, lighting, and potential contaminants may occur. Effects are not expected to extend much beyond LSA due to attenuation with distance and containment measures.
Timing	High Sensitivity	Some activities (e.g., blasting, elevated noise, increased traffic) may overlap with sensitive life history periods such as breeding, nesting, denning, migration, or overwintering. However, effects during these periods are expected to be short-term and localized, with mitigation measures reducing intensity and duration.
Frequency	Irregular Events (accidental spills; blasting) Continuous (traffic; operational noise; lighting)	Accidental spills are considered low-probability (rare) events, with any residual effects expected to be irregular in frequency. Blasting will not occur on a set schedule, nor will it occur every day. Residual effects due to traffic, operational noise, and nocturnal lighting will occur more continuously throughout active Project phases.
Duration	Medium-term	Health-related residual effects may persist for the duration of Construction and Operations but are expected to decline following cessation of activities and implementation of progressive reclamation and closure measures. Long-term chronic exposure is not anticipated due to ongoing monitoring and adaptive management.
Reversibility	Reversible	Sublethal stress responses and minor contaminant exposure are expected to diminish once disturbance related to Project activities ceases and habitats are reclaimed. Water treatment, site remediation, and vegetation re-establishment will further support recovery of ecological conditions.
Ecological/Socio-economic Context	Disturbed	The Project Area is located within an active industrial landscape influenced by ongoing AGS Mine operations, traffic, recreational use, and human presence.

Criteria	Rating	Rationale
Level of Confidence	Moderate	While contaminant pathways, traffic volume, and mitigation measures are well defined, the physiological responses of Other Wildlife to combined stressors can vary depending on species, local habitat conditions, and environmental factors. The assessment is based on available literature and professional judgement.
Significance	Not Significant	Residual effects are low in magnitude, reversible, and expected to decline following cessation of project activities.

6.10.6.5 Residual Effect: Change in Direct Mortality Risk

Effects of Project activities could include a change in direct mortality risk to the Other Wildlife VC. For instance, traffic collisions, increased hunting, and trapping pressure within the RSA due to increased access, human-wildlife conflict, and other hazards related to Project equipment and activities (e.g., vegetation clearing, entrapment in equipment/containers) could result in direct mortality of Other Wildlife (Collins and Kays 2011; Hamed and Laughlin 2015; Finn and Stephens 2017; Kolenda et al. 2021; Moore et al. 2023). However, mitigation measures such as enforced speed limits, giving right-of-way to wildlife, prohibition of hunting and trapping within the LSA, covering of open containers/bins and proper disposal of waste, and wildlife awareness training for staff, are expected to result in negligible residual direct mortality effects to the Other Wildlife VC.

With the Waste Management Plan, Environmental Protection Plan, and several mitigation measures in place (Table 6.10-3), potential residual effects of Project activities on the Other Wildlife VC due to direct mortality are predicted to be negligible in magnitude, localized (<1 km^2), medium-term in duration (throughout Project Construction, Operations, and Closure), occur continuously, have negligible sensitivity to seasonality, and are considered reversible. Given also that Project activities are occurring in already-disturbed habitat, residual direct mortality effects of Project activities on Other Wildlife are predicted to be not significant. Table 6.10-8 summarizes the potential residual effect characterization.

Table 6.10-8: Summary of Residual Effect Characterization Related to: Change in Direct Mortality Risk

Criteria	Rating	Rationale
Magnitude	Negligible	Direct mortality to other wildlife as result of Project Activities is not expected to cause measurable change to VC relative to baseline.
Geographic Extent	<1 km^2	Effects largely limited to Project Area (e.g., vehicle collision, death during land clearing, entrapment, human-wildlife conflict). Prohibition of hunting/trapping in the LSA will prevent direct mortality.
Timing	Negligible	Residual effects causing direct mortality are not sensitive to seasonality.

Criteria	Rating	Rationale
Frequency	Continuous	Any residual effects causing direct mortality to wildlife could occur continuously at any point during Construction, Operations, or Closure.
Duration	Medium-term	Effects extend from Construction through Operations and Closure but subside when operations cease.
Reversibility	Reversible	Residual effect at the population level is considered reversible.
Ecological/Socio-economic Context	Disturbed	Project Area is located on a previously disturbed site due to past mining activities.
Level of Confidence	High	Good understanding of likely mammal occurrence in the area; effects generally well-understood from existing AGS Mine and research conducted elsewhere.
Significance	Not Significant	Negligible magnitude, localized geographic extent, and high reversibility of residual habitat effects that are medium-term in duration (i.e., restricted to active Project phases).

6.10.7 Potential Cumulative Effects

The potential cumulative effects assessment considers the proposed Project in the context of past, present, and reasonably foreseeable activities within the region. Existing anthropogenic influences, including the AGS Mine site, St. Lawrence Wind Energy project, residential and recreational development associated with the Town of St. Lawrence, domestic wood harvesting, hunting, outfitting, off-road vehicle use, and established linear features such as roads and transmission lines, have already resulted in habitat alteration, effects on wildlife health, sensory disturbance, and increased mortality risk for the Other Wildlife VC. These activities shape the current baseline conditions in the area.

Ongoing operations at the AGS site overlap spatially and temporally with the Project and contribute similar pathways of effect, including habitat disturbance, sensory disturbance such as noise, vibration, and light, increased mortality risk, and greater potential for conflict between humans and wildlife. Additional pressures from hunting and outfitting may further compound disturbance during periods when their activities coincide with Project operations. Off-road vehicle use, though smaller in scale, contributes to localized vegetation damage, erosion along shorelines and sediment deposition in waterways, noise-related disturbance, and increased collision risk. Existing linear features, such as roads and transmission corridors, continue to facilitate predator movement and increase hunting access, thereby elevating mortality risk. In addition, ongoing operations of the St. Lawrence Wind Energy project located approximately 6 km northwest of the Project Area introduces a continuous source of sensory disturbance to wildlife, including turbine noise, blade movement, and maintenance-related vehicle traffic. The wind energy project consists of nine turbines, while access roads also contribute incrementally to habitat alteration, displacement or avoidance behaviour, and collision risk for some wildlife species. The associated access roads may also facilitate predator movement and human access.

Given these existing pressures and habitat, current wildlife use of the area is expected to be low. The Project will contribute to an increase in disturbed footprint. However, with the application of proposed mitigation measures, including noise and dust suppression measures, water and waste management practices, restoration, and adherence to EEMP and EPP, potential Project effects on the Other Wildlife VC are not anticipated to contribute measurably to cumulative effects of other anthropogenic activities in the area.

6.10.8 Follow-up and Monitoring Programs

Follow-up and monitoring programs are not recommended for Other Wildlife.

6.11 Economy

The following subsections includes the assessment of the Economy VC identified as relevant to the Project.

The economy of the Town of St. Lawrence (the Town or St. Lawrence) and nearby communities may be affected by changes arising from increased construction, operations, closure, and workforce activity. There could be adverse effects, but also opportunities for investments, supports, and initiatives for improvement in labour, labour income, and contributions to municipal revenues for the Town of St. Lawrence, and contributions to Gross Domestic Product (GDP) and provincial government revenues.

The state of the local economy, business operations and employment is significant to residents and business owners in St. Lawrence and nearby communities, and in contributing to sustained confidence and potential prosperity.

The Project's economic effect on income, employment, and business activity is also linked to effects on community infrastructure, services, and well-being. The Project is expected to contribute to the local economy through spending and taxation on labour, services, and supplies, along with CFI's direct contributions to the Town of St. Lawrence through taxation agreements.

The Project can be expected to directly simulate the economy over the 24-month period of construction and eventually closure activities. The Project is expected to lead to improved production and sales from the AGS Mine and aggregate. With sustained nameplate production, there is potential to drive increased revenue and income for business, government, and individuals. The locally available labour force may expect continued employment throughout the Project and subsequent mine operations. Increased year-round business may lead to sustained demand for more hardware and building supplies, accommodations, restaurants, convenience stores, fuel sales, and housing and services for residents attracted to direct and indirect employment, and visitors attracted to improved historic trails and attractions.

The study area boundary for assessing the economic effects of the Project is set at the community area of St. Lawrence. Factors to be assessed are employment, business, and revenue to the Town tied to the Project's Construction, Operation, and Closure. Economy-related assessment includes knowing the effects at the community level in terms of access to and availability of labour, income, and business. Economy-related effects are also tied to Project impact on other economies in the community – Ocean Choice

International's seafood processing, public service, tourism, and proposed new projects such as NordSpace.

6.11.1 VC Scoping

This section provides the scope of the VC, which was used to frame the assessment and assessment boundaries. Public and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EARD.

6.11.1.1 Assessment Boundaries

The assessment boundaries for the Economy VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.11.1.1.1 Temporal Boundaries

The temporal boundaries for the Economy VC effects assessment included:

- Construction: 6 months
- Operations: 18 months
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.11.1.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.11-1.

- Local Study Area (LSA) – the LSA is set at 1.5 km from the proposed Project footprint, including the South Ridge Pit, overburden stockpiles, and haul road, and nearby roads and trails.
- Regional Study Area (RSA) – The RSA used in this assessment has been expanded to encompass the full extent of the LSA as defined above. The approach ensures that any potential cumulative effects from the proposed Project are considered across a broader region, capturing not only localized impacts in St. Lawrence but the regional context of the southern Burin Peninsula including Little St. Lawrence, Lawn, and communities from Grand Bank to Marystown especially in relation to caption areas for health care facilities and services, regional waste management, housing, and emergency services.

CFI
CANADA FLUORSPAR INC.

SOUTH RIDGE MINE

FIGURE 6.11-1
ECONOMIC
LOCAL AND REGIONAL STUDY AREAS

MARCH, 2026

MARYSTOWN

GRAND BANK

LAWN

TOWN OF ST. LAWRENCE

LITTLE ST. LAWRENCE

0 10 20 30
Kilometers

Local Study Area

Regional Study Area

Project Footprints

Proposed Project Infrastructure

Proposed New Road

Existing Road Upgrades

Scale: 1:220,000
when printed on 11 by 17 inch paper

FALKIRK

This map and associated spatial data were prepared by Falkirk Environmental Consultant Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Falkirk Environmental Consultant Ltd. Data featured in this map has been derived from a variety of digital sources and, as such, FEC does not warrant the accuracy, completeness, or reliability of the map or its data for any other purpose. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: EA_Figures_20260304.aprx Published to .pdf on 2026-03-03 12:40 PM by AndrewBrazeau

6.11.2 Existing Conditions

This section describes the methods that established the existing conditions of the Economy VC and the description of the existing conditions.

6.11.2.1 Methods

6.11.2.1.1 Data Sources

Background information and data to inform the baseline conditions for the Economy VC included:

- Stakeholder interviews and consultation feedback;
- Information supplied by the Town of St. Lawrence;
- Statistics Canada 2021 Census Population;
- NL Community Accounts 2026 (Departments responsible for health, education, employment, social development, Centre for Health Information; and Canadian Census, employment, and revenue agencies);
- 2022 Labour Force statistics;
- 2024 Employment Insurance statistics;
- 2015-2016 Self-assessed health status statistics;
- 2025-2026 School enrolment statistics;
- Sector data sources – major projects, mining, fishery, tourism, oil, hydro; and
- Direct and indirect impact measures.

6.11.2.1.2 Data or Information Limitations

Data within the LSA for St. Lawrence was derived primarily from NL Community Accounts and 2021 Census of the Population. Data to inform the RSA for the Burin Peninsula was derived from the 2021 Census and other sources provided insights for St. Lawrence, but in some cases was supressed to protect sensitive information. Some information was not available for recent years for some demographic conditions and indicators.

6.11.2.2 Description of Existing Conditions

6.11.2.2.1 Income

The 2022 gross income for every man, woman, and child (gross personal income per capita) in St. Lawrence was $40,300. For the province, gross personal income per capita was $42,900. After tax personal income per capita, adjusted for inflation, for St. Lawrence was unavailable. (Government of Newfoundland and Labrador 2026a)

In terms of individual and family income, half of the males in St. Lawrence received more than $41,700 in income during 2021, while half of females received more than $31,200. A year later, in 2022, half of the males in Newfoundland and Labrador received more than $44,800 in income during 2022, while half of females received more than $33,000. The national values were $49,700 for males and $37,700 for females.

Half of the couple families in St. Lawrence had incomes of more than $95,100 in 2022. Half of the couple families in the province had incomes of more than $102,700. The national value was $110,900.

Half of the lone parent families in St. Lawrence had incomes of more than $57,800 in 2022. Half of the lone parent families in the province had incomes of more than $51,600. The national value was $58,900.

The average couple family income in St. Lawrence was $118,000 in 2022. The average couple family income in the province was $125,000. The national value was $138,300.

The 2022 self-reliance ratio for St. Lawrence was 69.9%, which is income from market sources, including employment, investment income, and pensions. This is a measure of the community's dependency on government transfers such as: Canada Pension, Old Age Security, Employment Insurance, Income Support Assistance, etc. which in 2022 was 30.1%. A higher self-reliance ratio indicates a lower dependency. The self-reliance ratio in the province was 78.9%.

In 2022, the sources of market income for persons in St. Lawrence were:

- Employment Income (630 persons reporting $42,900 average income);
- Investment Income (80 persons reporting $1,300 average income);
- Private Pension (150 persons reporting $19,200 average income); and
- Other Income (120 persons reporting income).

