

September 20, 2012

Department of Environment & Conservation  
Confederation Building  
P.O. Box 8700  
St. John's, Newfoundland  
A1B 4J6

**Attention: Honourable Terry French  
Minister of Environment & Conservation**

Dear Minister French,

**Reference: St. Lawrence Fluorspar Mine Reactivation Project – Environmental Protection Plan:  
Project Construction Phase**

**SNC-Lavalin Reference No 723081-4EPL-I-0003-01**

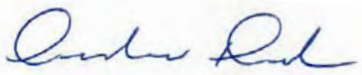
On behalf of our client, Newspar, SNC-Lavalin Inc. (SLI) is pleased to submit to your Department the final version of the *Environmental Protection Plan: Project Construction Phase* in Adobe Acrobat PDF format.

Submission of this report was required as a condition of environmental assessment release in October 2010 by the former Minister of Environment and Conservation, Honourable Charlene Johnson.

We trust this Plan meets with your Department's requirements. Should you or your staff have any questions or concerns, please do not hesitate to contact me at 368-0118.

Yours very truly

**SNC-LAVALIN INC.**

A handwritten signature in blue ink, appearing to read 'Andrew Peach', is positioned above the printed name.

Andrew Peach, P. Geo., EP  
Senior Environmental Scientist

cc P. Cooper/Newspar



SNC • LAVALIN

## ENVIRONMENTAL PROTECTION PLAN: PROJECT CONSTRUCTION PHASE

St. Lawrence Fluorspar Mine Reactivation Project

Newspaper



## MINING AND METALLURGY

20 | 09 | 2012

CONTRACT > ORIGINAL  
Internal ref. 723081-4EPL-I-0003-01

---

# **Environmental Protection Plan for Project Construction Phase**

## **St. Lawrence Fluorspar Mine Reactivation Project**

### **St. Lawrence, NL**

---

**Prepared for:**

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

**Prepared by:**

SNC-Lavalin Inc.  
1133 Topsail Road  
Mount Pearl, NL  
A1N 5G2

**Document No. 723081-4EPL-I-0003-01**

**Date:**  
**September 2012**

## DOCUMENT REVISION INDEX

INSTRUCTION TO PRINT CONTROL (Indicate X where applicable)

- ☒ Reissue all pages.
- ☐ Reissue revised pages only.

STAMP THE DOCUMENT AS FOLLOWS:

- ☐ Issued for information.
- ☐ Issued for review and comments
- ☐ Issued for approval
- ☒ Issued for final report

01	2012/09/20	All	Issued for Final Report	AP	RH	BP
00	2012/08/09	All	Issued for Final Report	RH, AP	AP	RH
PB	2012/03/31	All	Issued for Approval	MW	RH, RB	BP
PA	2011/06/15	All	Issued for Review and Comments	AH, JS	MW	MW
Rev.	Date yyyy/mm/dd	Page No.	Description	Prepared By	Reviewed By	Approved By

## TABLE OF CONTENTS

<b>1.0</b>	<b>PURPOSE.....</b>	<b>1</b>
<b>2.0</b>	<b>OBJECTIVE.....</b>	<b>1</b>
<b>3.0</b>	<b>SCOPE OF APPLICATION.....</b>	<b>2</b>
<b>4.0</b>	<b>DEGREE OF APPLICATION .....</b>	<b>2</b>
<b>5.0</b>	<b>RESPONSIBILITY.....</b>	<b>2</b>
<b>6.0</b>	<b>REFERENCE DOCUMENTS .....</b>	<b>3</b>
<b>7.0</b>	<b>DOCUMENT ORGANIZATION .....</b>	<b>6</b>
7.1	Description of EPP Sections .....	6
<b>8.0</b>	<b>DEVELOPMENT AND IMPLEMENTATION.....</b>	<b>7</b>
8.1	Mechanisms for Implementation .....	7
8.2	Annual Environmental Performance Review .....	8
8.3	Job Environmental Analysis (JEA) .....	8
8.4	Weekly Environmental Meetings.....	8
8.5	Toolbox Meetings.....	8
8.6	Employee Orientation .....	8
8.7	Environmental Monitoring .....	9
<b>9.0</b>	<b>GENERAL ENVIRONMENTAL PROTECTION PROCEDURES.....</b>	<b>9</b>
<b>10.0</b>	<b>AREA SPECIFIC ENVIRONMENTAL GUIDANCE .....</b>	<b>9</b>
10.1	Project Work Scope .....	9
10.1.1	Marine Terminal .....	10
10.1.2	Linear Developments (Roads, Pipelines, Transmission Lines).....	16
10.1.3	Tailings Management Facility (TMF).....	21
10.1.4	Mines and Mill Sites.....	26
10.1.5	Fisheries Compensation Works .....	32
<b>11.0</b>	<b>CONTINGENCY PLAN .....</b>	<b>37</b>
11.1	Fuel and Hazardous Material Spills.....	37
11.2	Wildlife Encounters .....	37
11.3	Forest Fires.....	38
11.4	Vessel Accidents.....	38

### List of Tables

Table 10-1:	Relevant Environmental Protection Procedures – Marine Terminal.....	14
Table 10-2:	Relevant Environmental Protection Procedures – Linear Developments.....	19
Table 10-3:	Relevant Environmental Protection Procedures – TMF .....	24
Table 10-4:	Relevant Environmental Protection Procedures – Mine and Mill Site Development.	31
Table 10-5:	Relevant Environmental Protection Procedures – Fisheries Compensation Works .	35

## List of Figures

Figure 10-1:	Facilities Site Location Plan .....	10
Figure 10-2:	Marine Terminal Site Location Plan.....	12
Figure 10-3:	Tailings Management Facility – Site Plan.....	22
Figure 10-4:	Proposed Mill Site Layout Plan .....	27
Figure 10-5:	Blue Beach North Proposed Site Layout Plan .....	28
Figure 10-6:	Tarefare Proposed Site Layout Plan .....	29

## List of Attachments

Attachment A	–	Contacts
Attachment B	–	Fisheries and Oceans Canada Operational Statements and Fact Sheets
Attachment C	–	Department of Environment and Conservation Newfoundland and Labrador Species at Risk Data Sheets
Attachment D	–	Environmental Protection Procedures
Attachment E	–	Newfoundland and Labrador Department of Environment and Conservation Water Resources Management Division - Environmental Guidelines

## 1.0 PURPOSE

Newspar, a partnership between Canada Fluorspar (NL) Inc., (CFI) and Arkema Spar NL Inc., is in the process of reopening the St. Lawrence Fluorspar mine site located on the Burin Peninsula, Newfoundland and Labrador (the Project). The objective of the Project is to upgrade and construct infrastructure for the mining, milling, and shipping of fluorspar and to bring back into production two underground mines. The underground mining of two previously exploited veins is planned for a period of about 20 years. Approximately 2.04 million tonnes of Acid Grade (AG) concentrate will be produced during the life span of the project. As part of the Project, CFI is also developing a marine terminal in Great St Lawrence Harbour.

The Project's environmental assessment identified potential negative effects related to routine activities associated with constructing, operating, and decommissioning the proposed mine, mill, and bulk export facility. It also identified possible accident scenarios during all project phases. Mitigation measures are required for each phase of the Project to properly address these potential adverse effects either from routine activities or from potential accident scenarios.

This *Environmental Protection Plan for the Construction Phase*, or simply EPP, has been prepared by SNC-Lavalin Inc., on behalf of our client Newspar (hereinafter referred to as the Proponent) to document mitigation measures for this phase of the Project. In addition, the purpose of this document is to fulfil specific permitting requirements of the federal and provincial environmental regulatory bodies.

## 2.0 OBJECTIVE

Environmental Protection Plans are of critical importance to mining projects. Government agencies will often require EPPs as a condition of project approval following an environmental assessment and before development begins. A well prepared EPP can demonstrate a proponent's understanding of the environmental regulations they must comply with, and the practices and procedures that they must implement to mitigate adverse environmental effects associated with their project.

The Proponent seriously regards their duty to implement and continually develop this EPP. In this way, a high level of environmental protection will be ensured throughout the Project's work areas and activities. This EPP is a working document to be used at site by Project personnel and contractors. It is also to be used at the corporate level to ensure policy statements are followed. This EPP can serve as an invaluable tool for site personnel, contractors, and regulators to monitor regulatory compliance, and for the Proponent to improve on their environmental performance.

This EPP contains environmental protection procedures for routine activities anticipated for the Project; identifies applicable permits, authorizations and approvals; and provides general guidance for responding to accidental events. This document forms an integral part of the Proponent's Health, Safety and Environment (HSE) Management Systems. The objectives of this EPP are to:

- Ensure that commitments to minimize environmental effects are met;
- Document environmental concerns and appropriate protection measures;
- Provide concise and clear environmental information and instructions to Project personnel;
- Aid in training;

- Communicate changes in the program through the revision process; and
- Provide a reference to applicable legislative requirements and guidelines.

### 3.0 SCOPE OF APPLICATION

The Proponent's environmental management system comprises a variety of environmental plans representing the way in which the Proponent will manage the environmental functions and requirements throughout the life of the Project.

Environmental Protection Plans developed for each Project phase (e.g. construction, operations, decommissioning, and post-decommissioning) are the foundations that support the Project's overall environmental management system. EPP's are critical for communicating environmental protection procedures and serve as an important reference for those that implement environmental protection measures. Furthermore, it is against the EPP backdrop that the Project's environmental performance will be evaluated. Other plans and programs, which collectively form the Project's environmental management system, include the following (note that these are in various stages of development or approval):

- Waste Management Plan;
- Fish Habitat (Marine and Freshwater) Compensation Plans;
- Mine Rehabilitation and Closure Plan
- Environmental Effects Monitoring Program; and
- Women's Employment Plan.

The scope of this EPP is intended for only the construction and mine development phase of the Project. EPP's for other major Project phases (e.g. Operations and Decommissioning) will be developed throughout the life of the Project in advance of each phase.

### 4.0 DEGREE OF APPLICATION

The application of this procedure is:

- Mandatory ☒
- Recommended ☐
- Optional ☐

### 5.0 RESPONSIBILITY

This EPP will be developed and implemented by an Environmental Management Team comprised of Newspar and the Engineering, Procurement, Construction Management (EPCM) contractor employees.

*Newspar General Manager:* responsible for providing overall direction for the Project's Mine and Mill Project and its environmental management system, and approving environmental policies and plans.



*Engineering, Procurement, Construction Management (EPCM) Project Manager:* responsible for managing the EPCM contract, including the Project's environmental management system, and reporting directly to the Proponent's General Manager.

*EPCM Construction Manager:* located on site and responsible for overseeing construction management and Project development. The Construction Manager will report directly to the EPCM Project Manager in St. John's.

*HSE Supervisor:* reporting directly to the Construction Manager, the HSE Supervisor will implement this *EPP for Construction Phase*, initiate/participate in team meetings, be involved in obtaining required environmental permits and authorizations, and will be responsible for site environmental monitoring.

The HSE Supervisor has the authority to provide direction to contractors, including issuance of stop work orders where contractors are not in compliance with approved health, safety or environmental procedures. He/she will be a resource to the Construction Manager and contractors and provide advice on all environmental matters as they arise.

*Provincial, Federal, and Municipal Government Representatives:* will visit the site periodically to ensure compliance with applicable government regulations and permits, as per the mandates of their respective agencies. They will provide information and advice directly to the Construction Manager.

*Contractors:* will undertake the construction of the Project. The contractors are responsible for implementing environmental protection procedures as outlined in this EPP, and shall comply with all relevant regulations, guidelines, permits, approvals and authorizations. This EPP will be one of several Project documents that will be used to evaluate the contractors' environmental performance.

## **6.0 REFERENCE DOCUMENTS**

Information and documents referenced in this EPP can be found with the HSE Supervisor at the Project site or in the Proponent's Project office in St. Lawrence. A list of applicable DFO Operational Statements and Fact Sheets are included in Attachment B of this EPP and a list of Newfoundland and Labrador, Department of Environment and Conservation (ENVC), Species at Risk Data Sheets and Environmental Guidelines are provided in Attachments C and E. A listing of the key reference material is provided below:

### **Provincial/Federal Government Publications:**

- Environmental Policy for Infilling Bodies of Water (W.R. 91-1);
- Environmental Code of Practice for Open Burning, 1995;
- Environmental Guidelines for Construction and Mineral Exploration Companies (Newfoundland and Labrador Department of Environment and Conservation (ENVC) and Newfoundland and Labrador Department of Natural Resources (DNR));
- Accredited Laboratory Policy, PD:PP2001-01.2 (Pollution Prevention Division, ENVC);
- Environmental Guidelines for Watercourse Crossings (Water Resources Division, ENVC);
- Environmental Guidelines for Stream Crossings by All-Terrain Vehicles (Water Resources Division, ENVC);

- Environmental Guidelines for Bridges (Water Resources Division, ENVC);
- Environmental Guidelines for Culverts (Water Resources Division, ENVC);
- Environmental Guidelines for Fording (Water Resources Division, ENVC);
- Environmental Guidelines for Diversions, New Channels, Major Alterations (Water Resources Division, ENVC);
- Environmental Guidelines for Pipe Crossings (Water Resources Division, ENVC);
- Environmental Guidelines for General Construction Practices (Water Resources Division, ENVC);
- Wright and Hopky, 1998. Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters;
- Newfoundland & Labrador Operational Statement (Department of Fisheries and Oceans Canada (DFO)) - Aquatic Vegetation Removal in Freshwater Systems;
- Newfoundland & Labrador Operational Statement (DFO) - Bridge Maintenance;
- Newfoundland & Labrador Operational Statement (DFO) - Beaver Dam Removal;
- Newfoundland & Labrador Operational Statement (DFO) - Clear Span Bridges;
- Newfoundland & Labrador Operational Statement (DFO) - Culvert Maintenance;
- Newfoundland & Labrador Operational Statement (DFO) - Dock Construction;
- Newfoundland & Labrador Operational Statement (DFO) – Marine Wharf Repair/Reconstruction;
- Newfoundland & Labrador Operational Statement (DFO) - Maintenance of Riparian Vegetation in Existing Right-of-ways;
- Newfoundland & Labrador Operational Statement (DFO) – Moorings;
- Newfoundland & Labrador Operational Statement (DFO) - Overhead Line Construction;
- DFO Fact Sheet # 1: Effects of Silt on Fish and Fish Habitat;
- DFO Fact Sheet # 2: Blasting – Fish and Fish Habitat Protection;
- DFO Fact Sheet # 3: Ditching;
- DFO Fact Sheet # 4: Temporary Fording Sites;
- DFO Fact Sheet # 5: Forwarder Trails;
- DFO Fact Sheet # 6: Filter Fabric;
- DFO Fact Sheet # 7: Rock Check Dam;
- DFO Fact Sheet # 8: Temporary Bridges;
- DFO Fact Sheet # 9: Resource Road Construction;

- DFO Fact Sheet # 10: Instream Work in the Dry – Cofferdams;
- DFO Fact Sheet # 11: Streambank Stabilization;
- DFO Fact Sheet # 12: Instream Work in the Dry – Temporary Diversion;
- DFO Fact Sheet # 13: Instream Work in the Dry – Elevated Pipes;
- DFO Fact Sheet # 14: Culvert Stabilization;
- DFO Fact Sheet # 15: Storm Drain Outlets;
- DFO Fact Sheet # 16: Highway Construction Low Point Protection;
- DFO Fact Sheet # 17: Temporary Settling Basins;
- DFO Fact Sheet # 18: Bridge Construction/Demolition;
- DFO Fact Sheet # 20: Highway Construction/Upgrading – Infilling, Stabilization and No-Grub Zones;
- DFO Fact Sheet # 21: Freshwater Intake End-of-Pipe Fish Screen;
- DFO Fact Sheet # 22: Diamond Drilling – Mineral Exploration;
- DFO Fact Sheet # 23: Stream Clean-up;
- DFO Fact Sheet # 24: Timber Crib;
- DFO Fact Sheet # 26: Culvert Installation;
- Scruton, D.A., *et. al.*, 1997. Forestry Guidelines for the Protection of Fish Habitat in Newfoundland and Labrador;
- Fisheries and Oceans Canada, 1995. Freshwater Intake End-of-Pipe Fish Screen Guidelines;
- Gosse, M.M., *et. al.*, 1998. Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador. Fisheries and Oceans Canada, St. John's, NF;
- Bradbury C., *et. al.*, 2001. Standard Methods Guide for the Classification/Quantification of Lacustrine Habitat in Newfoundland and Labrador; and
- Sooley, Darrin R., 1998. Standard Methods Guide for Freshwater Fish and Fish Habitat Surveys in Newfoundland and Labrador Rivers & Streams.