Also in 2022, the sources of Government Transfer Income for persons in St. Lawrence were:

- Old Age Security/Net federal supplements (310 persons reporting $10,600 average income);
- Canada Pension Plan (420 persons reporting $6,700 average income);
- Child Tax Benefit (100 persons reporting $6,800 average income);
- GST credit (340 persons reporting $600 average income);
- Employment Insurance (350 persons reporting $13,300 average income);
- Workers' Compensation (60 persons reporting $15,400 average income);
- Income Support Assistance (40 persons reporting $6,300 average income);
- Provincial Tax Credits (890 persons reporting $800 average income); and
- Other Government Transfers (110 persons reporting $1,200 average income).
- (Government of Newfoundland and Labrador 2026a)

6.11.2.2.2 Employment and Working Conditions

In 2022, 630 individuals reported earnings from employment in tax records, averaging $42,900 gross income from employment. In 2013, 680 individuals reported earnings from employment in tax records, averaging $37,700 gross income from employment. In the province 287,110 individuals reported earnings from employment in tax records in 2022, averaging $51,600 gross income from employment.

In 2022, there was a -3.1% 5-year change in employment. In 2013, there was a -6.8% 5-year change in employment. Across Newfoundland and Labrador there was a 0.5% 5-year change in employment in 2022. This continues to fluctuate in the Town and across the province.

As for Labour Force rates, in St. Lawrence, during the reference week of the 2021 Census (May 2-8, 2021), the employment rate for those aged 15 years and older was 44.6%

(47.5% for NL). During the same period the unemployment rate for St. Lawrence was 17.7% (15.2% for NL). There were 480 (243,330 for NL) individuals participating in the labour force.

There is a distinctive separation in male and female employment, which is also reflected in their income. Females lean to public services, healthcare, and sales and service, and food production. Men lean to business and administration, manufacturing, utilities, food production, and trades administration. (Government of Newfoundland and Labrador 2026a).

Employment of local people from St. Lawrence is a priority for CFI, as is more female and diverse people. The company intends to host job fairs, and target locally qualified and experienced people for the Project.

6.11.2.2.3 Business Economy

Traditionally shoreline communities on the Burin Peninsula were sustained by inshore fishing. Independent, self-employed fish harvesters used their own vessels and enterprise licenses to harvest cod, lobster, crab, and other seasonal species. Until the early 1930s, people in St. Lawrence made a traditional living like other coastal communities, relying on the inshore fishery and small-scale farming, with traditional hunting and wood gathering to sustain their families.

In the early 1930s there was great hardship – a 1929 tsunami destroyed much of the southern Burin Peninsula shoreline infrastructure and family homes, boats, sheds, and stages, including in St. Lawrence. This exacerbated hard times from the Great Depression and the collapse of saltfish trade.

In 1931, fluorspar mining became a new industry in St. Lawrence when an American entrepreneur Walter Seibert started the St. Lawrence Corporation of Newfoundland. The people of St. Lawrence did grueling work, with hand tools, low wages, and few safety practises, to carve out a mining operation. Since then, several companies have operated fluorspar operations on and off, within the vagaries and cycles of commodity prices and market demand.

In 2023 Fluorspar Holdings, bought the assets of the mine after the previous owners went insolvent in 2022. The new operator retained the name of CFI and is forging ahead with capital and equipment improvements. The owners are looking to mine the accessible high-grade fluorspar at South Ridge over the next two years to generate revenue while recalibrating and accelerating development of the AGS deposit to stabilize production for the next 20-30 years.

6.11.2.2.3.1 Mining

As reported by the Provincial Government in its *Mining in Newfoundland and Labrador Fall 2025* review, the “The mining industry Newfoundland and Labrador’s mining sector is experiencing significant growth and diversification, underscoring its pivotal role in Canada’s resource economy”. This creates increased demand for labour and supplies and driving investments in businesses that support the industry. Many former CFI employees (as well as people from the Burin Peninsula) are working in mines and industrial projects throughout Newfoundland and Labrador, and in northern Canada, most

as fly-in/fly-out, some as drive-in/drive-out, often for higher wages than typical for CFI. Some are regular mobile workers in northern Alberta's resource sectors. The mines to which many mobile workers from the Burin Peninsula commute on rotational shifts include:

- Baffinland's iron mine in Nunavut.
- Vale's Voisey's Bay nickel, cobalt, and copper mine in northern Labrador.
- Tacora's iron and manganese mine in Wabush, Labrador.
- Iron Ore Company of Canada's iron mine in Labrador City.
- Equinox Gold's Valentine Gold Mine in central Newfoundland is a major new mine.
- Hammerdown, Queensway, and FireFly Metals gold projects in central Newfoundland are expected to go into production soon, driven in part for the current high price of gold.
- Labrador's Central Mineral Belt is seeing increased exploration activity for uranium.
- Several companies are actively exploring for lithium in southwestern Newfoundland, nickel in central Newfoundland, and copper in western and central Newfoundland.
- Several people from Burin Peninsula communities work on major Projects such as transmission lines throughout North America, having gained experience with the 1,092 km Muskrat Falls and Labrador Island Transmission Link Project.

Mineral exploration and early works on projects are expected to drive demand for workers over the next five years, as prices and global demand rise for rare earth elements, uranium, higher iron purity content, and manganese projects in Labrador, as well as lithium, gold, and other base metals throughout Newfoundland.

Mineral shipments from this province in 2025 are estimated to be close to $5.3 billion. The $258.1 million in exploration spending last year was an increase of 5.8% over 2024. Over 8,600 jobs are credited to mining in this province and doesn't include the wage economy for projects outside the province.

The provincial and regional economy is expected to improve with CFI's redevelopment of the St. Lawrence mine. Since acquiring the insolvent former CFI assets in 2023, Fluorspar Holdings, operating under the same CFI name, has invested $125 million in infrastructure and equipment to leverage continued investment and mining activity for longer and larger scale fluorspar mining and aggregate production.

The company made an initial shipment of fluorspar in 2025. With the integration of revenue from the sale high-quality fluorspar from South Ridge, the company will be able to accelerate its AGS deposit. Included are potential underground operations, with an operating lifespan expected for 20-30 years. Fluorspar resources had been estimated to be more than 22 million tonnes. The Project is a critical step in reaching that goal.

CFI is a strong contributor to the regional and provincial economy, with $187 million in employment wages, and purchased goods and services, as well as taxation paid to the Town and the province since 2023.

Since assuming the operation, CFI's expenditures include $14 million on labour in the province and 78% of its other expenditures of $171 million in the province.

Fishery

Fisheries continue to play a significant role in the regional economy, despite the reduction in processing capacity with plant closures in Marystown and Burin. The largest plants on the peninsula are now Clearwater Seafoods in Grand Bank and Ocean Choice International in St. Lawrence.

Employment in year-round and seasonal fish and shellfish harvesting, as well as aquaculture sea farms and hatcheries, and seafood processing plants, totalled 16,700 workers in the province in 2024. That was an increase of 600 from the year before. Most of this employment is in rural communities on the water's edge.

The value of seafood exports from the province was just under a billion in 2024, at $971.5 million. High Snow Crab prices made a difference, but aquaculture was a major contributor in 2024. While the sales value of shellfish (mussels and oysters) dropped by 32%, mostly due to lower market prices, the value of salmon and steelhead trout increased by 48%, much of which was driven by Grieg Seafood NL's operations in Placentia Bay, and the hatchery in Marystown. Total value of commercial aquaculture production in the province rose by 22% to $281.5 million. (Government of Newfoundland and Labrador 2025a)

The Marystown and Placentia Bay aquaculture operation is expected to continue to expand to its full potential and provide increased economic impact on the Burin Peninsula. At the end of 2025, Grieg Seafood ASA sold its operations in Finnmark (in northern Norway), and its operations in British Columbia and Placentia Bay, Newfoundland to Mitsubishi-owned Cermaq in a CA$990 million transaction. (Fish Farming Expert 2025.) Cermaq is a global leader with annual salmon and trout production of 200,000 metric tons. The large-scale post-smolt salmon hatchery was 50% complete when Grieg halted construction in 2025. It still grew salmon in its five salmon farms in the bay by keeping smaller salmon in the water longer to achieve mature growth. A completed post-smolt facility will allow salmon to mature on land and spend less time in the water, reducing the risk of weather-related, environment, and predator losses.

While there are no defined plans announced for its Marystown operation, Cermaq has started to restructure its Canadian management teams and operation. If construction starts on the post-smolt facility, there could be an impact on the availability of workers and builders, and possibly on housing and accommodations. It also creates potential for a reinvigorated economy which will increase investment and capacity in Marystown and nearby communities.

6.11.2.2.3.2 Tourism

Tourism has been an economic generator for the province, predominantly in the summer season. The provincial tourism campaign includes evocative ads that features many Burin Peninsula locations and experiences. The Department of Tourism, Culture, Arts and Recreation is responsible for implementing the Provincial Tourism Strategy. The strategy aims to grow the tourism industry in all regions, enhance the visitor experience, and lead responsible, regenerative, and sustainable tourism development. Demand continues to increase for authentic, engaging, and personalized experiences that connect visitors with the province's people and places. Natural assets such as scenic landscapes, wildlife, and

wilderness areas remain key drivers of visitation and are essential to sustainable growth. Maintaining balance among provincial tourism priorities, private tourism operators, and forestry management is critical.

St. Lawrence features the top five most popular outdoor activities visitors come to the province i.e., walking and hiking, coastal sightseeing, visiting a beach, seabird watching, and whale watching. The top five culture and heritage experiences, which also can be enjoyed in St. Lawrence are enjoying local cuisine, exploring small communities, connecting with local people, historic sites and museums, and lighthouses. Other reasons visitors come the province, and the region are visiting friends and relatives, coming home, and sport events – all which St. Lawrence offers in some form.

Legendary Coasts of Eastern Newfoundland (LCEN) is one of five Destination Management Organizations in the province. LCEN actively promotes St. Lawrence, focusing on its natural experiences, and especially the stories of St. Lawrence that are featured throughout the town and on its trails. St. Lawrence is particularly known for its rare “peculiar confluence of extraordinary stories” (Hiscock 2026) tied to soccer, heroism of the mine and coastline rescues and the related renown of Lanier Phillips, connections to art including the dedicated Canadian stage play Oil and Water, economic connections to the stock market crash of 1929, a tsunami, half a billion years of geology, world wars, active mining, a working fishing community and harbour, influence on health and safety regulations. It is a living community with active and real cultural, natural, industrial, and historic experiences that tourists want to experience. The community anchors regional Burin Peninsula tourism experiences and attractions, including the international destination of Saint Pierre et Miquelon.

Trails in St. Lawrence are important tourism assets that support high-quality visitor experiences, especially those centered on pristine environments, natural settings, and nature-based activities. They underpin guided and independent tourism products, cultural interpretation, and community-based offerings. Protecting these values requires careful planning and management of mining activities, including appropriate setbacks and consideration of viewscapes and soundscapes. Lookouts along the trails also provide views of CFI’s Blue Beach marine facility and harbour operations, and the mine. The proposed South Ridge Project is not visible from Route 220. The scenic attractions of St. Lawrence and surrounding areas will remain accessible and uninterrupted by the Project. The re-routing of Iron Springs Road does not restrict access to coastal trails, beaches and scenic lookouts; and will be an improved road in terms of bridges, width, surface and structure, and can provide improved access for vehicles carrying mobility impaired visitors to reach Chambers Cove.

As the gateway to the French islands of St. Pierre et Miquelon, which attracts thousands of national and international visitors each year, communities on the Burin Peninsula derive benefits, including St. Lawrence, when travelers take the southern route from Fortune through the Town to loop the southern part of the peninsula to the rest of the province. Destination St. John’s and the Eastern Destination Marketing Organization (EDMO), operating under the tourism brand of Legendary Coasts, includes the Burin Peninsula in its product and market development initiatives. Destination St. John’s cooperates with the Government of France to increase the number of visitors to the French islands and the Burin Peninsula.

The tourism industry is worth about $1.4 billion to the province, from spending by about 500,000 non-resident visitors (peaking in 2019 with just over 530,000) and slightly more resident travellers. About half of vacation visitors, 52%, travel to and around the eastern tourism zone, i.e. Bonavista and Burin Peninsulas. While 31% of visitors stayed overnight in the Clarenville and Bonavista Peninsula area in 2024, only 3% had an overnight stay on the Burin Peninsula, suggesting there is room to grow (Government of Newfoundland and Labrador 2024).

Tourism growth will require increased accommodations in the busy summer months to keep visitors longer and spend more in the region. However, demand exceeds supply, from seasonal industries and business operations, such as CFI. St. Lawrence accommodations no longer include short term rental properties such as Airbnb properties, and the Ocean View Motel with its sixteen rooms has limited capacity, especially with many rooms booked over longer periods for CFI contractors and workers.

6.11.2.2.3.3 Offshore Oil and Energy

The offshore oil industry is reported to have contributed more than $20 billion in offshore royalties to the Government of Newfoundland and Labrador since production began in 1997. Offshore oil generated $7.2 billion in provincial royalties between 2018 and 2024, with $1.6 billion in 2024 alone. (Canada Action 2026).

From 2018-2024 offshore activity added an average of $8-9 billion a year in GDP, a quarter of NL's GDP. The approximately 9,000 jobs per year during the same period, represented 8.2% of all provincial employment. That rose to 20,500 jobs (8.4%) in 2024 during construction on the West White Rose project, which is now undergoing commissioning at the well site.

There are four producing offshore oil projects in Newfoundland and Labrador: Hibernia (operated by Hibernia Management and Development Company Limited), Terra Nova (operated by Suncor Energy), White Rose (operated by Husky Energy), and Hebron (operated by ExxonMobil). The West White Rose Project (to be operated by Husky Energy) will start producing by the summer this year.

There is currently no commercial natural gas production in the province, though the potential remains high, with an estimated 12.6 trillion cubic feet of natural gas available.

The concrete gravity structure (CGS) for the West White Rose was built in Argentia and towed to the White Rose field in June 2025. Many former CFI employees commuted to the worksite, about 3 hours' drive from St. Lawrence. Many Newfoundlanders and Labradorians and contractors worked in Texas on the construction of the topsides which were towed to the oil field and then mated with the CGS.

In March 2026, the Provincial Government signed a benefits agreement with Equinor and BP to advance the Bay du Nord project, which is a series of oil discoveries in the Flemish Pass in international waters about 500 kms northeast of St. John's, NL. It will be the deepest water project in Canada, ranging from 600 to 1,200 meters throughout the Flemish Pass Basin – much greater than current depths of 100 meters for the other four projects offshore NL.

While the final investment decision is not expected until 2027, the agreement contains major commitments to onshore construction and employment in NL, along with royalties,

and an equity option for the province. It is expected to provide up to $6.4 billion in direct revenue to the Provincial Government in the first phase of the project. Construction and jobs are a major focus for NL, intending to provide 31 million hours of work over 25 years. The agreement includes a 10% target for employment of skilled trades for construction and 15% for onshore operations. (Government of Newfoundland and Labrador 2026b).

Expressions of interest have already been issued for construction work, including topsides components. There is a commitment to fabricate a minimum of 95% of subsea components in the province. The agreement also includes a $200 million fund to stimulate long-term fabrication trades jobs, with a focus on offshore and maritime fabrication and maintenance. This will be used to leverage capital investment to build a large floating dry dock at Bull Arm, located 200 kms north of St. Lawrence.

There is no indication if the Cow Head Fabrication Facility in Marystown will be designated as a construction site for the project. Ten years ago, Hebron Project topsides and the drilling support module were constructed there and sent to Bull Arm for assembly.

Development of hydroelectricity in Labrador has the potential to be one of the largest economic construction projects in the province's history. The proposed development of Gull Island and other features of the Memorandum of Understanding (MOU) between Newfoundland and Labrador Hydro and Hydro-Quebec is under review by the recently elected Government of Newfoundland and Labrador. The Premier is indicating that if there is a deal, it will have to provide best returns to the province.

The Churchill Falls/Gull Island MOU, signed in December 2024, featured $33 billion in construction projects to increase Labrador power capacity to 3,900 MWs. The MOU, signed by the former government, projected the deal would run until 2075, with an upfront $3.5 billion payment to NL Hydro from Hydro-Quebec, and estimated revenue of over $200 billion over the life of the agreement. (Government of Newfoundland and Labrador 2025b).

Should the project proceed, along with other major projects in various stages of development, the province will have a labour crisis. There will likely be competition for high wage labour for available workers and apprentices on the Burin Peninsula.

6.11.2.2.3.4 Supply Chain and Services

There is the necessary business capacity in the region to serve most of the Project's regular operating requirements, and some construction and equipment works. There are opportunities for existing public and private businesses in the region, which now include hardware supplies; general freight trucking; automobile sales, parts and repair services; industrial equipment rental and leasing for construction and operation; engineering services; commercial banking; petroleum and petroleum products; regulation, licensing and inspection; durable goods; metal works; building materials; surveying and mapping; accommodations and food services; wholesale and retail supplies; real estate and rentals and more.

The Town and its business community is interested in opportunities for procurement and supplies. There are approximately fifteen commercial and retail operations in the Town ranging from food services, hotel accommodations, and construction and excavating

services. CFI is committed to buy from and support as many of these local businesses as possible.

6.11.3 Effects Assessment

The effects assessment was conducted according to the approach outlined in Section 5 of this EARD.

A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as following:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects;
- Identification of potential cumulative effects; and
- Follow-up commitments and monitoring programs.

6.11.3.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the VCs within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). Table 6.11-1 identifies all Project-VC interactions and briefly identifies the nature of the potential effect that may result from the identified interaction.

Potential Project-related effects on VCs will be determined by comparing baseline conditions to those expected to result from the Construction, Operation, and Closure phases of the Project. Potential effects will be described for each VC, including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another valued component).

Table 6.11-1: Project-VC Interactions with the Economy

Project Component	Project Activities	Potential Effect	Effect Pathway
Construction			
Construction of Community Access and Haul Roads	• Strip, clear, install bridges and culverts, fill, gravel, and grade. • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use • Upgrades to Memorial Bridge and Blake's Brook Bridge.	• Increased employment. • Changed business opportunities. • Increased taxation and spending related benefits for the Town. • Availability of accommodations. • Tourism development • Touring Corridor/Viewscapes • Trails	• Expectation from community to hire more local and female workers. • The Project will have direct impact in providing local employment opportunities for diverse, skilled, and unskilled labour. • There may be challenges to find new, and to retain current, qualified workers with competition from local seafood operations, and new and current mining and oil and gas projects. That may drive demand for increased wages for similar skills and work. • Opportunity to provide skills training and advancement opportunities for available, unskilled, and diverse workers, including women, and apprentices. • Opportunity to increase procurement from local businesses and create potential business growth during long-term mine operation post Project. • The concentration of industrial projects near Bull Arm and Clarenville may either suppress or create growth for local services and suppliers, and their opportunities for growth. • Increased Project spending in the local area for the next two years may be sustained or increased as the full mine increases production and sales. • Opportunity to find and plan solutions for accommodations development, and housing, until transition from any temporary accommodations during construction to operations, and potentially leading to more permanent housing when the mine is sustainable. • Opportunity to plan for taxation and contribution, community benefit agreements and programs with the Town and local organizations. • Expectations for the company to participate and contribute to local projects and programs, and support development of the historic trails and tourism economy. • Project activities will be conducted in a manner that maintains balance among provincial tourism priorities, private tourism operators, and forestry management as this is identified as a critical priority.
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks. • Sections of Blue Beach Haul Road will be regraded, and berms will be built up to support larger equipment traffic. • Strip, clear, fill.		
Pit Haul Roads	• Strip, fill, gravel, and grade.		
Power Infrastructure upgrades	• Reroute transmission line along Blue Beach haul road, lift lines to allow Cat 777s access to Project area. • Reroute transmission line along Iron Springs Road to northwestern edge of the South Ridge Pit and create a spur line along the northern side of the pit to support dewatering wells. • The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.		
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge Pit to maintain dewatered slopes and enhance stability.		
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.		
Access to Upper Benches	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.		
Stockpile Area Development	• Stripping, clearing, and preparing stockpile areas for topsoil, overburden, and waste rock.		
Water Management Infrastructure	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored.		
Operations			
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	• Increased employment. • Changed business opportunities. • Increased taxation and spending -related benefits for the Town. • Availability of accommodation.	• Expectation will continue from the community to hire more local and female workers. • The Project will continue to have direct impact in providing local employment opportunities for diverse, skilled, and unskilled labour. • Challenges may remain with finding new, and to retain current, qualified workers with competition from local seafood operations, and new and current mining and oil and gas projects. There may be demands for increased wages and benefits for similar skills and work. • Opportunity remains to provide skills training and advancement opportunities for available, unskilled, and diverse workers, including women and apprentices.
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored.		

Project Component	Project Activities	Potential Effect	Effect Pathway
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.		• There may be opportunity to maintain and improve procurement from local businesses, and support business growth until and during long-term mine operation post Project. • The concentration of industrial projects near Bull Arm and Clarenville may either suppress or create growth for local services and suppliers, and their opportunities for growth. • Project spending in the local area during operation may be sustained or increased as The Project supports increases in production and sales for the full mine operation, • Opportunity to find and plan solutions for accommodations development, and housing, as transition continues from any temporary accommodations during construction and throughout operations, and potentially leading to more permanent housing when the mine is sustainable. • Opportunity to plan for sustainable agreements on taxation, contributions, community benefit and programs with the Town and local organizations. • Commitment for the company to participate and sustainably contribute to local projects and programs and plans to support development of the historic trails master plan and tourism economy.
Stockpiling	• Waste rock will be deposited in stockpile areas, then crushed and sold as aggregate		
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.		
Closure			
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, and re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site Closure and post-closure.	• Stable employment. • Confirmed business opportunities. • Increased taxation and spending -related benefits for the Town. • Improved accommodations and housing.	• Sustained workforce and community support for hiring and training and apprenticeship programs. • Workforce planning to manage a sustained workforce, balancing local benefits to compete with other projects and employers, and to manage turnover. • Maintain a consistent procurement program and support local businesses with financial flexibility e.g. payment terms, tailored specifications, and terms. Support business growth for sustained business during long-term mine operation post Project. • Support growth of local services and suppliers, and their opportunities for growth with opportunities in Marystown, and with industrial projects near Bull Arm and Clarenville. • Establish commitments for sustained Project spending in the local area. • Support Town's plans for long-term housing and accommodations development. • Commit to sustained taxation and contributions, community benefits and programs with the Town and local organizations.
Waste Rock Stockpiles	• Most of the closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export. • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.		
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following Closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.		
South Ridge Pit	• South Ridge Pit will be flooded in Closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).		

Project Component	Project Activities	Potential Effect	Effect Pathway
Monitoring and Maintenance	• Post-Closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-Closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required. • Access roads will be maintained to facilitate post-Closure monitoring		

6.11.4 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and summarized in Table 6.11-1 above were used to inform the design and implementation of Project mitigation measures. The identified mitigation measures for the identified effects are outlined in more detail in the following sections including a discussion of the effectiveness and confidence related to the success of the mitigation in avoiding, minimizing, or restoring the VC to avoid residual effects. This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and proposed mitigations are effective.

6.11.4.1 Increased Employment

The Project is intended to provide ore to the AGS mill to support and sustain continued operations at AGS, thereby reducing the risk of layoffs associated with insufficient ore supply. Direct hiring for the Project will be through contractors and will support employment continuity by maintaining mill throughput and operational stability.

During the commissioning, and early production phases of the Project, contractors' employees will support mining, hauling, drilling, blasting, and related operational activities. CFI will prioritize the use of local and Canadian contractors, where feasible, consistent with its commitments under the Impact Benefits Agreement. Based on current workforce planning, the Project is expected to support approximately 35 contractor positions during steady-state operations. These positions will be employed by the mining contractor and are expected to remain relatively stable as the Project transitions into production.

As the Project advances into sustained production, CFI's ramp-up plan anticipates a measured increase in direct employment associated with owner-operator functions. These roles are distinct from contractor-provided mining services and are required to support long-term operational oversight, compliance, and integration with the AGS mill.

During the production ramp-up period, CFI anticipates creating approximately 5–10 additional direct positions, phased in over time in alignment with operational readiness and production milestones. These roles are expected to include but are not limited to mine planning and technical services, environmental monitoring and regulatory compliance, health, safety, and risk management, and operations coordination and administrative support.

CFI's approach to direct workforce growth is intentionally conservative and reflects the integration of contractor-operated mining activities within CFI's existing organizational structure, avoiding duplication of roles while ensuring adequate internal capacity to support safe and compliant operations.

Up to 10 personnel may also be transferred from AGS to the Project site, as operationally required, to support coordination between mining and milling activities. These transfers are intended to maintain employment continuity for existing AGS employees while supporting efficient Project execution.

CFI is committed to maximizing local and provincial benefits associated with the Project. This includes encouraging its mining contractor to prioritize the recruitment of locally and provincially qualified candidates where feasible, as well as supporting training and skills development initiatives that align with Project needs and long-term employment opportunities.

As of 2025, CFI employs 106 personnel, of which approximately 13% are women, reflecting the current workforce composition across operational, administrative, and support functions associated with the St. Lawrence Fluorspar Project. CFI's employment and workforce development approach for the Project is guided by its Gender Equity, Diversity, and Inclusion Plan (GEDIP), updated in January 2026. The GEDIP establishes aspirational workforce targets of 20–25% women and 5–8% Indigenous participation for a fully ramped operation, informed by provincial labour force availability, operational requirements, and long-term workforce planning.

CFI will continue to align its recruitment, retention, and workforce development practices with the principles of the January 2026 GEDIP. This includes encouraging contractors, where practicable, to adopt inclusive hiring practices and to support increased participation of women and other under-represented groups in traditionally male-dominated roles. CFI recognizes that workforce composition and operational needs evolve over time and will continue to review and refine its employment practices as the Project progresses.

The following table outlines the estimated personnel requirements by occupation during construction and operations, based on the National Occupational Classification 2021 system (Statistics Canada 2021). These estimates reflect the anticipated contractor-based workforce required to support the Project and are consistent with the overall employment levels at the mine.