### **Proponent's Technical Data Reports**

The Proponent's technical reports formed documentation to support the Project's environmental assessment and prefeasibility study. Such information is useful as a key source of information for measuring environmental performance throughout the construction phase. This documentation consists of the following:

- Scott Wilson Mining, 2009. Technical Report on the St. Lawrence Fluorspar Project, St. Lawrence, Newfoundland & Labrador;

- Roscoe Postle Associated Inc., 2011. Canada Fluorspar (NL) Inc., Technical Report Preliminary Feasibility Study of the St. Lawrence Fluorspar Project, Newfoundland & Labrador, Canada;
- BAE-Newplan Group, 2009. Burin Minerals Limited Project Summary, St. Lawrence, Newfoundland & Labrador;
- Canada Fluorspar (NL) Inc. 2009. Reactivation of the St. Lawrence Fluorspar Mine, Environmental Preview Report, Federal Environmental Screening Assessment Screening Report;
- Canada Fluorspar (NL) Inc. 2010. Reactivation of the St. Lawrence Fluorspar Mine, Addendum to: Environmental Preview Report, Federal Environmental Screening Assessment Screening Report. Deficiencies/Additional Information;
- Narwhal Environmental Consulting Services Inc, 2009. LGL Ltd. Habitat Survey, St. Lawrence, NL, Field Report;
- CFI, 2010. Marine Fish Habitat Compensation Strategy for Marine Terminal Footprint, St. Lawrence Fluorspar Mine Reactivation, St. Lawrence, NL. Prepared for Fisheries and Oceans Canada, Habitat Protection Division;
- AMEC Earth & Environmental. 2009. Water Quality and Fish Habitat Program in St. Lawrence; Proposed Re-Activation of Fluorspar Mine;
- BAE-Newplan Group, 2011. St. Lawrence Fluorspar Mine Reactivation, Waste Management Plan; and
- Gerald Penney Associated Limited, 2009. Historic Resources Impact Assessment (Stage 1), Canada Fluorspar Inc., St. Lawrence, NL, Archaeological Investigation Permit #09.07.

## **7.0 DOCUMENT ORGANIZATION**

### **7.1 Description of EPP Sections**

This *EPP for Project Construction Phase* comprises the following sections:

*Sections 1 through 4:* Introduces the purpose, objective, and scope and degree of application of this *EPP for Project Construction Phase*.

*Sections 5:* Roles and responsibilities of the Project's Environmental Management Team are discussed, and abbreviations and acronyms are defined. Contact numbers are provided in Attachment A.

*Section 6:* Provides references for useful information, some of which is referenced in Attachments B, C, D, and E.

*Section 8:* Discusses the strategy used to develop and implement this *EPP for Project Construction Phase*.

- Section 9:* Overview of environmental concerns and general environmental protection procedures associated with a variety of activities anticipated to occur during construction. Specific procedures are included in Attachment D.
- Section 10:* Contains area specific information and procedures for the principle work areas (i.e. the Marine Terminal, Roads & Transmission Lines, the Tailings Management Facility and the Mines and Mill Facilities). Other area specific information may be developed for other areas in the future. Area specific information will be modified or expanded as needed throughout the Project's construction phase as engineering design and construction methods evolve.
- Section 11:* Provides some general information on the contingency plans for accidents and unplanned events.

The following attachments provide information and forms that are referred to in these sections. A description of the various attachments follows:

- Attachment A:* Contact information for key individuals, which are referred to in Section 5.
- Attachment B:* DFO Operational Statements and Fact Sheets.
- Attachment C:* ENVC Species at Risk Data Sheets.
- Attachment D:* Environmental Protection Procedures.
- Attachment E:* Newfoundland and Labrador Department of Environment and Conservation Water Resources Management Division - Environmental Guidelines.

## **8.0 DEVELOPMENT AND IMPLEMENTATION**

This EPP may need to be revised and expanded as engineering design and work methods are further refined.

### **8.1 Mechanisms for Implementation**

The effectiveness of this EPP relies heavily on good communication between construction personnel and the Project's team, as represented on site by the Proponent's General Manager, Construction Manager, and Site HSE Supervisor. Mechanisms to be used to ensure compliance with this EPP include: annual environmental performance reviews; Job Environmental Analysis (JEA) for new work tasks; and weekly environmental meetings.

## **8.2 Annual Environmental Performance Review**

At the end of each construction year the Proponent, the EPCM contractor, and site contractors will gather for an environmental performance meeting to review all work activities that relate to environmental concerns, issues and/or mitigations. The review process will give all parties a chance to evaluate overall environmental performance and compliance with government regulations, permits, and this EPP.

## **8.3 Job Environmental Analysis (JEA)**

For a new construction package that has the potential for adverse environmental impact, a Job Environmental Analysis (JEA) will be conducted prior to the work commencing. The intent of the JEA is to identify potential environmental hazards and appropriate mitigation measures as provided in this EPP. The initial development of JEA documentation will be the responsibility of the individual company or contractor performing the work. Each JEA document shall be formally reviewed by the Site HSE Supervisor, Construction Manager, front line supervisors and Project design/field engineers. The JEA document review will integrate scientific principles, technological practices, and construction methods to arrive at appropriate mitigation measures for environmental protection. The review also provides a forum for discussing and agreeing upon improved methods and practices, and may prompt a revision to this EPP.

## **8.4 Weekly Environmental Meetings**

Weekly environmental meetings involving the HSE Supervisor, the Construction Manager, and contractors will be held to review any environmental issues and/or EPP implementation items. These meetings serve to anticipate and resolve environmental concerns before they arise, or to effectively deal with them should they occur. Non-compliance items identified during routine monitoring activities are tabled for discussion and resolution. In addition, the meetings provide an opportunity to keep all on-site Project participants informed of upcoming work activities.

## **8.5 Toolbox Meetings**

Toolbox or 'tailgate' meetings are short, informal meetings that are held with field crews and supervisors at the beginning of each work shift. Discussion involves the work task assignment for the day and any associated safety concerns or hazards. These meetings also provide the opportunity to discuss environmental concerns and applicable mitigation measures that apply.

## **8.6 Employee Orientation**

A site orientation will be developed and presented to all Project participants involved on the site. New workers at the Project site are presented with general information, rules and procedures to assist them in performing their work safely and with minimal impact on the environment. This site orientation will include elements of this EPP such as: spill response and reporting, environmental protection procedures, proper storage and handling of materials, encounters with wildlife and rare/endangered species, waste management, and emergency response.

## **8.7 Environmental Monitoring**

Environmental monitoring is an essential component of Project site activities. This monitoring occurs on a daily basis by the site HSE Supervisor and construction contractors. Every aspect of the operation is subject to inspection.

The basis for environmental monitoring at the Project site is embodied in this EPP. As an important component of it, conditions of regulatory permits and approvals also define the scope of monitoring activities.

Non-conformance with this EPP shall be documented and addressed during weekly meetings with the contractor responsible for mitigation measures. Non-conformance environmental issues will also be reported to the appropriate regulatory authority within ENVC. Corrective action shall be identified, target dates shall be agreed upon, and responsibilities shall be assigned to appropriate personnel. This documentation shall be distributed to other members of the Project's team and written notice of agreed corrective action will be forwarded to the contractor so that issues are appropriately resolved.

If serious non-conformance items are noted that require immediate attention, or if agreed corrective action is not implemented in a timely and effective manner, then appropriate resources shall be contracted by the Construction Manager to immediately undertake the required action.

## **9.0 GENERAL ENVIRONMENTAL PROTECTION PROCEDURES**

Attachment D of this EPP contains a comprehensive suite of general Environmental Protection Procedures to be used. These procedures are brief and offer clear instruction to the reader.

These Environmental Protection Procedures will be invaluable to bidders at the tender stage because they provide guidance for standard mitigation measures. This EPP will be part of each tender package, and contractors must include with their tender an Environmental Plan to show how they will achieve compliance with the EPP. Given that all contractors will be required by contract to comply with the EPP, this document will ensure the Proponent's expectations for environmental performance are communicated and met throughout all aspects of the Project construction phase.

This EPP links general Environmental Protection Procedures (Attachment D) with specific work areas (Section 10 below). The procedures in Attachment D may need to be modified in the future to address new activities, unforeseen site conditions, changes in engineering design and/or construction work methods, or new environmental performance levels.

## **10.0 AREA SPECIFIC ENVIRONMENTAL GUIDANCE**

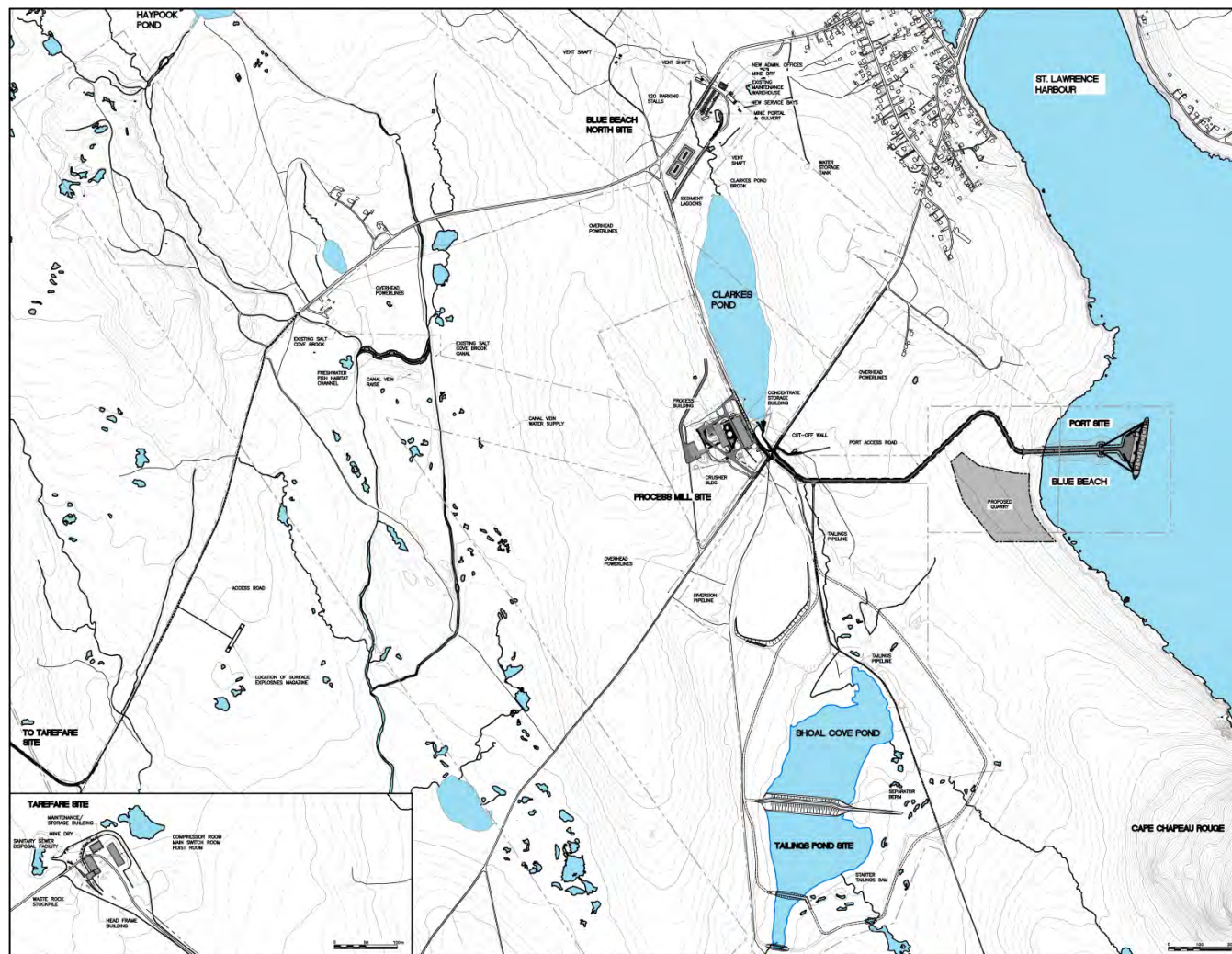
### **10.1 Project Work Scope**

Construction activity will occur in the following general areas:

- Marine Terminal (Section 10.1.1);
- Linear Developments (Section 10.1.2);
- Tailings Management Facility (Section 10.1.3);
- Mine Sites and Mill Facility (Section 10.1.4); and
- Fisheries Compensation Works (section 10.1.5).

For each of these areas, environmental guidance is provided below for the activities that are anticipated during construction. This EPP will be revised when required to reflect the evolving nature of engineering design and construction methods development during the construction phase. Revisions will be reviewed and approved for issue to EPP holders prior to the start of these activities. The Environmental Management Team will take the lead on EPP review and revisions. See Figure 10-1 for the facilities site location plan.

Other areas may be identified later, such as off-site storage, marshalling and forwarding areas, and will be added to this EPP as required.



**Figure 10-1: Facilities Site Location Plan**

### 10.1.1 Marine Terminal

CFI plans to construct a new deepwater marine terminal at Blue Beach Cove for the export of fluorspar concentrate product. Infrastructure associated with the marine terminal will include an approach causeway, wharf, and marine and ship loading topside equipment.

The main product will be a damp (10% moisture) filter cake (or acid grade concentrate) of 97.5% calcium fluoride purity. It will be trucked to the Blue Beach Marine Terminal, where it will be loaded



using a mobile ship loader. The port will be used in all seasons and thus all equipment will be suitable for cold weather operations.

Marine facilities will consist of

- An approach causeway;
- Wharf;
- Marine and ship loading topside equipment; and
- A working/laydown area will be incorporated into the wharf structure directly behind the berth face.

The wharf structure is designed to dock 36,000 deadweight tonnes (DWT) vessels.