Table 6.11-2 Estimated Personnel Requirements by Occupation during Construction and Operations

Position	Construction Requirements	Operations Requirements	National Occupational Classification 2021*
Excavator Operator	3	3	73400
Grader Operator	3	3	73400
Dozer Operator	3	3	73400
Truck Operator	12	12	73300
Drill Operator	6	6	73402
Blasting Operator	6	6	73402
Loader Operator	3	3	73400
Supervisor	3	3	7202
General Labourer	6	6	75110

Position	Construction Requirements	Operations Requirements	National Occupational Classification 2021*
Service Personnel/Mechanics	9	9	72401
Multiskilled Operators	2	2	73400

*Note: *73400 - Heavy equipment Operators; 73300 – Transport truck drivers; 73402 – Drillers and blasters; 7202 – Constructors and supervisors, technical maintenance trades and heavy equipment and transport operators; 75110 – Construction trades helpers and labourers; 72401 – Heavy-duty equipment mechanics*

Other indirect employment will be generated by the Project, including employment associated with supply chains and service providers. In Newfoundland and Labrador, a construction project of $8 million typically generates significant indirect employment through the demand for materials, professional services, and specialized equipment. Provincial economic modeling for major construction indicates the ratio of indirect and induced jobs to direct construction jobs is often 0.6 to 0.7 to 1.

For an $8 million project, such as the South Ridge Project, the indirect effects are demonstrated in several ways. Large-scale project data suggests that for every three direct construction jobs, roughly two additional indirect or induced jobs are supported in the broader economy. Supply chain demand, which will be indirect, creates work for provincial suppliers of fabrication and materials (concrete, lumber, steel etc.), professional services (engineering, legal, planning etc.), and equipment and logistics (maintenance, fuel delivery, transportation of machinery etc.).

Induced impact is derived when direct and indirect workers spend their earnings in local communities, supporting jobs in retail, hospitality, and goods and services.

The Project will have a direct and immediate impact in providing local employment opportunities for diverse, skilled, and unskilled labour. There is an expectation from the Town Council and the community to hire more local and female workers. Many local trades people travel throughout northern Canada, and offshore. There may be gaps in hiring local if there are expectations for similar wages and benefits and finding the right skill sets.

Prospects for the provincial economy are positive, given global geopolitical situations, American trade practises, and rising demand and prices in most of the commodities found in this province, along with the major oil and hydro agreements for proposed developments. The province has experienced slowdowns and collapsed developments in the past because of economic cycles, cheaper fabrication options outside of Canada, and changing political approaches to development of minerals and oil. While many downturns directly, and at times harshly, affected the economy of the Burin Peninsula, the province's prospects remain positive.

The economy of Newfoundland and Labrador, particularly in eastern Newfoundland, is expected to expand through aquaculture in Placentia Bay, and fabrication for offshore oil development and marine and military installations at Bull Arm. There will also be added demand for workers for mining in central Newfoundland and in northern Labrador, and

possibly wind-hydrogen development on the island, and hydro development in Labrador. Securing local workers may be challenging.

As CFI progresses its AGS Mine operation, it continues to develop its human resources and employment programs. CFI's goal is to have a full slate of programs ready for construction to be implemented throughout the Project and simultaneously integrated with overall mine operations by the time the Project Closure is completed.

CFI's mitigations and commitments to secure and build a stable workforce for the Project include:

- Communicating its business approach of integrating contractors for key parts of the operation during development, infrastructure construction, and mining; and why and when outsourcing employment is necessary.
- Active promotion of hiring and employment information through job fairs, social media, the Town, employee referrals, and resume identification, for current and future employment and careers.
- Targeting local skilled and experienced workers and apprentices.
- Identifying potential employees, including women, youth and people with other skills and encouraging an interest in education and training for future opportunities, through work terms, orientation, mentoring, scholarships, and on the job tours and training.
- Work with Office to Advance Women Apprentices, TradesNL, colleges and Memorial University of Newfoundland to provide career information and be aware of local labour.
- Gender Equity, Diversity, and Inclusion Plan continued updates to maintain approaches for safe workplaces, promotes fairness and work/life balance, without harassment and discrimination for people who identify as women, two-spirit, lesbian, Indigenous, gay, bisexual, transgender, queer, questioning, intersex, asexual, and all other orientations and genders, and people with disabilities, and visible minorities. Maintain policies for:
  - progressive discipline,
  - respectful workplace,
  - human rights and freedoms,
  - workplace etiquette,
  - drug and alcohol consumption,
  - diversity and sensitivity training and "safety" moments,
  - appropriate and safe personal workplaces and space,
  - considering bids and proposals from qualified local companies with proof of diversity,
  - Requiring suppliers and contractors to demonstrate GEDI plans and policies.
- Retention program to sustain a trained local workforce, including considerations of competition from other projects and other employers in a tight labour market.

6.11.4.2 Changes in Business Opportunities

There is expectation within the community and the region for procurement from local businesses, and to create potential business growth during the South Ridge Project and afterwards with the mine. CFI must balance its construction and operation planning and

financing for efficiency and affordability, while remaining committed to work with local businesses to provide support to the mine. Changes for local businesses could range from increased demand, tighter timing, bigger inventories, technology skills, and financial capacity. In the case of changes to the mine operation and its financial programs and operating schedules, changing specifications, technologies etc., local businesses may no longer qualify.

There are opportunities for local business growth with CFI and in the region with other companies and expansions, such as the Marystown salmon hatchery. Companies like CFI can dedicate attention and skilled procurement teams to learn about local businesses, and where possible customize and target specifications to local capacity and capacity before going outside the region or the province to purchase goods and supplies. It can also be flexible with payment schedules and lead times for ordering, in ways that leverage a local business growth.

Mitigations and commitments to ensure local businesses grow and are not harmed by the Project and other CFI operations include:

- Working with local businesses, the Town, the Burin Peninsula Chamber of Commerce, economic development organizations to focus on opportunities, promotions, and awareness of CFI's needs.
- Adding business opportunities to the Community Liaison Committee's terms of reference.
- Building a registry of qualified businesses, including those with former CFI experience and look to building relationships with those impacted by the previous company's insolvency.
- Surveying local business to identify, capability, expectations, qualifications etc.
- Hiring a procurement employee with strong knowledge and experience with the local business community, and regional demand.
- Supporting businesses attending growth opportunities in other regions, at expositions, trade shows, and conferences.
- Supporting the Chamber of Commerce, at events, with presentations, and contributions e.g. staff becoming a board member, sponsorships to encourage and orient the broader business community.
- Posting procurement notices and packages widely, and well in advance.
- Customizing procurement packages where possible to match local capacity.
- Competitive sole sourcing locally where possible if there are no other suppliers in the region.
- Contracting local businesses first, with a procurement priority for local businesses.
- Monitoring activity of other industrial projects on the Peninsula, near Bull Arm and Clarenville that may either suppress or create growth for local services and suppliers, and their opportunities for growth.
- Maintaining a consistent procurement program and supporting local businesses with financial flexibility e.g. payment terms, tailored specifications, and terms.
- Supporting business growth for sustained business during long-term mine operation post South Ridge Project.

6.11.4.3 Increased Taxation and Spending-related Benefits for the Town

CFI signed a taxation agreement with the Town of St. Lawrence at the end of 2025 and is working towards a new three-year agreement that will factor in the impact and budget of the Project. There are expectations for the company to participate and contribute to local projects and programs, and support development of the historic trails and tourism economy.

Mitigations and commitments to maximize benefits for the Town of St. Lawrence, by:

- Considering what is reasonable and affordable, and communicating those conditions to the Town.
- Completing the three-year taxation agreement in timely manner, with terms that can be flexible for the company and the Town.
- Developing options for support that could contribute equipment time, materials and skills for projects, and the talents and time of employees to support community projects contributions rather than financial.
- Developing a trust or foundation with a set budget and criteria for determining projects and activities to fund or sponsor; consider referrals for the community liaison committee for advice.
- Building a relationship with the Town to share insights and information to manage expectations and determine options.
- Finding community projects that CFI can leverage its contributions to secure funding and program supports and partnerships with funding agencies and other sponsors.
- Directly supporting initiatives to mitigate the impact that Project construction and operation can have on the community e.g. dust suppression program, adapting tourism and promotional materials to reflect the changes to historic roads and routes to attractions.
- Supporting the Town's plans for long-term housing and accommodations development.
- Establishing parameters and committing to sustained taxation and contributions, community benefits and programs with the Town and local organizations.
- Build relationships with other employers and businesses in the community to address common issues and opportunities.
- Support the Town in its advocacy and promotional efforts e.g., infrastructure funding, public services, healthcare, and community programs.

6.11.4.4 Availability of Accommodations

There will be a demand for accommodations for construction crews and contractors on the Project that may not be served by the available commercial accommodations at the local motel, or in rental properties. The Town monitors the availability of housing, especially in relations to attracting healthcare workers to St. Lawrence, and long-term residents and their families attracted by employment. The Town is finding ways to house seniors as they age, and required easier, affordable supportive housing. The houses of elders may be made available for sale as permanent or rental housing. Company personnel and suppliers and contractor occupying the motel and short-term rentals deny visitors the opportunity to stay in the community and contribute to tourism growth.

Mitigations and commitments to ease the pressure on ensuring available accommodations for other visitors and suppliers, and for housing in the community, include:

- Hiring residents in St. Lawrence and nearby communities who already have housing.
- Workforce planning for rotational workers arrangements to ensure accommodations are always used.
- Bring in temporary accommodation equipment i.e. construction trailers, or mobile homes that can be used longer term for rotational employees with specialties that are not available locally. Determine when some can be negotiated for release to community residents and other local providers when not required.
- Participating in long- term planning to support local businesses to build more accommodations by agreeing to leases and rental rates.
- Ensure employees and the community have confidence in the Project and the company to encourage building new houses.

6.11.4.5 Summary of Mitigation Measures

Table 6.11-3 summarizes all proposed mitigation measures and identifies whether after implementation a residual effect will remain.

Table 6.11-3: Summary of Proposed Mitigation Measures

Potential Effect	Proposed Mitigation	Potential Residual Effect? (Y/N)
Construction		
Increased employment	• Local hiring preference • GEDI Plan • Training	N
Changed business opportunities	• Local procurement preference	N
Increased taxation and spending - related benefits for the Town	• Taxation Agreement with Town	N
Availability of accommodation	• Temporary accommodations • Managed use of accommodations for rotational workers	N
Operations		
Increased employment	• Local hiring preference • GEDI Plan • Training	N
Changed business opportunities	• Local procurement preference • Support to local business growth and development	N
Increased taxation and spending - related benefits for the Town	• Taxation Agreement with Town • Planning support for community organizations	N
Availability of accommodation	• Temporary accommodations • Managed use of accommodations for rotational workers	N

Potential Effect	Proposed Mitigation	Potential Residual Effect? (Y/N)
Closure		
Increased employment	• Local hiring preference • GEDI Plan • Training • Retention programs	N
Changed business opportunities	• Standing offers with qualified local businesses • Continued support in regional economic development	N
Increased taxation and spending - related benefits for the Town	• Taxation Agreement with Town • Defined programs for supporting local organizations and projects • Community Liaison Committee	N
Availability of accommodation	• Managed use of accommodations for rotational workers	N

6.11.5 Identification and Characterization of Residual Effects

Project related adverse residual effects are not expected to remain after mitigation. No adverse residual effects characterization is required, and no adverse cumulative effects are identified.

6.12 Community: Infrastructure, Services, Health, and Well-being

The following section provides an assessment of Community: Infrastructure, Services, Health, and Well-being VC identified as relevant to the proposed Project.

Community services and infrastructure that may be affected by changes arising from increased construction, operations, and workforce activity. There could be adverse effects, but also opportunities for investments, supports, and initiatives for improvement in:

- Roads and traffic, including safety,
- Water and sewer services,
- Waste management,
- Housing (permanent, temporary, and rental housing and accommodations for contractors, employees, service workers, and visitors),
- Emergency services,
- Health care facilities and services, and
- Childcare facilities and services.

Increased pressure on community services and infrastructure could have adverse effects on health and well-being but can also bring opportunities for increased involvement and improvements in programs and supports in select areas:

- Demographics,
- Health conditions,
- Education,
- Heritage
- Recreation, and
- Social activities

The following subsections present for the VC:

- Scoping of the VC assessment including study boundaries,
- Existing conditions of the VC,
- Project components or activities that may interact with the VC and the potential effects related to the interactions,
- Proposed mitigation and management measures to manage the identified potential effect,
- Characterization of identified residual adverse effects of the Project,
- Summary of potential cumulative effects, and
- Description of relevant follow-up programs to support the management of potential effects on this VC.

6.12.1 VC Scoping

This section provides the scope of the VC, which was used to frame the assessment and assessment boundaries. Public and stakeholder engagement also guided the scope of the VC assessment as summarized in Section 4 of this EARD.