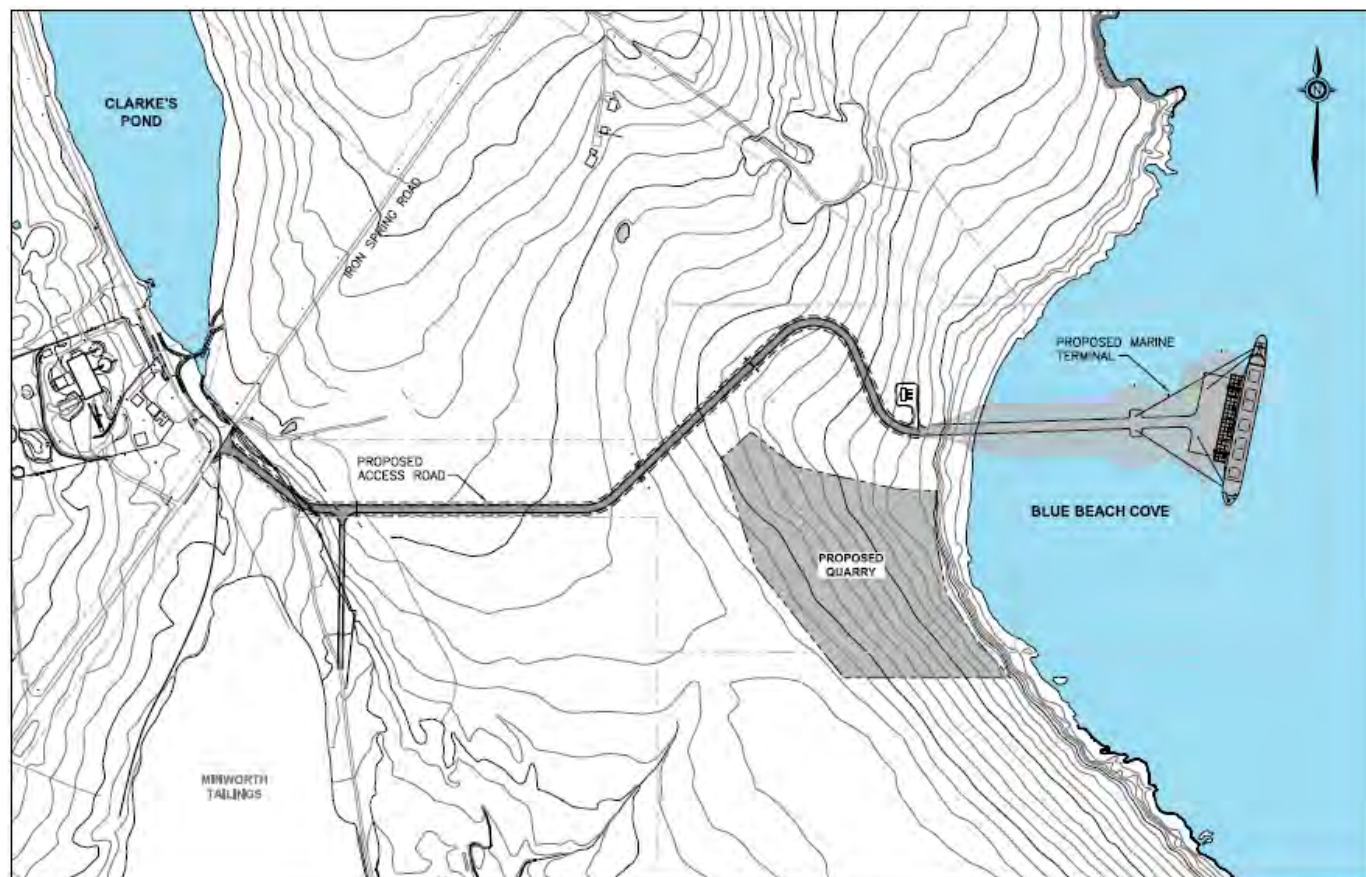
A rock filled causeway will join the wharf with the onshore portion of the facility. The berth face of the wharf will be located in close proximity to the 18 m depth contour. Two design options have been considered, and evaluated. The first option may consist of four (4) rock filled, 24.6 m diameter, steel sheet pile cells interconnected by steel sheet pile arcs for an overall berthing length of approximately 120 m. The second option is a concrete caisson wharf with an overall berthing length of approximately 100 m. These options will be further reviewed during the detailed design. The steel sheet pile option will occupy a slightly larger footprint. The wharf deck elevation will be +5.0 m above low normal tide (LNT).

Bollards will be equally spaced along the wharf face for breasting and spring lines. In addition, two mooring bollards will be located on the approach causeway. The wharf will be outfitted with the usual arrangement of marine hardware including fenders, ladders, lighting and power supply, fire protection and environmental emergency response equipment. The wharf will be capable of handling vessels up to 36,000 DWT.

Navigation aids will be provided as per Department of Fisheries and Oceans Canada, and Transport Canada, Canadian Coast Guard requirements.

The onshore portion of the marine terminal will consist of a storage/laydown area and access roadways.

The general layout of the Marine Terminal is shown in Figure 10-2. The facility is to be located to the east of Clarke's Pond and the existing mill structure, and will occupy part of Blue Beach Cove.



**Figure 10-2: Marine Terminal Site Location Plan**

#### **10.1.1.1 Construction Activities**

Important activities in the marine terminal area during construction include:

- Offloading, loading, and transfer from marine vessels of equipment and materials required for both construction and operations of the facilities;
- Drilling and blasting within a rock quarry located a minimum distance of 30 m away from the lowest normal tide mark;
- Placing rock fill and armour stone within the marine area;
- Constructing concrete caissons, steel sheet pile cells, or sheet pile bulkhead walls along the marine wharf;
- Fuel and other hazardous material storage and handling;
- Potential for marine pile driving depending on design of marine wharf;
- Load-haul-dump truck and miscellaneous heavy equipment operations;
- Surveying;
- Potential vegetation clearing and excavation; and
- Providing new marine fish habitat (i.e. causeway armour stone) in accordance with the

approved Marine Fish Habitat Compensation Plan.

#### 10.1.1.2 Environmental Issues

##### General

General environmental issues that may be associated with developing and working within the marine terminal area during construction include:

- Marine water quality effects due to site runoff, erosion and sedimentation as a result of clearing and grubbing, excavation, placement of rock fill, and construction of marine structures;
- The disturbance of fish and fish habitat as a result of construction in the marine environment, including pile driving if required;
- Potential leakage or spills of fuel or other hazardous materials;
- Loss of terrestrial habitat and/or disturbance of historic resources due to clearing and excavation;
- Hazardous materials use and storage;
- Noise, dust and emissions associated with equipment movement and use;
- Blasting, depending on the weight of explosive charge, could result in effects on the aquatic environment, as well as fish and fish habitat; and
- A Construction Safety Zone will be established in the marine environment around the proposed work area.

##### Sensitive Areas/Periods

*Marine:* The marine terminal is near areas that provide habitat for a number of marine species. The contractor shall get approval from the Department of Fisheries and Oceans for the timing of in-water construction to minimize the impact on local fish populations.

*Terrestrial:* The construction of the road to the marine terminal may disturb migratory birds during the nesting period of May to the end of July. Any sightings or indications of nesting migratory birds will be reported immediately, and work within 50 m of active nests will be halted until the HSE Supervisor advises otherwise. Additionally, in order to protect songbirds throughout the region, as well as nesting waterfowl in wetlands potentially destructive activities, such as cutting, will be avoided between May 1 and July 31 to accommodate the breeding season.

*Historic/Archaeological Resources:* There is a registered archaeological site in Blue Beach Cove; the wreck of the tug *Rio Sama* from 1946 and the project may have an adverse impact on a known historic resource, the wreckage field. However, the preferred location for the marine terminal will not disturb the two largest pieces of wreckage, which are also the only segments whose origin is obvious upon viewing. A 20 m buffer will be maintained around the individual pieces of wreckage belong to the wreckage field. In the event that a 20 m buffer cannot be maintained or it is apparent that an individual piece of wreckage will be directly impacted, work within the 20 m buffer zone will immediately stop and

the Provincial Archaeology Office will be notified immediately to discuss appropriate mitigation measures.

### 10.1.1.3 Environmental Protection Procedures

#### General Measures

Environmental Protection Procedures relevant to the construction of the marine terminal are listed in Table 10.1, and presented in detail in Attachment D.

**Table 10-1: Relevant Environmental Protection Procedures – Marine Terminal**

General Environmental Protection Procedures (Attachment D)	Relevance to Marine Terminal Area Construction
D.1 Clearing of Vegetation	•
D.2 Grubbing and Disposal of Related Debris	•
D.3 Storage, Handling and Transfer of Fuel and Other Hazardous Materials	•
D.4 Sewage Disposal	•
D.5 Solid Waste Disposal	•
D.6 Quarrying and Aggregate Removal	•
D.7 Buffer Zones	•
D.8 Erosion Prevention	•
D.9 Excavations, Embankment and Grading	•
D.10 Stream Crossings	•
D.11 Dust Control	•
D.12 Trenching	•
D.13 Dewatering – Work Areas	•
D.14 Marine Vessels	•
D.15 Pumps and Generators	•
D.16 Noise Control	•
D.17 Blasting	•
D.18 Drilling – Geotechnical	•
D.19 Concrete Production	•
D.20 Linear Developments	•
D.21 Vehicular Traffic	•
D.22 Works In/Around Marine Environment	•
D.23 Surveying	•
D.24 Equipment Operations	•
D.25 Geotechnical Drilling in the Marine Environment	•
D.26 Fish Relocation	
D.27 Historic Resources	•

Sections 10.0 and 11.0 and Attachments B, C, D, and E of this EPP provide information to be used to prevent pollution and reduce potential adverse environmental effects during marine terminal development. Included here are a listing of Fact Sheets and Operational Statements published by

Fisheries and Oceans Canada (some of which are applicable to the planned work at the marine terminal), a listing of ENVC Species at Risk Data Sheets, the environmental protection procedures and a listing of ENVC environmental guidelines.

#### **10.1.1.4 Area Specific Measures**

In addition to the Environmental Protection Procedures listed above, the following will be required during Marine Terminal development:

- Requirements listed in government permits, approvals, and authorizations;
- Environmental monitoring during initial on-land construction to ensure no evidence or materials of historic/archaeological significance are discovered or lost;
- Environmental monitoring to ensure no species at risk are identified on or within 20 m of the Marine Terminal footprint;
- Implementation of the Marine Fish Habitat Compensation Plan following receipt of Marine HADD Authorization from DFO;
- Construction Safety Zone demarcation and management in the marine environment.
- With respect to migratory birds the time of operation of exterior lighting such as spotlights and floodlights will be restricted on humid, foggy, and/or rainy nights, particularly during the migration season.
- Tall structures must be equipped with flashing lights (white and red strobe lights), in accordance with Transport Canada, Canadian Coast Guard regulations, to prevent birds from flying into them. The use of red solid warning lights at night will be avoided.

#### **10.1.1.5 Relevant Documents**

Documents relevant to construction activities at the Marine Terminal include:

- Marine Fish Habitat Compensation Plan;
- Historic Resources Management Plan;
- Emergency Response Plan;
- Mine Development Plan;
- Health and Safety Plan;
- Waste Management Plan;
- Newfoundland & Labrador Operational Statement (DFO) – Marine Wharf Repair/Reconstruction;
- Newfoundland & Labrador Operational Statement – Dock Construction (DFO); and
- Environmental Guidelines – General Construction Practices (ENVC)

#### **10.1.1.6 Permits, Approvals and Authorizations**

A registry of all permits required for the Project is located in a separate Newspaper database. This registry will be updated as permit requirements change over the course of site development.

#### **10.1.1.7 Monitoring Requirements**

Monitoring applicable to marine terminal construction includes:

- Marine water quality monitoring;
- Post-construction survey to verify that the project and associated works are completed according to and within the schedule of the Marine Fish Habitat Compensation Plan;
- Marine Fish Habitat Compensation monitoring program; and
- Environmental Effects Monitoring.

Other monitoring requirements may be added as determined by regulatory conditions of approval.

#### **10.1.2 Linear Developments (Roads, Pipelines, Transmission Lines)**

Existing site access roads link the office/mill site to the provincial highway system, the Tarefare and BBN mines to the mill site, and the office/mill site to Shoal Cove Pond. These roads will require upgrading using Class A and Class B granular material. The tailings pond will be surrounded by a perimeter access road.

A new access road will also be constructed from the office/mill site to the marine terminal, and this will involve a cut and fill operation to accommodate road construction.

Dry material will be moisture conditioned or covered to prevent blowing dust. Dust control will be provided for temporary roads and construction activities, primarily by using water when required. Fish bearing stream crossings will be designed and constructed to allow fish passage and to preserve aquatic habitat. All culvert installations will be sized to meet design flood conditions.

Access between the mill and the Blue Beach North mine sites will be along the existing roads. Some of these roadways will require minor work such as grading and ditching. The road will be upgraded to meet the foundation and dimensional requirements of the largest design vehicle expected to use the road.

In several years after the start of operations at Blue Beach North, mining there will terminate and continue at Tarefare. Mining at Tarefare will require a new road, and construction of it will be covered in an updated environmental protection plan to be prepared at that time.

There are two main access roads to the mill/mine site. Both are existing roadways and commence within the town of St. Lawrence. Portions of the existing tailings pond access roads will be utilized and some new roads will be constructed to provide access for construction of the berms and dams.

Water course crossings (by bridge or culvert) will be in accordance with permit requirements. Fish bearing streams will be crossed in accordance with DFO guidelines and standards.

There will be no new power plants required for this Project; all power will be provided by Nalcor's energy grid. There is an existing substation located on the main highway approximately 2.6 km north of the mill site. A new distribution system will be established from the substation to the various facilities

throughout the site. New substations and distribution systems will be built at Tarefare and BBN to avail of this through proposed electrical transmission lines linking into Nalcor's energy grid.

Electrical power for the mill/mine facility will be supplied from the local utility power grid system. Transmission lines will follow existing utility corridors.

Pipelines will also be required by the Project to serve various functions: delivery of process water needed for the mill; delivery of tailings from the mill to the Tailings Management Facility; and diversion of stream flows from Clarke's Pond to Shoal Cove Pond Brook. Some of these structures may need to be routed beneath the ground surface to maintain grades required for gravity drainage or to ensure frost protection.

There will be a cut-off wall constructed near the outlet of Clarke's Pond associated with the Clarke's Pond Brook stream flow diversion pipeline. A HADD authorization from DFO is required prior to constructing the wall. As a prerequisite for this, a Freshwater Fish Habitat Compensation Plan (in preparation) must be approved by DFO. This Plan will also address habitat compensation associated with the Tailings Management Facility.

#### **10.1.2.1 Construction Activities**

Key activities associated with the linear developments include:

- Surveying;
- Vegetation clearing along the road and transmission line rights-of-way;
- Load-haul-dump truck and dozer operations;
- Installing watercourse crossings (e.g. culverts, modular bridges, permanent bridges) along the road route;
- Bridge and culvert maintenance;
- Stripping/grubbing and material stockpiling;
- Excavation;
- Dewatering and sediment control;
- Fuel and other hazardous material storage and handling; and
- Snow removal activities.

#### **10.1.2.2 Environmental Issues**

##### **General**

General environmental issues associated with the linear developments include:

- Sedimentation and erosion from clearing, excavation, stockpiling, and other activities which result in ground disturbance;
- Sedimentation associated with culvert and bridge maintenance;
- Potential leakage or spills of fuel or other hazardous materials;

- Loss of terrestrial habitat due to clearing activities;
- Noise, dust and emissions associated with equipment movement and use, including crushing and aggregate processing;
- Interaction with wildlife that may use the Project area during certain times of the year; and
- Buffer zone intrusions near watercourses.

### **Sensitive Areas/Periods**

*Freshwater:* Stream crossings will generally be across existing roadways with existing culverts and bridges. New stream crossings may be required when constructing new access roads and Project infrastructure. All such stream crossings will be constructed in accordance with the procedures outlined in the Environmental Protection Plan and will meet requirements of the Department of Environment and Conservation, the Department of Fisheries and Oceans and Transport Canada pursuant to the Navigable Waters Protection Act.

*Terrestrial:* Vegetation consists predominantly of grass, alder, blueberry, fir and spruce. Various species of wildlife are known or thought to occur in the St. Lawrence area. Traffic from construction shall avoid any wildlife and any occurrences will be reported.

Linear developments have the potential to disrupt migratory birds especially during the nesting period of May to July. Any sightings or indications of nesting migratory birds will be report immediately and any further work in that area will be halted until appropriate mitigation measures are established.

### **10.1.2.3 Environmental Protection Procedures**

#### **General Measures**

General Environmental Protection Procedures relevant to the Linear Developments are listed in Table 10.2, and presented in detail in Attachment D.