6.12.1.1 Assessment Boundaries

The assessment boundaries for the Community: Infrastructure, Services, Health, and Well-being VC were selected based on the appropriate extent at which the Project-related

potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.12.1.1.1 Temporal Boundaries

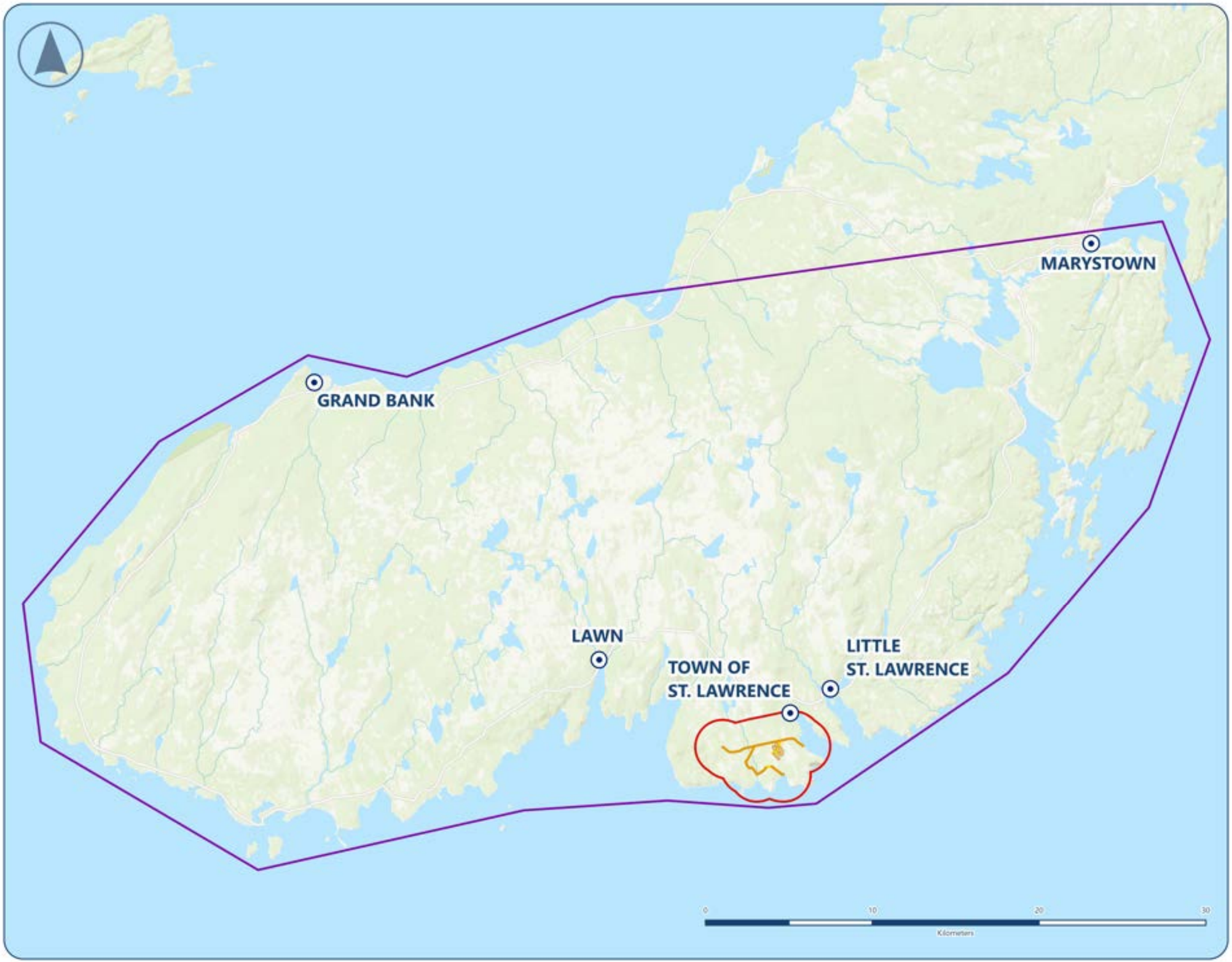
The temporal boundaries for the Community: Infrastructure, Services, Health, and Well-being VC effects assessment included:

- Construction: 6 months
- Operations: 18 months
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan

6.12.1.1.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.12-1.

- Local Study Area (LSA) – the LSA is set at 1.5 km from the proposed Project footprint, including the South Ridge Pit, overburden stockpiles, and haul road, and nearby roads and trails.
- Regional Study Area (RSA) – The RSA used in this assessment has been expanded to encompass the full extent of the LSA as defined above. The approach ensures that any potential cumulative effects from the proposed Project are considered across a broader region, capturing not only localized impacts in St. Lawrence but the regional context of the southern Burin Peninsula including Little St. Lawrence, Lawn, and communities from Grand Bank to Marystown especially in relation to caption areas for health care facilities and services, regional waste management, housing, and emergency services.



CFI
CANADA FLUORSPAR INC.

SOUTH RIDGE MINE

FIGURE 6.12-1
SOCIAL COMMUNITY, WELLBEING LOCAL AND REGIONAL STUDY AREAS

MARCH, 2026

Local Study Area

Regional Study Area

Project Footprints

Proposed Project Infrastructure

Proposed New Road

Existing Road Upgrades

Scale: 1:220,000
when printed on 11 by 17 inch paper

FALKIRK

This map and associated spatial data were prepared by Falkirk Environmental Consultant Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Falkirk Environmental Consultant Ltd. Data featured in this map has been derived from a variety of digital sources and, as such, FEC does not warrant the accuracy, completeness, or reliability of this map or its data for any other purpose. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: EA_Figures_20250304.aprx, Published to pdf on 2026-07-30 12:40 PM by AndrewBrazeau

6.12.2 Existing Conditions

This section describes the methods that established the existing conditions of the Community: Infrastructure, Services, Health and Well-being VC and the description of the existing conditions.

6.12.2.1 Methods

6.12.2.2 Data Sources

To inform the baseline conditions for Community: Infrastructure, Services, Health and Well-being VC, the data for desktop analysis that was sourced from stakeholder interviews and feedback, federal and provincial agencies and government departments, the Town of St. Lawrence, and publicly available data included:

- Stakeholder interviews and consultation feedback;
- Town of St. Lawrence-supplied information;
- Statistics Canada 2021 Census Population;
- NL Community Accounts (Departments responsible for health, education, employment, social development, Centre for Health Information; and Canadian Census, employment, and revenue agencies);
- 2022 Labour Force statistics;
- 2024 Employment Insurance statistics;
- 2015-2016 Self-assessed health status statistics;
- 2025-2026 School enrolment statistics; and
- Sector data sources.

6.12.3 Data or Information Limitations

LSA data for St. Lawrence was derived primarily from NL Community Accounts and 2021 Census of the Population. RSA data for the Burin Peninsula derived from the 2021 Census and other sources provided insights for St. Lawrence, but in some cases was supressed to protect sensitive information. Some information was not available for recent years for some demographic conditions and indicators, but they have not changed sufficiently to affect the assessment.

6.12.3.1 Description of Existing Conditions

6.12.3.2 Roads and Traffic

The region is well established as a mining zone, with extensive historical mining activity and interconnected mine, town, and provincial roads. The community has a deep connection to the older mine roads for their own recreation and enjoyment, accessing scenic areas, and for tourism.

Provincial Highway 220 leads to St. Lawrence with several entrances into St. Lawrence streets and roads. There is vehicular traffic from residents, current mine employees and contractors and service providers, who are accessing services, homes, and retail operations. Employee use is typically at work shift times when the roads are not in use for regular community traffic, including school buses. Tourism generates additional visitor traffic in summer. The Ocean Choice International seafood plant also generates increased vehicular use from employees, service providers, and shippers during the typical seasonal six-month operation starting in March or April.

Most of the town roads are paved and in good condition, but require regular maintenance and repairs, particularly from weather-caused flooding and runoffs, and by storm surges that damage shoreside roads around the harbour. The Town has dedicated approximately $500,000 in its 2026 capital work budget to address road repairs damaged by bank erosion and water runoff.

The mine-related gravel roads are dusty when conditions are dry. Some of the historic roads are passable for light vehicles, and 4-wheel drive passenger trucks, but some are accessible only to pedestrians and ATVs.

The restricted access By-Pass Road, located about 2 kms west of the Town on Highway 220, is dedicated to mine traffic, especially for heavy equipment, and employees. It connects to Director Drive and continues to the operating mine site and handles most mine-related traffic.

Many roads are tied to historic mine areas for past producing underground mining including:

- Minworth Plant,
- Minworth Tailings,
- Director Open Pit and Underground mines,
- Hares Ears Main Vein,
- Iron Springs Underground Mine,
- Tarefare Underground Mine,
- Canal Vein,
- Lord and Lady Gulch Vein, and
- Little Salt Cove Vein.

The network of Historic Roads surrounds the AGS Mine, with some leading to the Project site. These include:

- Red Head Road, leading prime coastal viewing,
- Shoal Cove Road,
- Iron Springs Road, leading to Cape Chapeau Rouge trail,
- Clarke's Pond Road, and
- Director Drive, off which runs an ATV trail/road connecting to Iron Springs Road.

CFI Areas and Private Mine Roads include:

- CFI Mine Bypass Road,
- Blue Beach Haul Road,
- Blue Beach Marine Terminal Access area, and
- AGS Road, a historic road now limited for CFI use.

Residents and visitors use the interconnected network of roads that are within a 15 km radius around the mine and the Town of St. Lawrence.

Director Drive starts in St. Lawrence off Water Street (which runs along the harbour front), passes along several homes and private properties. It intersects with the two entrances to Salt Cove Brook (crescent) where there are private homes, and a homesteading operation with vegetable gardens and chickens. Director Drive continues past a small business operation to the By-Pass Road to continue to the mine.

Iron Springs Road leads on from Pollux Crescent and Lamberts Lane off Water Street, past several homes and private properties to intersect with Clarkes Pond Road and the Blue Beach haul road to the marine terminal. It passes through the proposed Project site, and along the Iron Springs Campground, leading to the pedestrian bridge for the walking trail to Chamber Cove.

Other roads in the network lead to Shoal Cove Pond and other recreational sites. There are rough roads with older infrastructure, some that cross streams and rivers – a culvert area near Blakes Pond (Brook), Memorial Bridge with access to the Chamber Cove site, and Shoal Cove Beach access.

Unpaved roads produce dust from vehicles and ATVs, in dry seasons and when traffic is heavier. The Town is responsible for some of the road infrastructure, in support the Historic Advisory Committee's promotion and development of historic trails and site attractions. Former CFI operators provided heavy equipment and crushed materials to help with maintenance and improved road areas close to residents along Director Drive, Iron Springs Road, and for some trail access roads.

6.12.3.3 Water and Sewer Services

The Town of St. Lawrence dedicates portions of its budget to annual capital works. A chlorination building and intake system was completed by the end of 2025, and there were upgrades on Pike's Drive. Work that started on Notre Dame Street in 2024, and continued through 2025, will remain a priority in 2026. Work on Water Street West Phase 1 water and sewer upgrades in 2025 will continue in 2026.

Maintaining water and sewer systems that are old and were damaged in increasing climate change conditions require extensive budgeting and capital work projects to serve the Town's commercial, industrial, and public buildings and facilities, and approximately 460 residences.

6.12.3.4 Waste Management

St. Lawrence's waste collection and waste management programs are delivered and managed by the Eastern Regional Service Board. The focus is on optimizing waste reduction, recycling, and proper disposal to meet provincial environmental standards. The Burin Peninsula Regional Waste Management facility is located north of St. Lawrence and Marystown on Route 210, the main Burin Highway.

The Town organizes annual residential clean-up weeks to encourage electronics disposal and recycling, as well as bulk waste collections. Residents seek additional recycling programs which the Town is working to develop with Burin Peninsula Waste Management. Former and current CFI operators supported community-driven recycling, often to generate funds for groups.

Industrial operators, including the seafood processing facility and the CFI mine, are responsible for disposing hazardous water and liquid wastes through contractual services, and following regulated waste management protocols with the Regional Waste Management facility, and other services within the Eastern Regional Service Board. CFI has its own waste management plan and does not use the Town's waste management disposal system.

6.12.3.5 Emergency Services

The Town of St. Lawrence Fire Department provides emergency services to the town and is available to support the mine and other operations in the town. The town is served by the RCMP, a regional ambulance service, the US Memorial Hospital in St. Lawrence, the Burin Peninsula Health Centre, the Grand Bank Health Centre, Health and Community Services, and the Burin Peninsula Voice Against Violence.

CFI will have its own mine rescue team, to enhance its emergency plans. CFI operators have in the past supported town emergency programs. The company had provided support for training, equipment, certifications. In local emergencies, former operators released employees who were fire department volunteers.

In major emergencies, fire departments and other service providers and volunteers from nearby communities join with local teams, and vice versa.

6.12.3.6 Housing

Housing is a challenge for the Town of St. Lawrence, with few properties available for sale or rent. CFI is reviewing options with the Town for temporary accommodation solutions.

The average assessed residential value determined for property taxes in St. Lawrence for 2022 was $64,000. (Government of Newfoundland and Labrador 2026a). The assessed value does not necessarily represent the market appraisal value. While there are houses for sale in St. Lawrence, they appear to be on the market for longer times, believed to be tied to buyer confidence in the local economy.

There is a shortage of homes available for rent in St. Lawrence for use by workers in health care, the seasonal seafood processing and now construction and operations at CFI. The monthly rental cost of available houses in town has increased with demand and ranges from $2,300 to as high as $3,000 for substantial homes. (Pittman 2026). Several private operators have multiple houses for rent.

Tourism accommodations are limited. Several Airbnb properties have been taken off the market and used as rentals. (Pittman 2026). The Ocean View Motel has sixteen rooms, including several well-appointed executive suites. The property is frequently booked for mine employees and management, especially in the shoulder tourism season. Nearby communities with accommodations capture overflow in the region, for tourism, sporting events, and other demand.