**Table 10-2: Relevant Environmental Protection Procedures – Linear Developments**

<b>General Environmental Protection Procedures (Attachment D)</b>	<b>Relevance to Linear Developments</b>
D.1 Clearing of Vegetation	•
D.2 Grubbing and Disposal of Related Debris	•
D.3 Storage, Handling and Transfer of Fuel and Other Hazardous Materials	•
D.4 Sewage Disposal	•
D.5 Solid Waste Disposal	•
D.6 Quarrying and Aggregate Removal	•
D.7 Buffer Zones	•
D.8 Erosion Prevention	•
D.9 Excavations, Embankment and Grading	•
D.10 Stream Crossings	•
D.11 Dust Control	•
D.12 Trenching	•
D.13 Dewatering – Work Areas	•
D.14 Marine Vessels	
D.15 Pumps and Generators	•
D.16 Noise Control	•
D.17 Blasting	
D.18 Drilling – Geotechnical	
D.19 Concrete Production	•
D.20 Linear Developments	•
D.21 Vehicular Traffic	•
D.22 Works In/Around Marine Environment	
D.23 Surveying	•
D.24 Equipment Operations	•
D.25 Geotechnical Drilling in the Marine Environment	
D.26 Fish Relocation	
D.27 Historic Resources	

Sections 10.0 and 11.0 and Attachments B, C, D and E of this EPP provide further information for preventing pollution and reducing potential adverse effects on the environment during linear development construction. Included here are a listing of Fact Sheets and Operational Statements published by Fisheries and Oceans Canada (some of which are applicable to the planned work related to the liner developments), a listing of ENVC Species at Risk Data Sheets, the environmental protection procedures and a listing of ENVC environmental guidelines.

#### **10.1.2.4 Area Specific Measures**

In addition to the Environmental Protection Procedures listed above, the following will be required during construction of the Linear Developments:

- Requirements listed in government permits, approvals, and authorizations;
- Environmental monitoring to ensure no species at risk are identified on or within 20 m of the

construction footprints;

- Environmental monitoring during initial on-land construction to ensure no evidence or materials of historic/archaeological significance are discovered or lost; and
- With respect to migratory birds the time of operation of exterior lighting such as spotlights and floodlights will be restricted on humid, foggy, and/or rainy nights, particularly during the migration season.

#### **10.1.2.5 Relevant Documents**

Documents related to the linear developments include the following:

- Health & Safety Plan;
- Emergency Response Plan;
- Mine Development Plan;
- Waste Management Plan;
- Newfoundland & Labrador Operational Statement – Clear Span Bridges (DFO);
- Newfoundland & Labrador Operational Statement – Bridge Maintenance (DFO);
- Newfoundland & Labrador Operational Statement – Culvert Maintenance (DFO);
- Newfoundland & Labrador Operational Statement – Maintenance of Riparian Vegetation in Existing Rights-of-Way (DFO);
- Newfoundland & Labrador Operational Statement – Overhead Line Construction (DFO);
- Environmental Guidelines – General Construction Practices (ENVC);
- Environmental Guidelines – Fording (ENVC);
- Environmental Guidelines – Bridges (ENVC);
- Environmental Guidelines – Culverts (ENVC);and
- Environmental Guidelines – Watercourse Crossings (ENVC).

#### **10.1.2.6 Permits, Approvals and Authorizations**

A registry of all permits required for the Project is located in a separate Newspaper database. This registry will be updated as permit requirements change over the course of site development.

#### **10.1.2.7 Monitoring Requirements**

Monitoring during construction of the linear developments includes:

- Water quality and quantity monitoring will be undertaken. In addition, water quality monitoring at other locations will be undertaken at the discretion of Site Environmental Monitors to ensure that natural freshwater bodies are not negatively affected by construction activity.
- Environmental Effects Monitoring.

Other monitoring requirements may be added as determined by regulatory conditions of approval.

### **10.1.3 Tailings Management Facility (TMF)**

Throughout its life, the Project will produce an estimated total of 2.04 million tonnes of acid grade concentrate (at >97.5 %  $\text{CaF}_2$ ) and 1.5 million tonnes of high quality construction aggregate from 5.73 million tonnes of ore. An estimated 2.19 million tonnes of flotation tailings would be generated during this period.

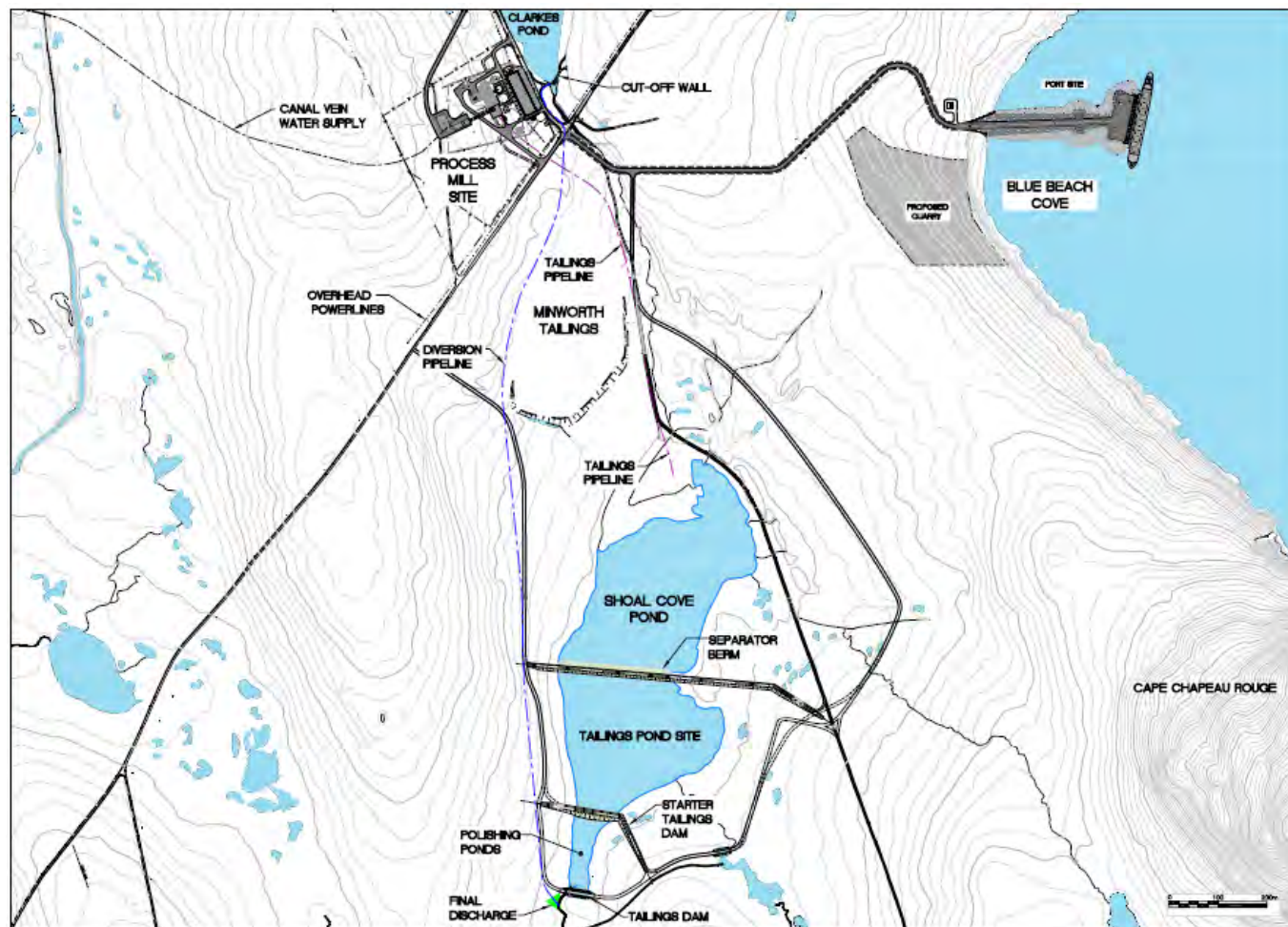
Newspar proposes to construct an engineered TMF within Shoal Cove Pond. The initial design of the TMF will include two cells separated by two retaining structures. Cell 1 will be retained by a Separator Berm located across the middle of Shoal Cove Pond and Cell 2 will be retained by a starter Tailings Dam upstream from the outlet of the pond, construction of a third dam is proposed after 3.5 years. See Figure 10-3 for the Tailings Pond Site Location Plan.

Cell 1 will act as the initial receiver for tailings for the first 3.5 years of operation. Flotation tailings may be flocculated and possibly adjusted for pH. The Separator Berm will be a pervious rock fill structure and will retain the tailings solids but allow the surface and pore water to report to Cell 2. The berm will be comprised entirely of rock fill materials and constructed directly over the existing organic layer in the base of Shoal Cove Pond. The organic layer is highly compressible (~50%) and has a very low shear strength. As a result, it will be necessary to construct a wide footprint to provide adequate stability. The width of the starter berm footprint will be equal to the width of ultimate berm which will provide a stable platform for all future raises of the Separator Berm.

Cell 2 will act as a polishing pond during the first 3.5 years of operation. The starter Tailings Dam will be constructed as a low permeability structure founded on the dense native glacial till. Due to the good foundation conditions and the availability of low permeability till, the dam section will be designed as a homogeneous fill with 2H (horizontal) to 1V (vertical) side slopes. Future raises of the starter Tailings Dam will be added using the downstream method to avoid building on the tailings. All runoff will be discharged through a concrete spillway at the abutment of the starter Tailings Dam.

After 3.5 years, tailings will report to Cell 2 and a second Tailings Dam will be constructed near the outflow of Shoal Cove Pond (Figure 10-3). This new cell will then act as the polishing pond. Runoff will again be discharged through a concrete spillway at the abutment of the new tailings dam. When Cell 2 becomes full, lifts will then be placed on the Separator Berm and starter Tailings Dam and tailings deposition will then begin within Cell 1 again, this cycle will continue for the life of the Project.

In order to compensate for the loss of fish habitat in Shoal Cove Pond, a HADD authorization will be required. To support this authorization, the Proponent is developing a Freshwater Fish Habitat Compensation Plan in consultation with DFO and ENVC. The compensation structure (described in the Plan) will consist of an excavated diversion channel that will link an old diversion canal near the inactive Director mine to a dewatered section of Salt Cove Brook. Once the channel is completed and water is allowed to flow through it, new fish habitat will have been created.



**Figure 10-3: Tailings Management Facility – Site Plan**

#### 10.1.3.1 Construction Activities

Important activities in the TMF area during construction include:

- Dumping rock fill into Shoal Cove Pond to construct the separation berm and starter tailings dam until the structures are complete;
- Cofferdams will be required, they will be constructed around the downstream impervious tailings dam;
- A gravel road to the east of the tailings pond will be rerouted because the water level in the pond will rise and inundate the road;
- Fuel and other hazardous material storage and handling;
- Overflow spillways will be sized and constructed to route excess water from the tailings discharge and surrounding watershed; and
- A rock quarry (exact location is not known at this time) will be operated to the west of Shoal Cove Pond to provide fill for the dams and roads.

### 10.1.3.2 Environmental Issues

#### General

General environmental issues that may be associated with developing and working within the TMF area during construction include:

- Water quality effects due to site runoff, erosion and sedimentation as a result of clearing and grubbing, excavation, placement of rock fill, and construction of the required structures;
- The harmful alteration, disturbance, and destruction (HADD) of fish and fish habitat as a result of construction in the environment;
- Potential leakage or spills of fuel or other hazardous materials;
- Loss of terrestrial habitat due to clearing and excavation;
- Stranding fish during construction of the impervious tailings dam;
- Hazardous materials use and storage; and
- Noise, dust and emissions associated with equipment movement, equipment use and drilling and blasting operations in the rock quarry.

#### Sensitive Areas/Periods

*Freshwater:* Shoal Cove Pond is a natural water body containing fish; however, it has been impacted by previous mining operations and tailings disposal. As a consequence, the pond's water quality has reported fluoride and lead levels that exceed the freshwater aquatic life criteria of the Canadian Environmental Quality Guidelines. This water continues to flow in an uncontrolled manner through Shoal Cove Brook and discharges into the receiving marine environment at Shoal Cove.

A Fish Habitat Compensation Plan is required to compensate for the loss of fish habitat within the pond. The pond itself will therefore be regarded as a 'sensitive area' during construction, and appropriate mitigation measures, as discussed below, will need to be implemented to reduce potential negative effects on the aquatic environment.

*Terrestrial:* Vegetation consists predominantly of grass, alder, blueberry, fir and spruce. Various species of wildlife are known or thought to occur in the St. Lawrence area. Traffic from construction shall avoid any wildlife and any occurrences will be reported.

### 10.1.3.3 Environmental Protection Procedures

#### General Measures

Environmental Protection Procedures relevant to the construction of the TMF are listed in Table 10.3, and presented in detail in Attachment D.

**Table 10-3: Relevant Environmental Protection Procedures – TMF**

<b>General Environmental Protection Procedures (Attachment D)</b>	<b>Relevance to TMF Area Construction</b>
D.1 Clearing of Vegetation	•
D.2 Grubbing and Disposal of Related Debris	•
D.3 Storage, Handling and Transfer of Fuel and Other Hazardous Materials	•
D.4 Sewage Disposal	•
D.5 Solid Waste Disposal	•
D.6 Quarrying and Aggregate Removal	•
D.7 Buffer Zones	•
D.8 Erosion Prevention	•
D.9 Excavations, Embankment and Grading	•
D.10 Stream Crossings	•
D.11 Dust Control	•
D.12 Trenching	•
D.13 Dewatering – Work Areas	•
D.14 Marine Vessels	
D.15 Pumps and Generators	•
D.16 Noise Control	•
D.17 Blasting	•
D.18 Drilling – Geotechnical	•
D.19 Concrete Production	•
D.20 Linear Developments	•
D.21 Vehicular Traffic	•
D.22 Works In/Around Marine Environment	
D.23 Surveying	•
D.24 Equipment Operations	•
D.25 Geotechnical Drilling in the Marine Environment	
D.26 Fish Relocation	•
D.27 Historic Resources	

Sections 10.0 and 11.0 and Attachments B, C, D, and E of this EPP provide information to be used to prevent pollution and reduce potential adverse environmental effects during development of the TMF. Included here are a listing of Fact Sheets and Operational Statements published by Fisheries and Oceans Canada (some of which are applicable to the planned work at the TMF), a listing of ENVC Species at Risk Data Sheets, the environmental protection procedures and a listing of ENVC environmental guidelines.

#### **10.1.3.4 Area Specific Measures**

In addition to the Environmental Protection Procedures listed above, the following will or may be required during TMF development:

- Requirements listed in government permits, approvals, and authorizations;

- Environmental monitoring to ensure no species at risk are identified on or within 20 m of the footprint of the TMF;
- Environmental monitoring during initial on-land construction to ensure no evidence or materials of historic/archaeological significance are discovered or lost;
- With respect to migratory birds the time of operation of exterior lighting such as spotlights and floodlights will be restricted on humid, foggy, and/or rainy nights, particularly during the migration season; and
- Implementation of the Freshwater Fish Habitat Compensation Plan.

#### **10.1.3.5 Relevant Documents**

Documents relevant to construction activities at the TMF include:

- Freshwater Fish Habitat Compensation Plan;
- Fish Capture and Relocation Plan;
- Mine Development Plan;
- Emergency Response Plan;
- Health and Safety Plan;
- Waste Management Plan; and
- Environmental Guidelines – General Construction Practices (ENVC).

#### **10.1.3.6 Permits, Approvals and Authorizations**

A registry of all permits required for the Project is located in a separate Newspar database. This registry will be updated as permit requirements change over the course of site development.