Ocean Choice International has a large seasonal and temporary foreign workforce for its seafood processing plant in St. Lawrence and provides several houses to sustain their workforce. Many of the seasonal workers stay in St. Lawrence throughout the year. Local seafood workers, who tend to be older, have their own homes in St. Lawrence and nearby communities. (Pittman 2026).

The Town is addressing the demand for low-income housing with its Future Senior's Housing Development that is designated for people with less than $42,000 annual income. The first of three phases, each with five units constructed at a time, is completed. (Pittman 2025).

The average monthly shelter costs for owned dwellings in 2021 was $680. Shelter costs for owner households include, where applicable, mortgage payments, property taxes, and condominium fees, along with the costs of electricity, heat, water, and other municipal services. (Government of Newfoundland and Labrador 2026a).

For the province, the average monthly shelter costs for owned dwellings in 2021 was $1,014. The average monthly shelter costs paid by those who rented in 2021 was $660. Provincially, the average monthly shelter costs paid by those who rented in 2021 was $903.

Few new homes have been built since 2021. The Census that year indicated there were 455 dwellings in St. Lawrence, compared to 475 in 2016. In 2021, 84.4% of homes in St. Lawrence were owned rather than rented. This reflected higher home ownership compared to 75.9% for the province and 66.5% for Canada.

House construction as reported in 2021 suggests an older housing stock:

- 230 dwellings were constructed before 1960,
- 160 dwellings were constructed between 1961 and 1980,
- 35 dwellings were constructed between 1981 and 1990,
- 20 dwellings were constructed between 1991 and 2000,
- 10 dwellings were constructed between 2001 and 2005,
- 15 dwellings were constructed between 2011 and 2015, and
- 10 dwellings were constructed between 2016 and 2021.
- (Government of Newfoundland and Labrador 2026a).

6.12.3.7 Health Care Facilities and Services

St. Lawrence's primary medical facility is the U.S. Memorial Health Centre, a 40-bed facility located at 1 Memorial Drive. It was built in 1954 by the American Government as a gift to the people of St. Lawrence and Lawn for rescuing 183 crewmen from the USS Pollux and USS Truxtun in February 1942. Mount Margaret Manor, a retirement assisted living nursing home, is located nearby.

The U.S. Memorial Health Centre is intended to offer 24/7 urgent care, long-term care, and laboratory services. It is also designated to provide ambulatory care clinics, including nurse practitioner services, often operating on a 12-hour or virtual bases.

Same-day appointments are limited to being available via phone or walk-in on a first-come, first-served basis. Urgent care when available is open to patients with or without a family health care provider and offers access to same-day urgent heath care services. It is positioned as an alternative to visiting an emergency department for non-emergency issues. Medical emergency services are supported with ambulances. Patients with a serious or urgent medical problem are encouraged to go to the nearest open emergency department in Grand Bank or Burin. Other services include the NL HealthLine with its nurse practitioner virtual care services, and availability for appointments (Eastern Health 2026).

There are serious challenges with recruiting and retaining medical personnel to provide the intended services – a situation familiar to most rural areas in the province. In the last

three years, there have been frequent reductions in the number of days and hours available for urgent care services.

Residents of St. Lawrence are concerned about reduced services, and with the Town Council, are regularly advocating for the return of more health care employees, and services, including for mental health support. Three nurses were hired to work at the U.S. Memorial Health Centre starting in the spring of 2026 – however there are challenges in finding suitable affordable housing for them and their families. (Pittman 2025)

6.12.3.8 Community Heritage

The effects of mining in St. Lawrence in relation to health and population are deeply relevant to residents of St. Lawrence and adjoining communities. For many decades mining dust and underground conditions led to silicosis and radon-induced cancers. Along with accidents and other diseases, mine conditions contributed to the deaths of close to 300 men, many who were young fathers, leaving many large families without support. With persistent pressure from the people of St. Lawrence to investigate mine health impacts and to protect workers and their families, a 1969 Royal Commission documented industrial diseases in the area and recommended long-awaited safety programs and compensation (Rennie 2019).

That memory still runs deep and explains the public's sensitivity to mine-generated conditions that could impact health.

Meanwhile, since the late 1970s, the legacy of older mined deposits, and associated networks of trails and mine roads are focal points for commemorating and remembering the people of St. Lawrence and Lawn, their labour, and their heroic efforts. Volunteers and funders and supporters continue work to mark significant sites and events to remember the valour and sacrifices of the community, and to create positive opportunities for recreation and a tourism economy (Loder 2025).

The strong community attachment to land within and around the mine lease areas remains steadfast throughout several efforts to re-open and operate the mine. That strong attachment continues, as the new owners plan to reinvigorate the fluorspar opportunity, and demonstrate there is longevity and opportunities for prosperity.

6.12.3.9 Demographics

The demographics of St. Lawrence are characterized by an aging population and declining numbers of youth. That trend is seen in most other communities on the Burin Peninsula and throughout the province and includes increasing out-migration. There is natural population decline in St. Lawrence and throughout rural Newfoundland and Labrador with the number of deaths exceeding births. In 2022 there were five births in St. Lawrence, and 30 deaths.

The population of St. Lawrence is somewhat stagnant. It is estimated by officials of the Town of St. Lawrence that close to 1,100 people currently live in St. Lawrence in 2026.

Table 6.12-1: Population Change

Community Area	Population		Change	
	2021	2016	#	%
LSA – St. Lawrence	1,055	1,190	135	11.3
RSA – Burin Peninsula	19,385	20,387	1,002	4.9
NL	510,550	519,715	9,165	1.8

From: nl.communityaccounts.ca St. Lawrence Profiles

The aging population of St. Lawrence is reflected in the steady increase in the median for the past quarter century. Since 2001, when the median age in St. Lawrence was 38 years, it increased to 43 years in 2006, 47 in 2011, and to 50.7 in 2016. It was 54 in 2021. While it is higher in St. Lawrence, this reflects the provincial trend. The 2021 median age in Newfoundland and Labrador was 48. It went from 44 in the 2011 census to 46 in 2016.

The 2021 census confirmed aging trend in St. Lawrence when 11.7% of the population were aged 14 and younger, (fewer than 13.4% in 2016), 57.8 % were aged 15–64 (down from 64.3% in 2016), and 30% aged 65 and over (up from^{2}2.7%). Close to 3.6% of the population was over the age of 85 in 2021 (only 2% in 2016). (Government of Newfoundland and Labrador 2026a).

Town officials are encouraged by some signs of population changes. Three new nurses and their families mean additional children in the school. Seasonal employment with the Ocean Choice seafood processing plant in St. Lawrence employs 60-80 people. About 40 employees, some with young families, live in St. Lawrence, and their children attend St. Lawrence Academy (Loder 2025, Pittman 2026)

6.12.3.10 Education

The 2021 Census reported that 19.8% of people 15 years of age and older in St. Lawrence did not have a high school diploma compared to 20.4% in the province. About 80.2% of people in St. Lawrence aged 15 and older have at least a High School Diploma compared to 79.6% in the province. About 7.3% of the same age group have a bachelor's degree or higher, compared to 16.6 % in the province. (Government of Newfoundland and Labrador 2026a).

School age children reflect changing demographics. In the current 2025/2026 school year there are 115 students enrolled in St. Lawrence Academy in all grades from kindergarten to level four. Six years ago, in 2019, there were 186. Thirty-seven years ago in 1989, there were 550 students. (Government of Newfoundland and Labrador 2026a).

6.12.3.11 Health Conditions

Health and well-being conditions in the community include physical and mental factors that are tied to social determinants of health including lifestyle and heritage, prevalence of diseases, social environment, income, education, and demographics. Disruptions in community health and well-being could be adverse effects of the Project, with increased activity from construction and operation, and additional workers in the community. CFI is reviewing options for mine-based medical support and services.

Effects described and assessed in this section include well-being indicators, hospital stays, social environment, income, and demographics.

Other health and well-being effects are described and assessed in other VC's, include Air Quality in Section 6.2, Noise and Vibration in Section 6.3, Groundwater Quality and Quantity in Section 6.4, Surface Water Quality and Quantity in Section 6.5, Fish and Fish Habitat in Section 6.6, Wetlands and Vegetation, in Section 6.7, Avifauna in 6.8, Bats in Section 6.9, Other Wildlife in Section 6.10, Economy Section 6.11, and Historic Resources in Section 6.13.

A major indicator of well-being is how people rate their own health status. In 2015-2016, 62% of individuals on the Burin Peninsula rated their health as excellent or very good. That might have changed as the population aged in the past ten years.

In St. Lawrence the highest percentage (15%) of hospital stays during 2020-2021 was due to diseases of the digestive system, for an average of five days. Across the province, diseases of the circulator system accounted for the highest percentage at 14%. Reasons why people from St. Lawrence were in hospital included cancers (10.5%), injury and poisoning (6.2%), diseases of genitourinary system (8.2%), diseases of respiratory system (6.2%), diseases of circulatory system (10.2%) and diseases of digestive system (15%). (Government of Newfoundland and Labrador 2026a).

6.12.3.12 Recreation

Outdoor enjoyment and sport are very important to the people of St. Lawrence and are deeply tied to its history, culture, and social life. They are important to the healthy lifestyle focus of the community.

St. Lawrence is renowned as the Soccer Capital of Canada. For more than a century the sport was played in St. Lawrence and nearby communities. Many players were mine workers and their families. The Laurentians hold the record for the most Provincial Challenge Cup wins, and many National Challenge Cup medals. They were named the provincial team of the decade in the 1970s, 1990s, and 2000s. The Centennial Soccer Field is in the Canadian Register of Historic Places, and along with the Memorial Field, both offer space for soccer matches for players, including those in the St. Lawrence Minor Soccer Association and St. Lawrence Soccer Association for older players. Teams continue to compete provincially. Players on many teams in urban areas trace their skills to generations of St. Lawrence Laurentians.

The Town has many sports facilities and community properties for gatherings, a testament to the community's dedication to sport and recreation over the past fifty years. Some require modernization and investment to meet provincial and national standards for sporting competitions and programs. The curling club is closed for now, and the softball field needs upgrades and repairs.

The St. Lawrence Recreation Centre is a multi-use sports and gathering place in the town, next to the Centennial Field. An older facility, the Centre requires regular inspections and maintenance for safety and lacks suitable internet and Wi-Fi connectivity. A $2.5 million plan is awaiting funding to complete major structural upgrades, install sound systems, better internet, and sport equipment, such as new basketball nets and backboards to allow for more youth and community programming, and to serve as a multi-use centre for

events. The Centre is the focal point for the Centennial field with its modern soccer pitch, and its contemporary Laurentian playground.

The St. Lawrence Swimming Pool is a seasonal heated outdoor pool, located close to the Recreation Centre, that generally opens in mid-July. Significant upgrades were made in 2024 and 2025, including a new liner. A lifeguard is available, and swimming lessons and private pool rentals are offered. There are free public swims on special occasions, with some sponsored by CFI and other supporters. There are other natural swimming areas – two swimming holes known as Salmon Hole and Hairy Hole, and the two local beaches at Shoal Cove and Salt Cove (Town of St. Lawrence 2026; Town of St. Lawrence: Pittman, Slaney, Bridger, Loder 2025-2026).

Residents and their returning families, and visitors, enjoy hiking, walking, driving, and using ATVs on the older mine roads and trails network, and to access to beaches, rivers and ponds, and attractions throughout the community and surrounding country. Several trails, most of which follow old mine roads and networks, are known as regional and provincial destinations. They lead to popular beaches and vistas at Shoal Cove, Salt Cove, and Chamber Cove. Historic mine roads include Red Head Road, Shoal Cove Road, Iron Springs Road, Clarke's Pond Road, Director Drive and Iron Springs Road. The new road to Blue Beach Marine Terminal Drive interconnects the road system and is named for former Blue Beach deposit mined in the 1930s.

The Chamber Cove Trail system has over 5 kms of walking and hiking trails that connect seascape and coastline views with sites that have deep meaning for the people of St. Lawrence and nearby communities. The Trails of Valour series of walking and hiking trails connect the Chamber Cove Heritage Walk, the Bergeron Trail, and the Lionel Saint Trail, which focus on memorials to the local people who rescued 186 servicemen from the convoy of American Naval Ships, USS Truxtun DD229, USS Pollux AKS2, and USS Wilkes DD 441 that ran aground in February 18,1942. The Cape Chapeau Rouge Trail provides a 5.5 km route to the highest point on the Burin Peninsula, known to be used by 16th century Basque fishermen (Town of St. Lawrence 2026).

While most of the roads lie within mine lease areas, the people of the community are connected and continue to use the system. The Town of St. Lawrence's Historic Advisory Committee and its predecessors developed and maintain a substantial tourism attraction and brand tied to the mining history, local recreation, and the Chamber Cove memorial site. (Loder 2025).

These contribute to many aspects of community health and well-being – mental health, community pride, and satisfaction with local lifestyle, in all seasons, for all ages, including youth. The provincial government is focusing health programming on social determinants of health to improve long-term health outcomes. There is a strong emphasis on rebalancing community-based care and encouraging active lifestyles, including with initiatives like "Active for Life". Many social- and health-focused funding programs have leveraged and supported community and sport programs and development of the trail system (Government of Newfoundland and Labrador 2026b). The St. Lawrence Trail System has the potential to align with provincial systems such as the East Coast Trail near St. John's and Gros Morne National Park in western Newfoundland that provide

opportunities for hiking and nature-based activities that support overall health, and local economies.