#### **10.1.3.7 Monitoring Requirements**

- Freshwater Fish Habitat Compensation monitoring program;
- Water quality and quantity monitoring will be undertaken. In addition, water quality monitoring at other locations will be undertaken at the discretion of Site Environmental Monitors to ensure that natural freshwater bodies are not negatively affected by construction activity;
- Real-time water quantity/quality station(s) will be established in the vicinity of the Tailings Management Facility (TMF). This network will provide near real-time water quality and quantity data to ensure emerging issues associated with the TMF (from both the construction and operational phases) are caught and mitigative measures implemented in a timely manner thus minimizing the impact to the Shoal Cove Brook system. This network will be established in partnership with the Water Resources Management Division through a signed Memorandum of Agreement. The exact type, number, location of the station(s) and other logistical details will be determined through collaborative engagement with the Proponent;

- Groundwater quality and water level monitoring will be undertaken in the vicinity of all mine shafts and the Tailings Management Facility (TMF) to monitor changes in groundwater quality and water levels during the construction phase and throughout the lifetime of mining operations and closure. The groundwater monitoring network, including the number and location of wells, must be approved by Water Resources Management Division;
- Post-construction survey to verify that the project and associated works are completed according to and within the schedule of the Freshwater Fish Habitat Compensation Plan; and
- Environmental Effects Monitoring

Other monitoring requirements may be added as determined by regulatory conditions of approval.

#### **10.1.4 Mines and Mill Sites**

Newspar propose to reactivate the existing underground fluorspar mines and expand an existing mill within the 'Mineral Workings' designated area as per the Town of St. Lawrence Municipal Plan.

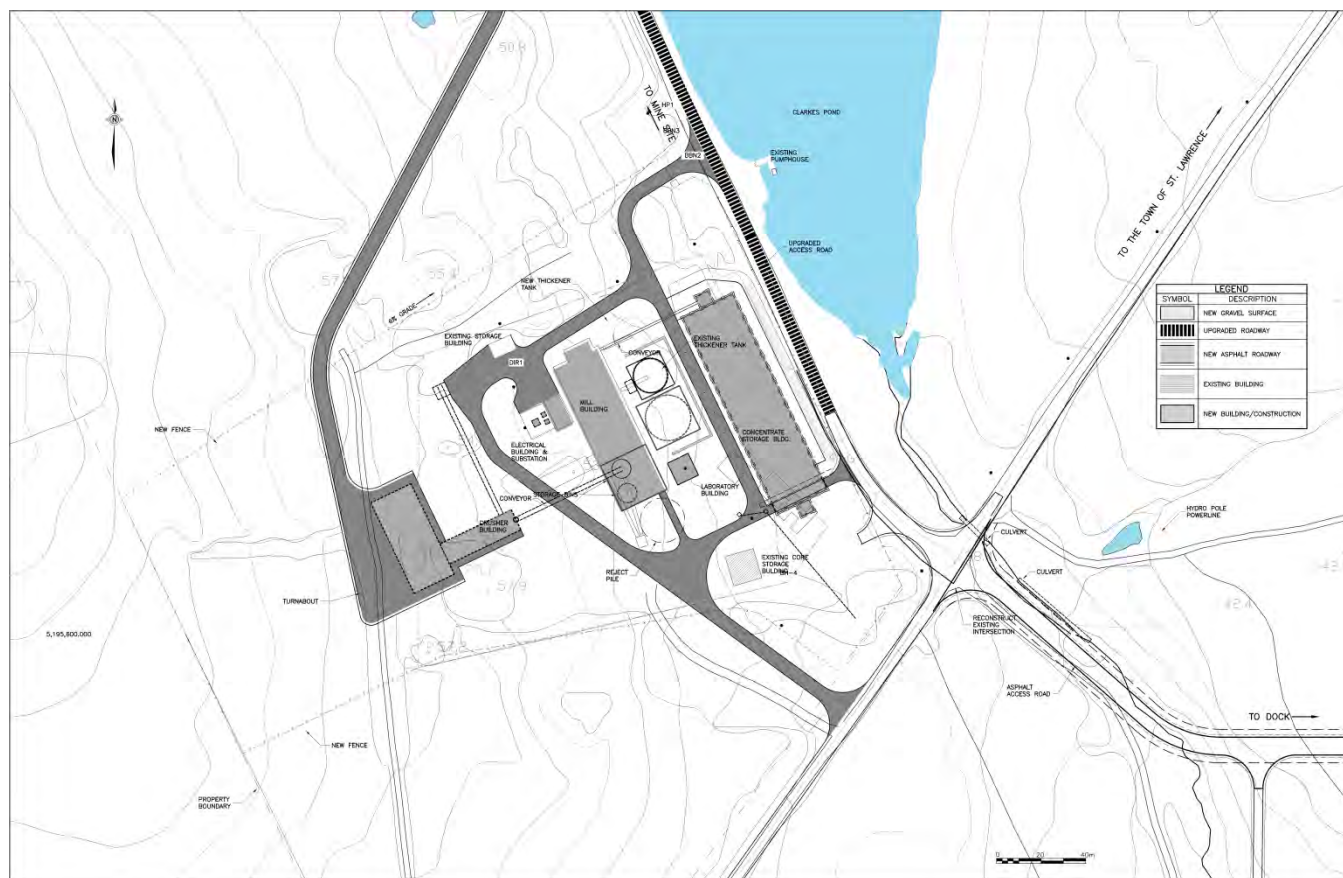
The Mine and Mill sites are part of a brownfield area in which mining and milling have occurred since the 1930s. Several structures and buildings remain on site from previous operators. See Figure 10-1 for Site Location Plan.

The site footprint will directly affect two watersheds: (1) Clarke's Pond-Shoal Cove Pond watershed; and (2) Director-Salt Cove Brook watershed.

The existing mill will be upgraded and expanded to produce acid grade fluorspar concentrate. The mine/mill site is anticipated to produce between 120,000 and 180,000 tonnes of fluorspar concentrate per year.

The majority of the existing structures will be upgraded or replaced as part of the proposed mine reactivation program. The proposed mill site will consist of an assay laboratory, maintenance and service building, ore crushing facility, ore storage facility and a mill building including a fluorspar filter cake storage building. See Figure 10-4 for the proposed site layout plan for the mill site.



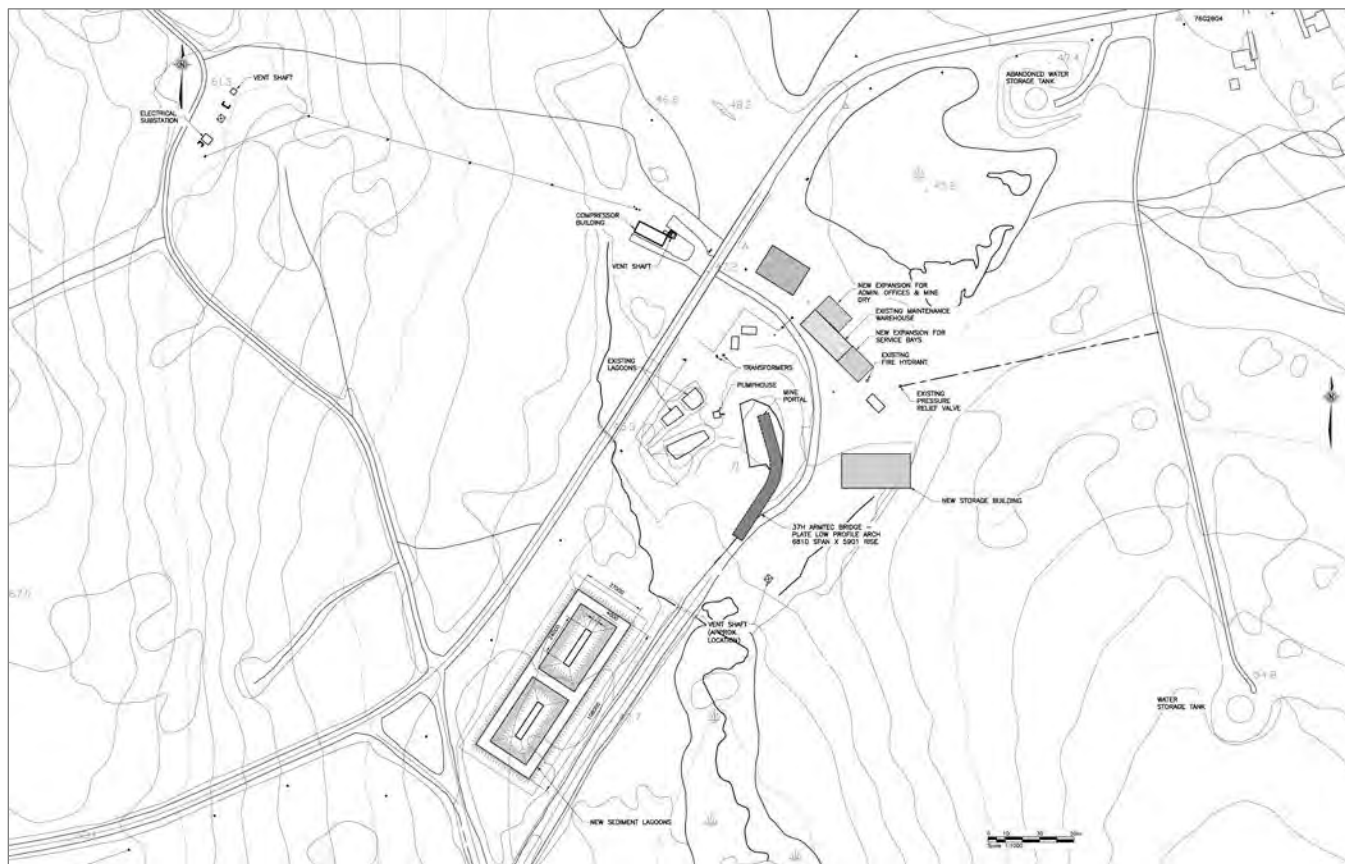


**Figure 10-4: Proposed Mill Site Layout Plan**

BBN Mine will be reactivated first followed by Tarefare. Mining will involve Alimak mining methods. Underground directional drilling followed by blasting using ANFO explosives will be carried out. In the case of Tarefare Mine, ore will be collected and hauled to an ore pass and loading pocket in the shaft where it will be brought to surface by the mine's hoist, from there it will be trucked to the Mill. An existing ramp at Blue Beach North will be deepened and used to bring ore to surface.

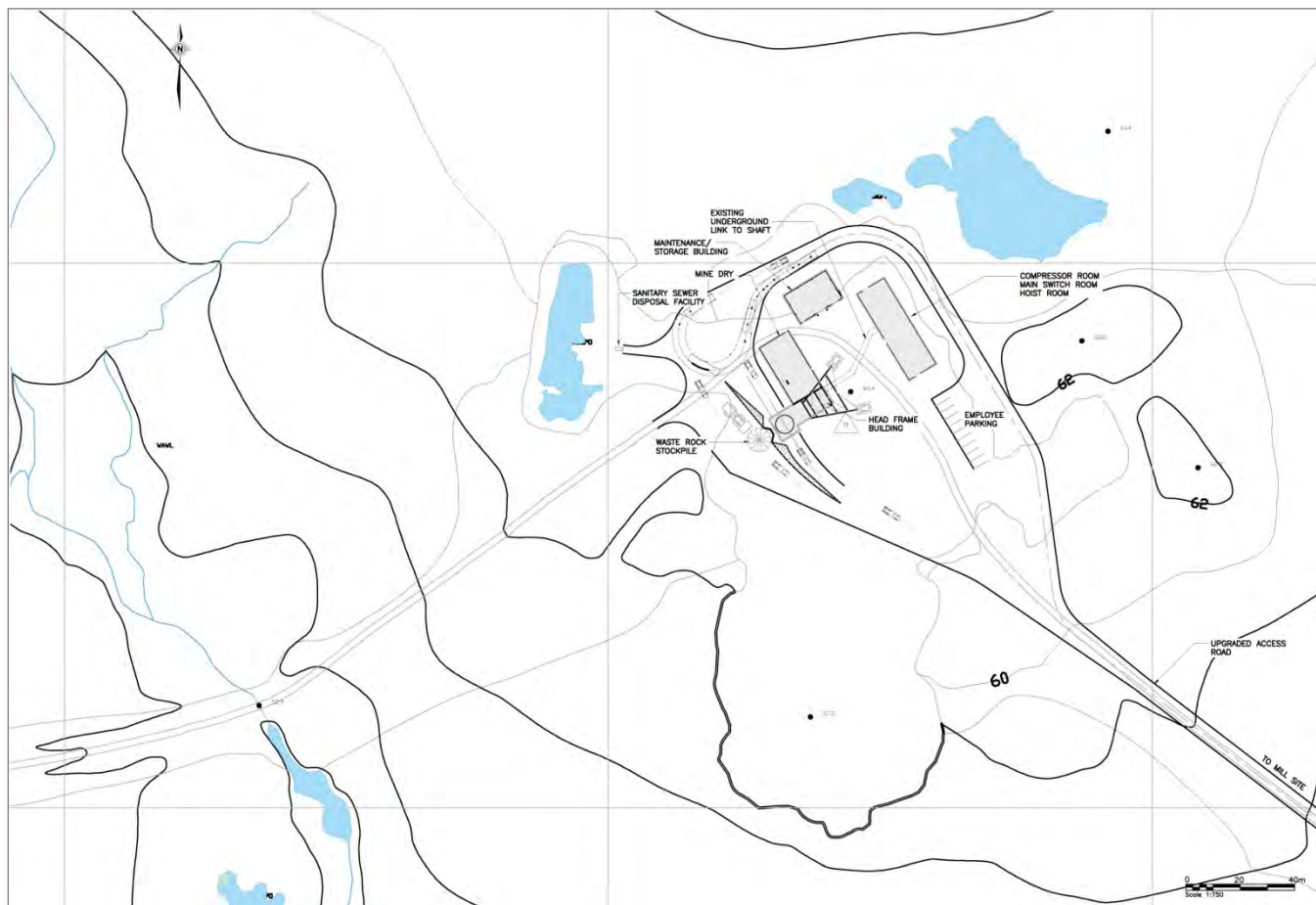
Additional small buildings may be required however the need for and location of these buildings will be determined as the detailed design progresses. The Blue Beach North and Tarefare Mine proposed site layout plans can be seen in Figures 10-5 and 10-6 respectively.

The BBN mine site will have an administration building, access ramp, mine dry facility, compressor building, electrical substation, and maintenance/storage warehouse. The Tarefare mine site will have a headframe building and hoist house, mine dry facility, compressor building, electrical substation, and maintenance/storage warehouse.



**Figure 10-5: Blue Beach North Proposed Site Layout Plan**

Development of BBN will require continuous dewatering of underground openings during the construction (mine development) phase, and will continue throughout operations. Water will be clarified underground using a series of three settling basins (sumps). Pumping of 2000 gal/min (130 litres/s) to the surface will occur at the last sump. This will be discharged at the surface (see Figure 10-5) into two settling ponds where its quality will be monitored. Groundwater quality will also be monitored at the settling ponds. If needed, a flocculent will be added to ensure the water quality meets with regulatory requirements prior to discharge into Clarke's Pond inflow stream via pipeline.



**Figure 10-6: Tarefare Proposed Site Layout Plan**

#### **10.1.4.1 Construction Activities**

Key activities associated with development of the mines and mill sites include:

- Surveying;
- Vegetation clearing and overburden stripping;
- Excavation and trenching;
- Drilling and blasting required for quarrying and construction aggregate production;
- Building, storage, and process equipment fabrication and erection;
- Establishing material stockpiles and surface water collection systems;
- Creating new freshwater fish habitat at the Site in accordance with the approved Freshwater Fish Compensation Plan;
- Dewatering and sediment control;
- Fuel and other hazardous materials use, handling and storage; and
- Heavy equipment traffic.

Site preparation activities include levelling/infilling and installation of temporary offices with associated services (power, potable water cooler/storage systems, and temporary sanitary facilities) will commence as soon as the access road is sufficiently completed for equipment and personnel to access the site.

Work to develop the mineshafts will begin immediately following environmental approval, given that approximately 24 months will be required to upgrade the Tarefare mine shaft and carry out the pre-production activities. Blue Beach North will require approximately 22 months for pre-production work.

#### **10.1.4.2 Environmental Issues**

##### **General**

General environmental issues that may be associated with construction at the mines and mill sites include:

- Surface water and groundwater quality;
- Sedimentation/erosion from clearing, grubbing, excavation, stockpiling, and other ground disturbing activities;
- Effects to wildlife and/or freshwater fish during blasting;
- Potential leakage or spills of fuel or other hazardous materials;
- Noise, dust and emissions associated with equipment movement and use;
- Hydrologic effects resulting from excavation, blasting, filling, dewatering and water control;
- Interaction with wildlife that may use the Project area during certain times of the year; and
- Buffer zone intrusions near watercourses.

##### **Sensitive Areas/Periods**

*Freshwater:* Some of the works associated with the mines and mill will be in or near areas that provide habitat for a number of freshwater species. The contractor shall get approval from the Department of Fisheries and Oceans for the timing of any in-water construction to minimize the impact on local fish populations.

Newspar is currently designing the Freshwater Fish Habitat Compensation diversion channel and monitoring program in consultation with DFO and ENVC.

*Terrestrial:* Vegetation consists predominantly of grass, alder, blueberry, fir and spruce. Various species of wildlife are known or thought to occur in the St. Lawrence area. Traffic from mine and mill construction shall avoid any wildlife and any occurrences will be reported.

#### **10.1.4.3 Environmental Protection Procedures**

##### **General Measures**

General environmental protection procedures relevant to the development of the mines and mill sites are listed in Table 10.4, and presented in detail in Attachment D.

**Table 10-4: Relevant Environmental Protection Procedures – Mine and Mill Site Development**

General Environmental Protection Procedures (Attachment D)	Relevance to Mines and Mill Sites Development
D.1 Clearing of Vegetation	•
D.2 Grubbing and Disposal of Related Debris	•
D.3 Storage, Handling and Transfer of Fuel and Other Hazardous Materials	•
D.4 Sewage Disposal	•
D.5 Solid Waste Disposal	•
D.6 Quarrying and Aggregate Removal	•
D.7 Buffer Zones	•
D.8 Erosion Prevention	•
D.9 Excavations, Embankment and Grading	•
D.10 Stream Crossings	•
D.11 Dust Control	•
D.12 Trenching	•
D.13 Dewatering – Work Areas	•
D.14 Marine Vessels	
D.15 Pumps and Generators	•
D.16 Noise Control	•
D.17 Blasting	•
D.18 Drilling – Geotechnical	•
D.19 Concrete Production	•
D.20 Linear Developments	•
D.21 Vehicular Traffic	•
D.22 Works In/Around Marine Environment	
D.23 Surveying	•
D.24 Equipment Operations	•
D.25 Geotechnical Drilling in the Marine Environment	
D.26 Fish Relocation	
D.27 Historic Resources	

Sections 10.0 and 11.0 and Attachments B, C, D, and E of this EPP provide information to be used to prevent pollution and reduce potential adverse environmental effects during mine and mill development. Included here are a listing of Fact Sheets and Operational Statements published by Fisheries and Oceans Canada (some of which are applicable to the planned work at the mines and mill sites), a listing of ENVC Species at Risk Data Sheets, the environmental protection procedures and a listing of ENVC environmental guidelines.

#### 10.1.4.4 Area Specific Measures

In addition to the general environmental protection measures listed above, the following specific measures will be implemented during construction:

- Additional specific conditions of approval will be implemented as per regulatory requirements;

- Implementation of the Freshwater Fish Habitat Compensation Plan and monitoring;
- With respect to migratory birds the time of operation of exterior lighting such as spotlights and floodlights will be restricted on humid, foggy, and/or rainy nights, particularly during the migration season;
- Environmental monitoring to ensure no species at risk are identified on or within 20 m of the construction footprints;
- Environmental monitoring during initial on-land construction to ensure no evidence or materials of historic/archaeological significance are discovered or lost;
- Tall structures must be equipped with flashing lights (white and red strobe lights), in accordance with Transport Canada, Canadian Coast Guard regulations, to prevent birds from flying into them. The use of red solid warning lights at night will be avoided; and
- Environmental Effects Monitoring.

#### **10.1.4.5 Relevant Documents**

Documents related to the development of the mines and mill sites include the following:

- Emergency Response Plan;
- Health & Safety Plan;
- Mine Development Plan
- Waste Management Plan;
- Freshwater Fish Habitat Compensation Plan; and
- Environmental Guidelines – General Construction Practices (ENVC).

#### **10.1.4.6 Permits, Approvals and Authorizations**

A registry of all permits required for the Project is located in a separate CFI/Newspaper database. This registry will be updated as permit requirements change over the course of site development.

#### **10.1.4.7 Monitoring Requirements**

Monitoring applicable to the mine and mill Sites include:

- Water quality monitoring of surface water bodies and groundwater (including water pumped from the underground workings prior to discharging to surface water bodies);
- Freshwater Fish Habitat Compensation monitoring programs; and
- Environmental Effects Monitoring.

Other monitoring requirements may be added as determined by regulatory conditions of approval.

#### **10.1.5 Fisheries Compensation Works**

A Fish Habitat Compensation Agreement and Authorization for the Shoal Cove Pond Tailings Management Facility (TMF) has previously been issued (January, 1997) by Fisheries and Oceans

Canada (DFO) with respect to the freshwater fish habitat affected. However, as a condition of that authorization the Proponent must carry out a Fish Habitat Compensation Program which includes the following works:

- Restore stream flow to the original streambed of Salt Cove Brook by diverting water from the canal below Haypook Pond;
- Create new fish rearing habitat in a diversion channel between Haypook Pond Canal and Salt Cove Brook including the revegetation of streambanks;
- Alter a concrete barrier in the canal above the new diversion channel to allow for fish passage during low flows; and
- Construct an earth barricade approximately 50 m downstream from the outlet of the new diversion channel to repair a breach in an old tailings dam.

In addition to DFO's requirements, the provincial Department of Environment and Conservation (ENVC) requires that an overflow structure, i.e., cut-off wall and diversion pipeline be installed near the outflow of Clarke's Pond out of concerns that during high runoff events the outflows of Clarke's Pond may have a negative impact on water quality discharging from the TMF. A diversion system has been designed to minimize the effects of high runoff events and the system bypasses both Clarke's Pond Brook and the TMF and finally discharges into Shoal Cove Brook.

The cut-off wall will be constructed at the southern end of Clarke's Pond so that it does not affect the hydraulic control of the outflow into Clarke's Pond Brook. Final design will ensure minimum flows are maintained between Clarke's Pond and Clarke's Pond Brook, and the addition of a fish ladder will ensure fish passage is maintained between Clarke's Pond and Clarke's Pond Brook. The footprint of the diversion structure in Clarke's Pond will result in the harmful alteration, disruption or destruction (HADD) of fish habitat and has therefore been added to the Freshwater Fish Habitat Compensation Plan.

#### **10.1.5.1 Construction Activities**

Key activities associated with development of the fisheries compensation works include:

- Load-haul-dump truck and miscellaneous heavy equipment operations;
- Surveying;
- Vegetation clearing, overburden stripping/grubbing and material stockpiling;
- Providing new freshwater fish habitat (i.e. compensation channel) in accordance with the approved Freshwater Fish Habitat Compensation Plan;
- Installing watercourse crossings (e.g. temporary bridges);
- Bridge and culvert maintenance;
- Excavation and trenching;
- Placing substrate within the new compensation channel;
- Dewatering and sediment control;

- A rock quarry (exact location is not known at this time) will be operated to the west of Shoal Cove Pond to provide materials required for compensation works (e.g., substrate);
- Fuel and other hazardous material storage and handling; and
- Heavy equipment traffic.

#### **10.1.5.2 Environmental Issues**

##### **General**

General environmental issues that may be associated with construction of the fisheries compensation works:

- The disturbance of fish and fish habitat as a result of construction in the freshwater environment;
- Potential leakage or spills of fuel or other hazardous materials;
- Hazardous materials use and storage;
- Noise, dust and emissions associated with equipment movement and use;
- Sedimentation and erosion from clearing, excavation, stockpiling, and other activities which result in ground disturbance;
- Sedimentation associated with culvert and bridge installation, if required;
- Loss of terrestrial habitat due to clearing and excavation activities;
- Noise, dust and emissions associated with equipment movement and use, including crushing and aggregate processing;
- Buffer zone intrusions near watercourses;
- Water quality effects due to site runoff, erosion and sedimentation as a result of clearing and grubbing, excavation, placement of rock fill, and construction of the required structures;
- The harmful alteration, disturbance, and destruction (HADD) of fish and fish habitat as a result of construction in the environment;
- Stranding fish during the diversion of water flow from the canal below Haypook Pond;
- Hydrologic effects resulting from excavation, filling, dewatering and water control; and
- Interaction with wildlife that may use the Project area during certain times of the year.

##### **Sensitive Areas/Periods**

*Freshwater:* The compensation works will be in or near areas that provide habitat for a number of freshwater species. The contractor shall get approval from the Department of Fisheries and Oceans for the timing of in-water construction to minimize the impact on local fish populations.

Newspar is currently designing the Freshwater Fish Habitat Compensation diversion channel and monitoring program in consultation with DFO and ENVC.



*Terrestrial:* Vegetation consists predominantly of grass, alder, blueberry, fir and spruce. Various species of wildlife are known or thought to occur in the St. Lawrence area. Traffic associated with the fisheries compensation works shall avoid any wildlife and any occurrences will be reported.

### 10.1.5.3 Environmental Protection Procedures

#### General Measures

General environmental protection procedures relevant to the development of the mines and mill are listed in Table 10.5, and presented in detail in Attachment D.

**Table 10-5: Relevant Environmental Protection Procedures – Fisheries Compensation Works**

General Environmental Protection Procedures (Attachment D)	Relevance to Fisheries Compensation Works
D.1 Clearing of Vegetation	•
D.2 Grubbing and Disposal of Related Debris	•
D.3 Storage, Handling and Transfer of Fuel and Other Hazardous Materials	•
D.4 Sewage Disposal	•
D.5 Solid Waste Disposal	•
D.6 Quarrying and Aggregate Removal	•
D.7 Buffer Zones	•
D.8 Erosion Prevention	•
D.9 Excavations, Embankment and Grading	•
D.10 Stream Crossings	•
D.11 Dust Control	•
D.12 Trenching	•
D.13 Dewatering – Work Areas	•
D.14 Marine Vessels	
D.15 Pumps and Generators	•
D.16 Noise Control	•
D.17 Blasting	
D.18 Drilling – Geotechnical	
D.19 Concrete Production	•
D.20 Linear Developments	•
D.21 Vehicular Traffic	•
D.22 Works In/Around Marine Environment	
D.23 Surveying	•
D.24 Equipment Operations	•
D.25 Geotechnical Drilling in the Marine Environment	
D.26 Fish Relocation	•
D.27 Historic Resources	

Sections 10.0 and 11.0 and Attachments B, C, D, and E of this EPP provide information to be used to prevent pollution and reduce potential adverse environmental effects during mine and mill development. Included here are a listing of Fact Sheets and Operational Statements published by Fisheries and Oceans Canada (some of which are applicable to the fisheries compensation works), a listing of ENVC

Species at Risk Data Sheets, the environmental protection procedures and a listing of ENVC environmental guidelines.

#### **10.1.5.4 Area Specific Measures**

In addition to the general environmental protection measures listed above, the following specific measures will be implemented during construction:

- Additional specific conditions of approval will be implemented as per regulatory requirements;
- With respect to migratory birds the time of operation of exterior lighting such as spotlights and floodlights will be restricted on humid, foggy, and/or rainy nights, particularly during the migration season;
- Environmental monitoring to ensure no species at risk are identified on or within 20 m of the construction footprints;
- Environmental monitoring during initial on-land construction to ensure no evidence or materials of historic/archaeological significance are discovered or lost;
- Implementation of the Freshwater Fish Habitat Compensation Plan and monitoring; and
- Environmental Effects Monitoring.

#### **10.1.5.5 Relevant Documents**

Documents related to the development of the fisheries compensation works include the following:

- Emergency Response Plan;
- Health & Safety Plan;
- Mine Development Plan
- Waste Management Plan;
- Freshwater Fish Habitat Compensation Plan;
- Newfoundland & Labrador Operational Statement – Bridge Maintenance (DFO);
- Newfoundland & Labrador Operational Statement – Clear Span Bridges (DFO);
- Newfoundland & Labrador Operational Statement – Culvert Maintenance (DFO);
- Environmental Guidelines – Fording (ENVC);
- Environmental Guidelines – Bridges (ENVC);
- Environmental Guidelines – Culverts (ENVC);
- Environmental Guidelines – Diversions, New Channels, Major Alterations (ENVC);
- Environmental Guidelines – Watercourse Crossings (ENVC); and
- Environmental Guidelines – General Construction Practices (ENVC).

#### **10.1.5.6 Permits, Approvals and Authorizations**

A registry of all permits required for the Project is located in a separate CFI/Newspar database. This registry will be updated as permit requirements change over the course of site development.

#### **10.1.5.7 Monitoring Requirements**

Monitoring applicable to the fisheries compensation works include:

- Water quality and quantity monitoring will be undertaken. In addition, water quality monitoring at other locations will be undertaken at the discretion of Site Environmental Monitors to ensure that natural freshwater bodies are not negatively affected by construction activity;
- Post-construction survey to verify that the works are completed according to and within the schedule of the Freshwater Fish Habitat Compensation Plan;
- Freshwater Fish Habitat Compensation monitoring programs; and
- Environmental Effects Monitoring.

Other monitoring requirements may be added as determined by regulatory conditions of approval.

### **11.0 CONTINGENCY PLAN**

#### **11.1 Fuel and Hazardous Material Spills**

Fuel and hazardous materials can be damaging to vegetation, soil, water (freshwater or marine), groundwater, wildlife, aquatic organisms, historic resources and human health and safety.

In the event of a fuel or hazardous material spill, the HSE supervisor will be notified immediately. It is the responsibility of the supervisor/monitor to contact the appropriate agencies, if required.

An Emergency Response Team Coordinator (ERTC) will be identified at site. He/she has been trained in spill cleanup procedures and how to mobilize the cleanup equipment. The overall responsibility of co-ordinating a cleanup and maintaining this contingency plan to ensure it is current and up to date will be his/her responsibility. The ERTC has full authority to take necessary and appropriate action without unnecessary delay. The ERTC will act in consultation with the HSE Supervisor and regulating authorities.

The ERTC will be responsible for the preparing a written report which will be submitted (as soon as possible and no later than 30 days after the spill) to the HSE Supervisor. It will be the responsibility of the HSE Supervisor to distribute the report to relevant government agencies.

An Emergency Preparedness and Response Plan is currently being developed by Newspar and will address fuel and hazardous materials spills.

#### **11.2 Wildlife Encounters**

Wildlife encounters pose a risk for stress and/or injury to both the wildlife and site personnel. Control measures and environmental protection procedures have been put in place to minimize the risk to

wildlife and humans. As a protection measure, hunting, trapping or fishing by Project personnel is not permitted on site.

Site Environmental Monitors are responsible to ensure that the Site and working areas are kept clean of food scraps and garbage, waste is collected regularly and inspections are carried out to ensure cleanliness in accordance with the Project's Waste Management Plan. No attempts to catch, chase or divert, follow, or otherwise harass any wildlife will be made by any project personnel. Any encounters with wildlife shall be reported to the HSE Supervisor.

To adequately document all worker/wildlife encounters, a wildlife encounter form shall be provided to all site contractors and completed when encounters are of a significant or threatening nature. These forms must be submitted to the HSE Supervisor.

An Emergency Preparedness and Response Plan is currently being developed and will address Wildlife Encounters.

### **11.3 Forest Fires**

Construction for the development of the Proposed St. Lawrence Fluorspar Mine site may have activities that increase the risk of fire in the natural environment.