6.12.3.13 Social Groups and Community Organizations

St. Lawrence has a very strong volunteer community, with several service clubs and community organizations for all ages (Bridger 2026):

- The Town supports age-friendly installations and programs throughout town, including a waterside gazebo near the Recreation Centre, and maintains portions of the historic trail system and community infrastructure to support the many organizations.
- The 50+Club offers regular events and makes space available in its Golden Age building and outdoor spaces with raised garden beds, green spaces, and a gazebo. Their building is available for the local sewing group and other private and community gatherings.
- Community Youth Network in St. Lawrence is aligned with a government-supported network throughout the province, offering programs and supports to promote youth resiliency with a particular focus on those who may face challenges in transitioning to adulthood youth. They offer support, skill-building, to enhance strengths, foster self-confidence, and future choice pathways. CYN uses the Recreation Centre and the school for its programs.
- Other youth-focused programs include Burin Peninsula Brighter Futures, school-run programs including volleyball, basketball, indoor soccer, ball hockey, and student-led council and more.
- 269 Royal Canadian Sea Cadet Corps Endeavour Cadet Corp offer youth training in marksmanship, biathlons, and outdoor orientation activities.
- The Lion’s Club was revived and is working to be reinstated as a full club and will return to having regular meetings and community programs, such as organizing the annual Santa Parade.
- The ATV Association of the region organizes rides throughout the Burin Peninsula for back country ATV use and cooperates with the Town to use the historic mine roads and travel safety through the community, in keeping to the provincial ATV regulations.
- The St. Lawrence Minor Soccer Association and the St. Lawrence Soccer Association for the Laurentians manage soccer registration, team rosters, schedules, and competitions, and regularly attract players from communities beyond St. Lawrence. Challenge Soccer Cup NL events are frequently hosted in St. Lawrence, drawing spectators and supporters to the community.
- Ther are several committees dedicated to their causes – the Anglican Church Women's League, Public Library Board committee, Stella Maris Hall Corporation, St. Lawrence Day Committee which organizes Come Home Years at significant times.
- Historic Advisory Committee volunteers are supported in part by the Town and are very active with historic trails management and development, tourism promotion, and operating the Miner’s Museum and its cafe, The Lunch Tin. The Museum, in partnership with 3LTraining and Employment features Island Rock Jewellery & Crafts providing employment to people with intellectual disabilities to help produce

hand-carved polished jewelry and items from vibrant coloured pieces of local fluorspar.
- The St. Lawrence Fire Department includes twenty-four people from St. Lawrence most of whom are volunteers.

6.12.4 Effects Assessment

The effects assessment was conducted according to the approach outlined in Section 5 of this EARD.

A step-wise process was used to assess the potential environmental effects of the Project in a systematic and transparent manner, as following:

- Identification of Project-VC interactions and potential effects;
- Selection of mitigation measures;
- Identification and characterization of residual effects; and
- Follow-up commitments and monitoring programs.

6.12.4.1 Identification of Project-VC Interactions and Potential Effects

The effects assessment considered the potential interactions between the Project components and activities and the VCs within the identified spatial boundaries and phases of the Project (i.e., Construction, Operation, and Closure). Table 6.12-2 identifies all Project-VC interactions and briefly identifies the nature of the potential effect that may result from the identified interaction.

Potential Project-related effects on VCs will be determined by comparing baseline conditions to those expected to result from the Construction, Operation, and Closure phases of the Project. Potential effects will be described for each VC, including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another valued component).

Table 6.12-2: Project- Interactions Community: Infrastructure, Services, Health, and Well-being VC

Project Component	Project Activities	Potential Effect	Effect Pathway
Construction			
Construction of Community Access and Haul Roads	• Strip, clear, install bridges and culverts, fill, gravel, and grade, • Execution of as-needed improvements to existing access roads to coastal recreation areas to enable light vehicle use. • Upgrades to Memorial Bridge and Blake's Brook Bridge.	• Change in community well-being. • Increased workforce population from CFI employees, and contractors	• The Project will have a direct temporary effect on access to roads, trails, recreational areas and activities, attractions and campground for residents, visitors, and campers. • The Project will have temporary direct effects of noise, air quality, and delays. • The Project will have temporary direct effects on safety and convenience. • The Project demand for housing will have a direct effect on the availability and cost of commercial accommodations for visitors, and on local housing and temporary accommodations for current and new residents in public sector and other industrial sectors e.g. health care, seafood processing, spaceport development. • The Project may have an indirect temporary effect on availability of local urgent and primary health care center facilities and services, and availability of emergency fire and ambulatory services for residents and employers and operators.
Main Haul Road	• Widening of existing haul road to accommodate new Project-related haul trucks. • Sections of Blue Beach Haul Road will be regraded, and berms will be built up to support larger equipment traffic. • Strip, clear, fill.		
Pit Haul Roads	• Strip, fill, gravel, and grade.		

Project Component	Project Activities	Potential Effect	Effect Pathway
Power Infrastructure upgrades	• Reroute transmission line along Blue Beach haul road, lift lines to allow Cat 777s access to Project area. • Reroute transmission line along Iron Springs Road to northwestern edge of the South Ridge Pit and create a spur line along the northern side of the pit to support dewatering wells. • The transmission line that currently follows Iron Springs Road will be re-routed around the northwestern edge of the South Ridge Pit, and a spur line will be created along the northern side of the pit to support dewatering wells.		• The Project may have an indirect effect on opportunities for shared and additional resources for health care and emergency services.
Pit Dewatering	• Dewatering wells or horizontal depressurization drilling will be installed/ used along the northern margin of the South Ridge open pit to maintain dewatered slopes and enhance stability.		
Pit Stripping	• Stripping of topsoil, overburden, and installation of access routes to upper bench areas.		

Project Component	Project Activities	Potential Effect	Effect Pathway
Access to Upper Benches	• Constructing berms in advance of blasting. • Creation of temporary access ramps used to mobilize equipment into the upper benches of the pit for drilling, blasting, loading, and hauling.		
Stockpile Area Development	• Stripping, clearing, and preparing stockpile areas for topsoil, overburden, and waste rock.		
Operations			
Open Pit Mining	• Material will be excavated from the South Ridge Pit and hauled to the appropriate stockpiles adjacent to the pit. • Blasting frequency will average 12 blasts per month, with approximately 96 loaded holes per blast, once production ramps up. Peak production will require approximately 16 blasts in a month. • Electronic detonation methods will be used to mitigate environmental effects of blasting.	• Change in community well-being. • Increased workforce population from CFI employees, and contractors	• The Project will have direct effects of noise, air quality, and delays. • The Project demand for housing will have a direct effect on the availability and cost of commercial accommodations for visitors, and on local housing and temporary accommodations for current and new residents in public sector and other industrial sectors e.g. health care, seafood processing, spaceport development. • The Project may have an indirect temporary effect on availability of local urgent and primary health care center facilities and services, and availability of emergency fire and ambulatory services for residents and employers and operators. • The Project may have an indirect effect on opportunities for shared and additional resources for health care and emergency services. • Improved access to attractions and recreation – historic roads, memorials, beaches, and rivers. • (Positive Effect) There may be improved activities and opportunities for shared and additional resources for health care and emergency services,
Water Management	• Non-contact water will be diverted away from work areas using a containment ditch. Contact water will be collected in the sediment pond and monitored.		

Project Component	Project Activities	Potential Effect	Effect Pathway
Hauling	• Ore will be transported to the existing AGS mill for processing: peak operations will include 532 hours hauled with a single truck at a production rate of 65,286 tons per month or 122.7 t/hr Processed concentrate will be hauled to the BBMT (existing) via the Blue Beach Haul Road (existing) for export 2 days per month.		and community programming e.g. cooperative trail development and road maintenance.
Stockpiling	• Waste rock will be deposited in stockpile areas, then crushed and sold as aggregate		
Aggregate Crushing	• Waste rock will be processed into saleable aggregate and transported to BBMT for shipment. • Aggregate crushing is expected to commence 6 months after mining operations. • Aggregate removal is expected to continue for 24 months following the completion of mining operations including progressive rehabilitation.		

Project Component	Project Activities	Potential Effect	Effect Pathway
Closure			
Roads	• Haul roads will be decommissioned by covering them with overburden and topsoil, and re-seeding for vegetation regrowth. • Recreation access roads will remain in place and open for continued public use following site closure and post-closure.	• Improved road and trail experiences for users – local and visiting pedestrians, and ATV and light vehicle drivers.	• Increased distance, and time. • Improved driving experience – safer, smoother road surface, wider. • Improved access to attractions and recreation – historic roads, memorials, beaches, and rivers.
Waste Rock Stockpiles	• The majority of closure can be performed immediately, with complete closure to occur within 2 years of complete removal of waste rock for export. • Closure to be completed up to 2 years following the completion of saleable aggregate transport. • Once depleted, the waste rock stockpile areas will be capped with overburden, topsoil and seeded to establish vegetation cover.	• Change in community well-being. • Increased workforce population from CFI employees, and contractors.	• The Project will have direct effects of noise, air quality, and delays. • The Project will have a direct effect on safety and convenience. • The Project demand for housing may have an indirect effect on settling housing demand, with possible improvement in availability and cost of commercial accommodations for visitors, and on local housing and temporary accommodations for current and new residents in public sector and other industrial sectors e.g. health care, seafood processing, spaceport development. • Project-related demand may settle, adjust, or improve to ongoing operational demand for local

Project Component	Project Activities	Potential Effect	Effect Pathway
Overburden and Topsoil Stockpiles	• Overburden and topsoil material to be used for conventional reclamation activities associated with the South Ridge Pit access road and waste rock stockpiles. • Following closure of South Ridge, surplus material will be reserved to support future reclamation of the AGS Mine.		urgent and primary health care center facilities and services, and for emergency fire and ambulatory services for residents and employers and operators. • (Positive Effect) There may be improved activities and opportunities for shared and additional resources for health care and emergency services, and community programming e.g. cooperative trail development and road maintenance.
South Ridge Pit	• South Ridge Pit will be flooded in closure, pending additional underground development timelines. Safety berms and signage will be installed around the perimeter. • Flooded pit to effectively become South Ridge Pond until such time that CFI decided to pursue underground development (at which point it may be drained and converted into an underground access portal).		

Project Component	Project Activities	Potential Effect	Effect Pathway
Monitoring and Maintenance	• Post-closure monitoring activities will be conducted to determine the effectiveness of decommissioning. Post-closure monitoring activities will include chemical stability monitoring, biological monitoring, and physical stability monitoring. • Implementation of follow-up measures, maintenance, and repairs as required. • Access roads will be maintained to facilitate post-closure monitoring.		

* *Includes general maintenance (e.g., grading, erosion control, quarrying, borrow pits), seasonal maintenance (e.g., snow clearing, bridge and culvert maintenance), and special maintenance (e.g., slope failures, road settlements, break-up).*

6.12.5 Effects Management

Potential effects of the Project will be managed through existing Project mitigation and management programs, Project design, and additional recommended mitigation measures.

The potential effects identified and summarized in Table 6.12-2 above were used to inform the design and implementation of Project mitigation measures. The identified mitigation measures for the identified effects are outlined in more detail in the following sections including a discussion of the effectiveness and confidence related to the success of the mitigation in avoiding, minimizing, or restoring the VC to avoid residual effects. This approach reflects a precautionary approach to the EA and provides additional confidence and opportunity to ensure the EA predictions are accurate and proposed mitigations are effective.

6.12.5.1 Change in Community Well-being

The Project will have a direct temporary inconvenient effect on resident, visitor, and camper access to historic roads, trails, recreational areas and activities, attractions and to camping areas in the Iron Springs campground and along the Shoal Cove Beach Road. The Project will have temporary direct effects on safety and convenience. The Project will lead to improved driver experiences.

There will be minimal new road construction, and upgrades to existing roads and infrastructure.

- Diversion from Iron Springs Route to Director Drive Route, with singular span modular bridge replacement will increase distance from 3.6 kms to 5.1 kms and add approximately 2.5 minutes' drive time.
- Options for Blakes Brook Bridge Access.
- Access Road to Shoal Cove Beach with diversion from Iron Springs Road to Director Drive route will add 5 minutes drive time and increase the distance from 3.9 kms to 7.1 kms.
- Other road construction and infrastructure changes are on CFI's private property and will require public notification for safety and traffic at intersections along Blue Beach Road.

Mitigations to reduce temporary inconvenience and disruption, protect public safety during construction, and ensure long term enjoyment of local recreational activities and attractions:

- CFI will participate in a Community Liaison Committee.
- Plan to ensure designs and project schedules are staggered and managed to ensure there will always be some access throughout the network of the main roads, especially Iron Spring Road.
- Communications to provide regular information (maps, photos, description of activities) and updates to users and the public (Town Council, households, public notices etc.) to plan their activities and adjustment during the period when road routes are changed and improved culverts and bridges are installed.