To minimize potential risk of fire, the HSE Supervisor will ensure that contractors take all precautions necessary to prevent fire hazards when working at the site. All waste materials of a flammable nature shall be disposed of in the appropriate container and disposed of in an appropriate manner; in addition sufficient firefighting equipment shall be present at the site.

An Emergency Preparedness and Response Plan is currently being developed and will address Forest Fires.

### **11.4 Vessel Accidents**

There exists the potential that vessels involved during construction activities may run aground, become involved in collisions with other vessels, or sink due to inclement weather conditions or other unforeseen circumstances. Further problems may result if oil products or chemicals are released during vessel accidents. However, the priority concern will be the safety of all crew members.

There is already extensive use of the waters of Placentia Bay by large ocean going vessels and smaller vessels. The bay supports a healthy commercial fishery, aquaculture, oil tanker traffic associated with the refinery and trans-shipment terminal, cargo vessels, passenger ferries and recreational craft.

Vessel crews of ships providing service to the Project area shall have emergency response procedures for both life threatening and potentially polluting situations. These emergency response procedures shall be communicated to all crew members and made available to the Proponent and EPCM contractor upon request.

An Emergency Preparedness and Response Plan is currently being developed and will address Vessel Accidents.

## **ATTACHMENT A** **Contacts**

### **Newspar & Canada Fluorspar (NL) Inc.**

Phonce Cooper  
General Manager  
St Lawrence Fluorspar Mine Reactivation Project  
Tel: (709) 873-3331  
Fax: (709) 873-3335  
[pcooper@newspar.ca](mailto:pcooper@newspar.ca)

### **EPCM Contractor**

To Be Determined  
Project Manager

To Be Determined  
HSE Supervisor

To Be Determined  
Construction Manager

To Be Determined  
*EPP for Construction Phase* Document Control Coordinator

### **ENVIRONMENT CANADA**

*Environmental Protection Operations Directorate - Atlantic*  
Senior Compliance Promotion Officer  
Tel: (902) 426-6318  
Fax: (902) 426-9709

*Canadian Wildlife Service*  
Environmental Conservation Branch  
Tel: (709) 772-5585  
Fax: (709) 772-5097

### **FISHERIES AND OCEANS CANADA**

Jack O'Rourke  
Area Habitat Biologist – Southern, NL Region  
Tel: (709) 772-7345  
Fax: (709) 772-2659

Carole Grant  
Section Head, Marine Section, Habitat Protection Division, St. John's, NL  
Tel: (709) 772-2506  
Fax: (709) 772-5562

Fisheries Officer  
Darryl Walsh - St. Lawrence Area  
Tel: (709) 279-7850  
Fax: (709) 279-7860

**CANADIAN COAST GUARD**

Environmental Response  
Marine Pollution Incident  
Tel: (709) 772-2083  
1-800-563-9089

Joint Rescue Coordination Centre Halifax: Newfoundland & Labrador  
Halifax, NS  
Tel: (709) 772-5151  
1-800-563-2444

Air Search and Rescue Coordination Center  
Halifax, NS  
1-800-565-1582

**TRANSPORT CANADA**

Manager – Compliance & Enforcement  
Clement Murphy  
St. John's, NL  
Tel: (709) 772-5165

**NEWFOUNDLAND DEPARTMENT OF ENVIRONMENT AND CONSERVATION**

Water Resources Management Division  
Clyde McLean  
Manager - Investigation Section  
Tel: (709) 729-5713

Pollution Prevention Division  
Dexter Pittman  
Manager - Industrial Compliance Section  
Tel: (709) 729-6771

Wildlife Division  
Kirsten Miller  
Senior Wildlife Biologist – Habitat Management  
Tel: (709) 637-2029

**NEWFOUNDLAND DEPARTMENT OF TOURISM, CULTURE AND RECREATION**

Provincial Archaeology Office  
Martha Drake  
Tel: (709) 729-2462

**NEWFOUNDLAND DEPARTMENT OF GOVERNMENT SERVICES**

Environmental Protection Officer  
St. Lawrence  
Tel: (709) 466-4060  
Fax: (709) 466-5674

**NEWFOUNDLAND DEPARTMENT OF NATURAL RESOURCES**

Alex Smith  
Director – Mines/Mineral Development  
St. John's  
Tel: (709) 729-6379

**ROYAL CANADIAN MOUNTED POLICE**

RCMP Marystown Detachment  
PO Box 1240  
Marystown, NL A0E 2M0  
Tel: (709) 279-3001

**ATTACHMENT B**  
**Fisheries and Oceans Canada**  
**Operational Statements and Fact Sheets**

<b>OS #</b>	<b>Title</b>
1	Aquatic Vegetation Removal in Freshwater Systems Operational Statement
2	Bridge Maintenance Operational Statement
3	Beaver Dam Removal Operational Statement
4	Culvert Maintenance Operational Statement
5	Directional Drilling Operational Statement
6	Dock Construction Operational Statement
7	Marine Wharf Repair/Reconstruction Operational Statement
8	Isolated Pond Construction Operational Statement
9	Maintenance of Riparian Vegetation in Existing Right-of-ways Operational Statement
10	Moorings Operational Statement
11	Overhead Line Construction Operational Statement

<b>Fact Sheet #</b>	<b>Title</b>
1	Effects of Silt on Fish and Fish Habitat
2	Blasting – Fish and Fish Habitat Protection
3	Ditching
4	Temporary Fording Sites
5	Forwarder Trails
6	Filter Fabric
7	Rock Check Dam
8	Temporary Bridges
9	Resource Road Construction
10	Instream Work in the Dry – Cofferdams
11	Streambank Stabilization



Fact Sheet #	Title
12	Instream Work in the Dry – Temporary Diversion
13	Instream Work in the Dry – Elevated Pipes
14	Culvert Stabilization
15	Storm Drain Outlets
16	Highway Construction Low Point Protection
17	Temporary Settling Basins
18	Bridge Construction/Demolition
20	Highway Construction/Upgrading – Infilling, Stabilization and No-Grub Zones
21	Freshwater Intake End-of-Pipe Fish Screen
22	Diamond Drilling – Mineral Exploration
23	Stream Clean-up
24	Timber Crib
26	Culvert Installations

Please note that DFO Fact Sheets may be revised in the future and the information/guidance contained in some of the above Fact Sheets may differ from the Operational Statements. In cases where an Operation Statement and a Fact Sheet exist for a given activity, Newspar will adhere to the information/guidance contained in the Operational Statement. If there are any questions or concerns, Newspar will contact DFO for clarification.

**ATTACHMENT C**  
**Department of Environment and Conservation Newfoundland and Labrador Species at Risk Data**  
**Sheets**

<b>Data Sheet #</b>	<b>Title</b>
1	The Banded Killifish
2	The Barrows Goldeneye
3	The Eskimo Curlew
4	The Harlequin Duck
5	The Peregrine Falcon ( <i>anatum and tundrius</i> )
6	The Piping Plover
7	The Red Crossbill
8	The Short-Eared Owl
9	The Chimney Swift

## **ATTACHMENT D ENVIRONMENTAL PROTECTION PROCEDURES**

### **D.1 CLEARING OF VEGETATION**

#### **Environmental Concerns**

Vegetation clearing (e.g., trees and shrubs) will be required during site preparation for work areas, laydown areas, roads, etc. Environmental concerns include loss of habitat, sedimentation of watercourses, and disturbance or destruction of historic resources.

#### **Environmental Protection Procedures**

Measures will be implemented to reduce the potential effects of vegetation removal. Clearing activities will be limited to those areas that are required for construction of infrastructure, and will comply with the requirements of all applicable permits, including the Commercial Cutting Permit, the Operating Permit and the Permit to Burn.

- a) A cutting permit shall be obtained prior to the start of any site clearing. Clearing and tree removal shall be restricted to the minimum areas needed for the site and stockpiles. Under no circumstances will any merchantable timber be bulldozed.
- b) 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.
- c) All slash shall be piled for subsequent disposal.
- d) Limits of clearing must be shown on all drawings Issued for Construction. Only those areas designated on drawings shall be cleared. Trees shall be blazed at intervals in advance of clearing to demarcate the limits of the work. Blazed trees shall not be felled. Clearing activities shall not remove any trees outside the authorized clearing widths.
- e) All merchantable or forest product timber within the specified clearing limits shall be located so as not to obstruct the access or work of others. All trees in the cutting area that are greater than 9 cm diameter breast height (dbh) must be felled and removed from the cutting area. All trees must be utilized to a top diameter of 8 cm.
- f) All merchantable or forest product timber shall be salvaged. It shall be cut into standard harvesting lengths (i.e., 8 to 12 ft lengths), trimmed, and stored adjacent to the road so that it is easily located during winter. The timber will be available for local residents to recover and use as firewood or saw logs.
- g) Disposal of cleared unmerchantable timber, slashings and cuttings by burning shall be in compliance with applicable regulations, the Environmental Code of Practice for Open Burning, and the Permit to Burn. At no time shall a fire be left unattended.
- h) Slash and any other construction material or debris shall not be permitted to enter any watercourse and shall be piled above spring flood levels.
- i) Chain saws or other hand-held equipment shall be used in clearing vegetation except where alternative methods or equipment are approved by the HSE Supervisor through consultation with Site Environmental Monitors. Mechanical clearing by heavy equipment shall not occur except where it can be demonstrated that there is no merchantable timber, and where the resulting terrain disturbance and erosion will not result in the loss of topsoil or the sedimentation of watercourses and water bodies. All chainsaw operators shall be equipped with an adequate fire extinguisher during the fire season, as well as shovels and axes.

- j) Mobile mechanical equipment will not be used for timber removal within 15 meters of a stream or waterbody. Manual methods or a mechanical long lead choker system may be used in these instances. Activities will be monitored and if necessary this buffer may be increased where necessary.
- k) A buffer zone of undisturbed vegetation shall be maintained between construction areas and all waterbodies, watercourses (Attachment D.7), and ecologically sensitive areas. Buffer zones features will be key elements of the environmental review of drawings prior to construction.
- l) Where possible timber shall be felled inward toward the work area to avoid damaging any standing trees within the immediate work area.
- m) Workers shall not destroy or disturb any features that are indicative of a historical or archaeological site. Any such findings shall be reported to the HSE Supervisor.
- n) Burning:
  - i. All fires shall be in compliance with the applicable regulations, Environmental Code of Practice for Open Burning, and the Permit to Burn. At no time shall a fire be left unattended.
  - ii. No more than three fires are to be burning at any one time; each fire shall not exceed 9 square metres.
  - iii. No burning shall take place during periods of high or extreme Fire Weather Index, or in winds over 15 km/h; and
  - iv. Adequate supervision is required until fires and ashes are completely burned out. Sites being supervised must be within a single sight line.

## **D.2 GRUBBING AND DISPOSAL OF RELATED DEBRIS**

### **Environmental Concerns**

The principal concerns associated with grubbing and disposal of related debris are the potential effects of erosion on marine and freshwater ecosystems and water quality.

### **Environmental Protection Procedures**

All grubbing and disposal of related debris near watercourses shall adhere to relevant regulatory requirements, including the permits from ENVC and the formal "Letters of Advice", "Operational Statements", and/or Authorizations for Works or Undertakings Affecting Fish Habitat from the Fisheries and Oceans Canada.

Other specific measures to be undertaken to minimize potential effects on aquatic habitat and resources are as follows:

- a) Grubbing of the organic vegetation mat and/or the upper soil horizons shall be minimized. These shall be left in place where possible. Limits of stripping and/or grubbing must be shown on all drawings issued for construction.
- b) The organic vegetation mat and/or upper soil horizon material, which has been grubbed, shall be spread in a manner that attempts to cover exposed areas. Any surplus material shall be stored or stockpiled for site rehabilitation and revegetation purposes elsewhere in the Project area. Topsoil and peat shall be stockpiled separately from the overburden and separated by a buffer zone (Attachment D.7) from any waterbodies, watercourse or ecologically sensitive areas. The location of the stockpiles shall be shown on drawings issued for construction and accessible for future rehabilitation purposes.
- c) Organics/topsoil shall not be contaminated with underlying overburden or other unsuitable material during grubbing and stripping. It shall be kept separate to be used for reclamation purposes.
- d) A minimum of 5 metres should separate stockpiles of grubbed material from standing timber.
- e) 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. This is especially important if stockpiles are to remain in place for periods of a year or more.
- f) Silt fences, check dams, settling ponds, etc. shall be installed to minimize and control runoff of sediment laden water during grubbing, and the re-spreading and stockpiling of grubbed materials. Where grubbed, materials are re-spread or stockpiled; as many stumps and roots as possible shall be left on the ground surface to maintain soil cohesion, to dissipate the energy of runoff, and promote natural revegetation. Erosion control measures shall be implemented in areas prone to soil loss; these measures can include brush cover, stone riprap, wire mesh, settling ponds, and drainage channels. Refer to Attachment B for specific DFO Fact Sheets and Operational Statements.
- g) The length of time that grubbed areas are left exposed to the natural elements shall be minimized to prevent unnecessary erosion. These areas will be monitored for erosion and such findings shall be reported to the HSE Supervisor.
- h) During grubbing, care shall be taken to ensure that grubbed material will not be pushed into areas that are to be left undisturbed.

- i) Grubbing shall be avoided on steep slopes near watercourses. A buffer zone shall be maintained between grubbed areas and watercourses, waterbodies and ecologically sensitive areas (Attachment D.7). Grubbing limits adjacent to watercourses will be flagged in the field prior to undertaking grubbing/stripping activities.

### **D.3 STORAGE, HANDLING AND TRANSFER OF FUEL AND OTHER HAZARDOUS MATERIALS**

A variety of fuels and potentially hazardous materials will be used during Project construction activities. Gasoline, diesel fuel, grease, motor oil and hydraulic fluids are all needed for equipment. Other potentially hazardous materials, which may be routinely used, include:

- propane;
- explosives;
- acetylene;
- paints;
- epoxies;
- concrete additives;
- antifreeze;
- cleaners and solvents;
- fuels (gasoline, diesel, etc.) and
- oils and grease

The Proponent is aware that a number of the substances listed above appear on Schedule 1 of the Environmental Emergency Regulations (E2), under the Canadian Environmental Protection Act, 1999 (CEPA 1999), which includes ammonium nitrate based explosives. The proponent is also aware that any person in Canada, who owns, or has charge, management or control of a substance listed on Schedule 1 of the regulations must ensure that where either the total amount of the substance or the single largest container on site is equal to or greater than that specified in the Schedule 1 that notice must be submitted to the Minister containing the information outlined in Schedule 2 of the regulations. The Proponent will also ensure that all other applicable requirements of the Environmental Emergency Regulations (E2) with respect to the storage, handling and transfer of fuel and other hazardous materials will be followed at all times.

#### **Environmental Concerns**

The primary concern regarding the use of fuel and hazardous materials is their uncontrolled release to the environment through spillage, and the subsequent adverse effects on human health and safety, terrestrial, aquatic and marine habitat and species, soil, and groundwater quality.

#### **Environmental Protection Procedures**

The following protection procedures will be implemented in accordance with the St. Lawrence Fluorspar Mine Reactivation Waste Management Plan, (BAE-Newplan, 2011):

##### *Transport of Fuel and Other Hazardous Materials*

The Transport of Dangerous Goods Act, 1992 applies when dangerous good are being transported to and from site. The transport of fuel and other hazardous materials to and from site will be undertaken in compliance with the Transportation of Dangerous Goods Act, 1992. All goods entering the site will be inspected to ensure that the appropriate placards or labels and manifest are in place and the

security of the product is assured. All persons handling dangerous goods must show proof of certification of training in the transportation of dangerous goods as required under the Act. Security staff and the HSE Supervisor will be trained in the requirements of the Act.

If there is a requirement to transport hazardous waste off site and within Canada for recycling or disposal operations the Proponent will consult and adhere to the Interprovincial Movement of Hazardous Waste Regulations, SOR/2002-301 (IMHWR), under the Canadian Environmental Protection Act, 1999 (CEPA 1999).