- Engagement and consultation with the Town of St. Lawrence, the Historic Advisory Committee, and Iron Springs Campground users to provide information and invite feedback (including site visits and inspections) on designs, timing, and sequence of road construction activity.
- Provision of safe ways to travel past, or through road construction areas by managing traffic and guiding access during the installation of culverts and bridges, and road widening and grading e.g. emergency and temporary diversion alongside, opening access if necessary.
- Assist, if necessary, with moving equipment, materials, and vehicles.
- Providing signage, safety lighting, and alerts at construction sites.
- Providing emergency contact information to 24/7 mine security team, and local emergency responders; and contact information for community liaison employees for general information.
- Monitor community opinions, experiences and satisfaction with revised routes, and Project operations through regular feedback invitations, surveys, and information sessions.
- Design and install Project infrastructure to protect community enjoyment and well-being and avoid negative visual and audible impacts.
- Communicate community investments and benefits:
  - Protecting Existing Jobs: South Ridge extends the life of AGS Mine operations, securing current employment (over 100 employees). Offers mining careers that support families and keep young people in the community.
  - New Jobs and Opportunities: Additional positions during construction plus 35 new jobs in Operation phase, and Closure phase. St. Lawrence residents and Newfoundland and Labrador workers come first.
  - Supply Chain Opportunities: Fuel, equipment, maintenance, catering, transportation, local procurement, and professional services.
  - Economic Ripple Effect: Mining wages get spent in local stores, supporting everyone.
  - Community Partnerships: CFI commitment to building long-term relationships with local business and contributing to local initiatives, programs, and infrastructure.
  - Building on Local Heritage: Commitment to sustaining the community's proud legacy.
  - Provincial Leadership: Supporting NL's vision as a critical minerals leader in Canada.

The Project will have temporary direct effects of noise and air quality. Mitigations are described in the relevant sections.

6.12.5.2 Increased Workforce Population

The increased workforce population from employees during Construction and Operation may have effects on housing, availability of health care and emergency service, as well as provide opportunities for shared and additional resources.

The Project demand for housing will have a direct effect on the current availability and cost of commercial accommodations for visitors, and on local housing and temporary accommodations for current and new residents in public sector and other industrial sectors e.g. health care, seafood processing, spaceport development.

The Project may have an indirect temporary effect on availability of local urgent and primary health care center facilities and services, and the availability of emergency fire and ambulatory services for residents and employers and operators. This could result from injuries, accidents, and illnesses among the CFI employees and contractors' workers, and their families.

The Project may have an indirect positive effect on opportunities for shared and additional resources for health care and emergency services between the company and community organizations.

Mitigations to reduce the impact on housing include:

- CFI will participate in a Community Liaison Committee.
- Hiring qualified local workers who are established in the community with their own housing or accommodations. Work with educational institutions and trades organizations to develop and increase availability of local workforce with appropriate training and skills.
- Ensure rentals and occupancy of commercial establishments do not interfere with other businesses, and essential public service employees.
- Installing temporary accommodations with construction camp facilities and on-site services during the construction period. Encourage employees to find appropriate accommodations during Operations.
- Consider constructing CFI accommodations, financed wholly or in cooperation with local developers; considering opportunities for future release for other community uses and industries, as workforce is absorbed into the community with their own housing investments and purchases.
- Develop an inventory of available properties outside of St. Lawrence if local properties are required for more urgent community services e.g. health care workers.
- Consult with Town of St. Lawrence on monitoring and managing potential negative impacts e.g. drastic increased pricing and rental costs.

Mitigations to prevent any indirect temporary effect that may occur on health care and emergency response facilities and services:

- Focus on worker health and safety programs to prevent or reduce use of local health and social services. Ensure contractor compliance with workers' health and safety regulations.
- Develop a specialized emergency response plan in cooperation with the Town of St. Lawrence and community organizations, which includes employee training and on-site capacity for emergency response programs, equipment, facilities, and sustainability.
- At present, the Project does not maintain dedicated on-site health or emergency response resources beyond those required for normal operational safety. Should

additional site health or emergency response capabilities be developed in the future, CFI may explore opportunities to share information with the community and coordinate with local emergency services where appropriate.

6.12.5.3 Improved roads and trail experiences

The Project will have a direct positive long-term impact on resident, visitor, and camper access and experiences with the historic roads, trails, recreational areas and activities, attractions and camping areas. The Project will lead to improved driver experiences, even with the increased distance, and time to reach destinations. The roads will be safer, and with a smoother road surface. There will be improved access to attractions and recreation historic roads, memorials, beaches, and rivers.

Mitigations to ensure enhancement of potential positive effects include:

- CFI will participate in a Community Liaison Committee.
- Communications of the long-term improvement in road quality and access, and CFI's commitments to plan cooperative programming for regular maintenance, and potential programming to improve user recreational experiences.
- Focus on safety, manage speeding and off-trail damaging use near heritage areas.
- Provide comprehensive household, youth-focused and visitor-focused information (on social media, signage, community updates, security orientation, flyers, and safety orientation with local emergency responders about changes to the roads, routes, as well as details about safety procedures including security, fencing, berms, lighting, and restricted access, and emergency contacts.
- Increase communications and public information - direction, safety, and interpretive.
- CFI will cooperate with the Town of St. Lawrence and Historic Advisory Committee to support maintenance, programming, planning for improved economic potential, capital works, and promotion. CFI will cooperate to share and contribute expertise and equipment, road materials for maintenance and suppression, including defining and valuing its contribution to leverage funding support from government agencies.

6.12.5.4 Summary of Mitigation Measures

Table 6.12-3 summarizes all proposed mitigation measures and identifies whether after implementation a residual effect will remain, as well as identifies if a follow up program is recommended.

Table 6.12-3: Summary of Proposed Mitigation Measures

Potential Effect	Proposed Mitigation	Potential Residual Effect? (Y/N)
Construction		
Change in Community Well-being	• Community Liaison Committee • Communications and Engagement • Plans for traffic management and safe access	N
Increased Workforce	• Community Liaison Committee • Housing plan • Shared planning and resources for healthcare and emergency services, focus on health and safety • Local recruitment, training, retention • Communications and Engagement	N
Operations		
Change in Community Well-being	• Community Liaison Committee • Communications and Engagement • Plans for monitoring traffic management and safe access	N
Increased Workforce	• Community Liaison Committee • Housing plan • Shared planning and resources for healthcare and emergency services, focus on health and safety • Local recruitment, training, retention • Communications and Engagement	N
Improved roads and trail experiences	• Community monitoring • Community Liaison Committee • Support maintenance, programming, planning for improved economic potential, capital works, and promotion.	Y (Positive Effect)
Closure		
Change in Community Well-being	• Community Liaison Committee • Communications and Engagement	N
Increased Workforce	• Community Liaison Committee • Housing plan • Shared planning and resources for healthcare and emergency services, focus on health and safety • Local recruitment, training, retention • Communications and Engagement	N
Improved roads and trail experiences	• Community Liaison Committee • Support maintenance, programming, planning for improved economic potential, capital works, and promotion.	Y (Positive effect)

6.12.6 Identification and Characterization of Residual Effects

There are no predicted adverse residual effects of the Project, no residual effects characterization required. Positive residual effects of the Project are not characterized.

6.12.7 Identification of Cumulative Effects

As there are no adverse residual effects on Community VC related to the Project, there are no cumulative effects to be identified.

6.13 Historic Resources

The following subsections includes the assessment of the Historic Resources VC.

6.13.1 VC Scoping

Historic resources may include cultural/spiritual, paleontological, architectural, and/or archaeological resources. The Project includes ground disturbance as described in the Project Activities list that could affect potential historic resources. To ensure potential Project interactions that could impact heritage sites or cultural resources, historic resources must be identified to ensure assessment and mitigation measures are implemented. Historic resources are considered as a VC and they are legally protected under provincial legislation in NL, specifically the Historic Resources Act (RSNL1990 CHAPTER H-4). In 2014, Gerald Penney Associates Ltd. conducted the St. Lawrence Mine Historic Resources Impact Assessment (HRIA), Archaeological Investigation Permit #14.55.

6.13.2 Assessment Boundaries

The assessment boundaries for the VC were selected based on the appropriate extent at which the Project-related potential direct and indirect effects on the VC could occur. This section defines the boundaries selected for the VC assessment and rationale for the established boundary, as relevant to the VC.

6.13.2.1 Temporal Boundaries

The temporal boundaries for the Project effects assessment included:

- Construction: 6 months
- Operations: 18 months
- Closure: Approximately 24 months, to be determined through development of the reclamation and closure plan.

6.13.2.2 Spatial Boundaries

The spatial boundaries of the assessment are defined below and provided in Figure 6.13-1.

Local Study Area (LSA): The Project footprint of disturbance. This represents the area of Project-related soil disturbance.

Regional Study Area (RSA): Southern Burin Peninsula. The southern Burin Peninsula provides a regional context for the LSA.

CFI
CANADA FLUORSPAR INC.

SOUTH RIDGE MINE

FIGURE 6.13-1
LOCAL AND REGIONAL STUDY AREAS FOR HISTORIC RESOURCES

MARCH, 2026

LITTLE SAINT LAWRENCE
TOWN OF ST. LAWRENCE
NORTH WASTE ROCK FACILITY
OVERBURDEN STOCKPILE
AGS PITS
SOUTH WASTE ROCK FACILITY
TOPSOIL STOCKPILE
TAILINGS MANAGEMENT FACILITY
MILL
AGS PLANT SITE
ADMINISTRATION BUILDINGS
AGS SECURITY GATEHOUSE
BLAKE'S BROOK BRIDGE
BLUE BEACH HAUL ROAD
TOPSOIL STOCKPILE
OVERBURDEN STOCKPILE
WASTE STOCKPILE 2
WASTE PAD
WASTE STOCKPILE 1
SOUTH RIDGE PIT
BLUE BEACH MARINE TERMINAL
IRON SPRINGS CAMPSITE
MEMORIAL BRIDGE
Winter Pond
Mine Cove
Black Duck Pond
Long Pond
Hay Pook Pond
John Fitzgerald Pond
Upper Island Pond
Island Pond
Hayes Eats Pond
Shoal Cove Pond
Clarkes Pond
Great St. Lawrence Harbour
Blue Beach Cove
Shoal Cove
Chambers Cove
Salt Cove
0 1 2 3 Kilometers

PROJECT FOOTPRINT

- Surface Drainage Ditch
- Proposed Sedimentation Pond
- Blue Beach Marine Terminal
- Local Study Area
- Regional Study Area
- Proposed New Road
- Existing Road Upgrades
- Proposed Project Infrastructure

EXISTING MINE COMPONENTS

- Shared AGS Mine Infrastructure
- Existing AGS Mine Infrastructure

Scale: 1:30,000
when printed on 11 by 17 inch paper

FALKIRK

This map and associated spatial data were prepared by Falkirk Environmental Consultant Ltd. for the exclusive use of the client and are not intended for distribution or use by any third party without the express written consent of Falkirk Environmental Consultant Ltd. Data featured in this map has been derived from a variety of digital sources and, as such, YOC does not warrant the accuracy, completeness, or reliability of the map or its data for any other purpose. Spatial Reference: Name: NAD83(CSRS)v2 UTM Zone 21N File: EA_Figures_20250304.aprx, Published to .pdf on 2026-01-30 12:40 PM by AndréBrazeau

6.13.3 Existing Conditions

This section describes the methods that established the existing conditions of the Historic Sites and Archaeology VC and the description of the existing conditions.

6.13.3.1 Data Sources

Background information and data to inform the baseline conditions for the Historic Sites and Archaeology VC included the St. Lawrence Mine Historic Resources Impact Assessment (HRIA) conducted for the AGS mine and included the South Ridge area. This report is provided in Appendix 6.13-1.

6.13.3.2 Desktop Analysis

Historic and archaeological studies from the regional study area were compiled and analysed for local study area context.

6.13.3.3 Field Study

Field investigation occurred from 28-30 October 2014 and was conducted by Robert Cuff and Blair Temple of Gerald Penney Associates Ltd (GPA). A walkover survey was then conducted focussing on the ore bodies and infrastructure of the proposed mine. The field investigation included the South Ridge area.

6.13.4 Description of Existing Conditions

The field investigations included a larger area than is represented by the Projects LSA and did include the proposed Project footprint of disturbance at South Ridge. The walkover survey began along the hillsides to the south of the ore vein. From an overview assessment, significant historic resources were not anticipated in this area. The walkover provided an opportunity to visually assess the wider area, confirming the suspicions that the area was largely unsuitable for habitation and an unlikely location for an

During three days of field investigation, no historic resources were identified, other than evidence of previous mining and mineral exploration activity. One registered archaeological site (ship wreck) has been identified at Blue Beach outside of the LSA. No historic resources were identified in the LSA during the HRIA field program (GPA 2015).

Based on field level assessment, the Project area of disturbance was judged to have low archaeological potential due to there being no significant site advantage for habitation, and only one location (Shoal Cove Pond) seemed likely to have seen much use or transit from St. Lawrence prior to the opening of the first fluorspar mine in 1933. This area was found to already have been profoundly disturbed by previous mining of fluorspar.

6.13.5 Effects Assessment

The Project is largely located on a brownfield site. The HRIA for this Project, indicates there is low archaeological potential within the LSA. It is determined that the Project has no interaction with known historic or archaeological resources and low likelihood of interaction with unknown resources.

Mitigation measures will be incorporated to address the unexpected discovery of historic resources that could occur during the construction phase, especially during stripping,

excavation, and blasting, and construction activities. In the event of discovery of such resources, construction activities in the affected area will cease immediately and the discovery will be reported to the Provincial Archaeology Office. A mitigation strategy will be developed in collaboration with the NL Government.

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