If there is a requirement for hazardous wastes or hazardous recyclable materials to be shipped for disposal or recycling outside Canada or imported into Canada, the Proponent will consult and adhere to *the* Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations, SOR/2005-149 (EIHWHRMR), under the Canadian Environmental Protection Act, 1999 (CEPA 1999).

#### *Storage of Fuel and Other Hazardous Materials*

Bulk storage of fuel products and other hazardous materials on land will be stored and handled in compliance with The Storage and Handling of Gasoline and Associated Products Regulations, 2003, the Heating Oil Storage Tank System Regulations, 2003, or other applicable regulations.

The following conditions shall apply to the storage of fuels and other hazardous materials.

- a) Before installing fuel storage tanks, the necessary approvals under The Storage and Handling of Gasoline and Associated Products Regulations shall be obtained from the Department of Government Services.
- b) Only trained, qualified persons will handle fuels and other hazardous materials. The Workplace Hazardous Materials Information System (WHMIS) will be implemented to ensure proper handling and storage is achieved.
- c) Oils, grease, gasoline, diesel or other fuels or any material deemed to be hazardous shall be stored at least 100 m from any surface water.
- d) Fuels shall be stored inside dykes or self-dyked units and will be clearly marked to ensure they are not damaged due by moving vehicles. The markers will be visible under all weather conditions.
- e) Storage areas will be equipped with suitable firefighting equipment.
- f) Any aboveground fuel tank shall be positioned over an impervious mat and shall be surrounded by an impervious dyke of sufficient height (minimum height 0.6 m) to contain:
  - i. where a dyked area contains only one storage tank, the dyked area shall retain not less than 110% of the capacity of the tank; and
  - i. where a dyked area contains more than one storage tank, the dyked area shall retain not less than 110% of the capacity of the largest tank or 100% of the capacity of the largest tank plus 10% of the aggregate capacity of all the other tanks, whichever is greater. Otherwise approved self-dyked storage tanks shall be used where required.
  - ii. dyked areas are to be dewatered on an as needed basis. The water shall be decontaminated prior to release into the environment.
- g) Any dykes of earthwork construction shall have a flat top not less than 0.6 m wide, and be constructed and maintained to be liquid tight to a permeability of 25 L/m<sup>2</sup>/day. The distance between a storage tank shell and the centerline of a dyke shall be at least one half the tank height. Dykes shall be fenced.



- h) Fuel storage areas and non-portable transfer lines shall be clearly marked or barricaded to ensure that they are not damaged by moving vehicles. The markers will be visible under all weather conditions. Barriers will be constructed in compliance with the provincial Storage and Handling of Gasoline and Associated Product Regulations, 2003.
- i) Waste oils, lubricants, and other used oil shall be reused, recycled or disposed of at an approved, licensed waste management facility or eliminated using controlled burning methods (i.e., incineration or burner) in accordance with the Policy Directive PPD05-01: Management of Impacted sites, Guidance Document for the Management of Impacted sites, and Guidance Document GD-PPD-045: Protocol for the Management of Soils Excavated on Impacted sites and the Air Pollution Control Regulations, 2004. Controlled burning of used oil products shall not proceed without approval from the Department of Environment and Conservation.
- j) All storage tank systems shall be inspected on a regular basis as per Sections 20 and 21 of The Storage and Handling of Gasoline and Associated Products Regulations, 2003. This involves, but is not limited to, gauging or dipping and the keeping of reconciliation records for the duration of the program.
- k) Contracted fuel suppliers must comply with Newspar's *EPP for Construction Phase* and before transporting or positioning fuel at the site, have on file at the Newspar office a copy of their "Fuel and Hazardous Material Spills Contingency Plan" which will have to be accepted by Newspar.
- l) Smoking shall be prohibited within 10 m of a fuel storage area.
- m) Hot Work Permits shall be required before undertaking welding or torch cutting at a fuel storage area.
- n) Temporary fuelling or servicing of mobile equipment in areas other than the main fuel storage site shall not be allowed within 30 m of a watercourse. Gasoline or lubricant depots must be placed 100 m from the nearest waterbody.
- o) Within 30 days of known decommissioning of a storage tank system, empty the system of all products, remove the tank and associated piping from the ground, remove any contaminated soil, clean the area and restore the site.
- p) Any soil contaminated by small leaks of fuel, oil or grease from equipment shall be disposed of in accordance with the provincial Environmental Protection Act and Used Oil Control Regulation. The Used Oil Control Regulation will be used as a guideline to the ENVC requirements for such disposal.
- q) A fuel and other hazardous materials spill contingency plan, and appropriate emergency spill equipment shall be in place on site (see Section 12.1 of this *EPP for Construction Phase*, in addition to contingency plans required by fuel suppliers).
- r) Bulk fuel storage facilities shall be dipped on a weekly basis in order to accurately gauge fuel consumption. These consumption rates shall allow for visually undetectable sources of contamination to be identified and corrected.
- s) Outdoor storage of gasoline or diesel in portable containers is acceptable only in designated areas for that purpose.

#### *Fuel Transfer*

The following procedures shall apply to the transfer of fuel or hazardous material:

- a) In all cases, a qualified person shall attend transfer to storage tanks, for the duration of the operation. This person shall be trained in proper fuel handling procedures to minimize the risk of an unattended spill. The attendant shall be trained in the requirements of Newspar's Emergency Preparedness and Response Plan, which is currently being developed by Newspar, and WHMIS.
- b) Hoses or pipes used for fuel transfer shall be equipped with properly functioning and approved check valves, spaced to prevent backflow of fuel in the case of failures.
- c) Fuel transfers between ship and shore or between ships shall be conducted in accordance with the *Canada Shipping Act*, Oil Pollution Prevention Regulations.
- d) Exposed pipelines shall be protected from vehicular collision damage by the installation of guardrails.
- e) Exposed "ship to shore" fuel transfer lines shall be clearly flagged from the shoreline to the receiving fuel tank to prevent traffic collision during transfer operations.
- f) Bulk fuel transfers from tankers shall only take place during daylight hours.

#### *Equipment Fuelling*

The following procedures shall apply to the fuelling of heavy construction equipment:

- a) Fuelling and lubrication of equipment shall occur in such a manner as to minimize the possibility of contamination to soil or water.
- b) When refuelling equipment, operators shall:
  - i. use leak free containers and reinforced rip and puncture proof hoses and nozzles;
  - ii. be in attendance for the duration of the operation; and
  - iii. seal all storage container outlets except the outlet currently in use.
- c) Regular inspections shall be performed on the hydraulic and fuel systems of machinery. Leaks shall be repaired immediately.
- d) Fuelling or servicing of mobile equipment on land shall not be allowed within 30 m of watercourses, waterbodies or ecologically sensitive areas. Gasoline or lubricant depots must be placed 100 m from the waterbody.
- e) Fuelling attendants shall be trained in the requirements under the Spill Contingency Plan.

#### *Hazardous Materials*

The following procedures shall apply to the use of hazardous materials:

- a) Hazardous materials shall be used only by personnel who are trained and qualified in the handling of these materials and only in accordance with manufacturers' instructions and government regulations. WHMIS and the provisions of the Transportation of Dangerous Goods Act (Transport Canada) shall be implemented throughout the job site. All employees involved with hazardous materials shall be appropriately trained.
- b) All hazardous materials shall be removed and disposed of in an acceptable manner in accordance with government regulations and requirements.
- c) Material Safety Data Sheets (MSDS) must be available on site prior to receipt of any hazardous materials.
- d) A hazardous waste storage area shall be constructed and properly marked.

### *Spills of Fuel and Hazardous Materials*

The following procedures shall apply to spills of fuel and hazardous materials:

- a) All necessary precautions shall be implemented to prevent the spillage of fuels and other hazardous materials used during the construction phase.
- b) All spills of fuel and hazardous materials shall be reported immediately to the HSE Supervisor, Environmental Monitors and the Contractor. Any spill to the marine or freshwater environments and spills of 70 L or more on land shall be reported immediately to the Canadian Coast Guard at 709-772-2083 or 1-800-563-9089 as outlined in Newspar's Emergency Preparedness and Response Plan (currently being developed by Newspar).
- c) Every effort shall be made to immediately control the source of the leak or spill and clean up the contaminated area.
- d) All material and equipment used during spill cleanup must be stored properly until it can either be disposed of or cleaned to avoid further contamination. Disposal of clean up materials must be in accordance with this *EPP for Construction Phase*, Newspar's Waste Management Plan and all government regulations and requirements.
- e) There shall be appropriate emergency spill response equipment on site for all phases of the Project.
- f) A complete list of the emergency spill response equipment shall be available on site and kept up to date.
- g) All emergency response equipment should be kept in good working condition suitable for required use. To ensure working condition of equipment, practice deployments will be conducted under the supervision of the Emergency Response Team Coordinator and/or the HSE Supervisor.
- h) Regular inspections of all spill response supplies and equipment will be conducted and documented to ensure adequate supply and condition.
- i) The use of chemical dispersants to treat oil slicks shall take place only under the authorization of Environment Canada, Environmental Protection Branch (Newfoundland and Labrador Region).

## **D.4 SEWAGE DISPOSAL**

### **Environmental Concerns**

The accidental release of untreated sewage is a concern to human health, drinking water quality, and freshwater and marine ecosystems.

### **Environmental Protection Procedures**

During construction it is anticipated that portable toilets will be installed at the site. Sewage and waste materials at the site will be routinely removed for treatment and disposal in accordance with the St. Lawrence Fluorspar Mine Reactivation Waste Management Plan, (BAE-Newplan, 2011).

## **D.5 SOLID WASTE DISPOSAL**

### **Environmental Concerns**

Solid waste (e.g., domestic waste, paper, cardboard, and wood), if not properly controlled and disposed of, will be unsightly, may cause human safety and health concerns, and could negatively affect wildlife. Refer to the St. Lawrence Fluorspar Mine Reactivation Waste Management Plan, (BAE-Newplan, 2011).

### **Environmental Protection Procedures**

- a) A Waste Management Plan will be in place to address waste generation, handling and disposal during construction. Any procedures or strategies for management of solid waste will be in accordance with the Provincial waste management strategy.
- b) During the construction phase a Temporary Waste Management Station will be operated under the direct supervision of the Site Services Contractor and managed by the Company's Representative. Access to the Temporary Waste Management Station will be controlled at all times via a chain link fence. Solid waste will be removed from site and disposed at an existing landfill by a certified waste management company.
- c) All contractors will be required to submit detailed waste management plans which adhere to Newspar's Waste Management Plan.
- d) The minimum qualifications of the Temporary Waste Management Station Operator include:
  - i. Workplace Hazardous Materials Information System (WHMIS) certification;
  - ii. Transportation of Dangerous Goods certification;
  - iii. Working knowledge of applicable Provincial and Federal waste management legislation (i.e., Newfoundland and Labrador Environmental Protection Act, Used Oil Control Regulations, Air Pollution Control Regulations, Storage and Handling of Gasoline and Associated Products Regulations, etc.).
- e) Waste accumulated on site prior to disposal shall be confined so that it does not pose an environmental or health hazard or cause conflict with wildlife. Storage of waste shall be in proven bear proof containers; this can be done in consultation with the Inland Fish and Wildlife Division of the Department of Environment & Conservation (ENVC).
- f) All non-recyclable non-hazardous solid domestic wastes will be transported for off-site disposal at an approved waste disposal site.
- g) To reduce the amount of waste being generated and land filled, all site personnel will abide by the Reduce, Reuse, Recycle Program outlined in Newspar's Waste Management Plan.
- h) Waste that is not approved for landfill shall be transported off site to an approved disposal location.
- i) No waste material will be deposited in a body of water.

## **D.6 QUARRYING AND AGGREGATE REMOVAL**

### **Environmental Concerns**

The principle concerns for quarry development and associated aggregate removal include the potential for sedimentation of marine and freshwater systems, loss of terrestrial habitat and historic resources, Acid Rock Drainage (ARD) potential and the possible requirement for quarry development/reclamation plans.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize these effects:

- a) Permits to quarry shall be obtained from the Department of Natural Resources before quarries are established. Quarry activity will be undertaken in compliance with these quarry permits and shall comply with all other relevant regulations.
- b) The development of quarry sites and rock excavations will require frequent ARD monitoring to determine the absence or presence of sulphide bearing rock. For environmental protection against ARD, Newspaper Site Environmental Monitors will visually inspect bedrock before, during, and after excavation work on a periodic basis.
- c) Quarry areas shall be developed in a controlled manner so as to minimize potential environmental effects. The following protection procedures shall be implemented to minimize disturbance and facilitate rehabilitation:
  - i. the quarry area, stockpile area and limits of clearing shall be staked and/or flagged to prevent over extension of the development, thereby minimizing the extent of the operation (corner posts at least 1 metre high will be installed to mark the quarry area);
  - ii. the area to be excavated shall be clear cut of all vegetation prior to grubbing, excavation or removal of any material (Attachments E.1 and E.2). Only the area necessary for one year's production may be cleared;
  - iii. all stumps, organic matter and topsoil shall be stripped from the area to be excavated and stockpiled at least 5 m from uncleared areas; stripping stockpiles shall be kept at least 10 m from the area of excavation; separate overburden piles shall be developed where this material is present; topsoil and the underlying overburden shall not be mixed;
  - iv. stockpile areas are to be approved by the HSE Supervisor, in consultation with the Site Environmental Monitors, prior to stripping;
  - v. working faces must not exceed 10 m for a rock quarry or 5 m for unconsolidated materials. The faces should also be worked so that their height doesn't exceed that which can be safely reached with the equipment being used. Available material left over from quarrying and stockpiled overburden shall be used to minimize slopes and face heights;
  - vi. each quarry will be evaluated on a site specific basis to determine if, based on topography and presence/absence of Potentially Acid Generating (PAG) material, whether the cliff faces will be converted to rubbished slope; and
  - vii. following sloping, the topsoil and any organic materials shall be re-spread over the disturbed area to promote natural revegetation by adjacent seed sources.
- e) In order to prevent sedimentation of waterbodies, watercourses and ecologically sensitive areas,

settling ponds shall be established, if required, and cleaned on a regular basis, as required, to ensure that the retention capacity is maintained at all times. Refer to Attachment B for specific DFO Fact Sheets and Operational Statements.

- f) If water is abstracted from a water course, used, treated and subsequently returned to the same water course, the TSS level of the effluent shall not contain more than 30 milligrams per litre (ppm) more than was in the water originally abstracted. Any other site discharges shall not exceed 30 milligrams per litre (ppm) of TSS, irrespective of the TSS level of the receiving water body.
- g) Dust from aggregate processing, storage and handling shall be controlled with water as required during times when temperatures are above freezing.
- h) If crushing activities in the quarry require a water source, approval from the Department of Environment and Conservation, Water Resources Management Division, shall be obtained prior to any water use.

### **Rehabilitation**

- a) Any organic material or overburden removed during development of the borrow pits and quarries shall be stockpiled near the pit or quarry area for future use during reclamation of the borrow pit or quarry. Overburden or non-PAG rock that is not suitable for reclamation purposes shall be stockpiled in stable configurations, contoured to match the surrounding landscape, for permanent disposal or temporarily stockpiled and returned to the borrow pit or quarry opening once extraction from the pit or quarry is complete.
- b) As site conditions dictate, vegetation or other cover materials may be established on slopes to control erosion and dust. Quarries and pits reclaimed during operations may be used as test plots to evaluate suitable revegetation techniques to be used for the reclamation of other work areas in the future.
- c) The Department of Natural Resources will be contacted not less than three days prior to abandonment of a site to arrange for an inspection.
- d) All equipment and material will be removed from the site.
- e) All pit and quarry slopes will be recontoured to a slope angle less than or equal to 30°, or to a slope conforming to that existing prior to quarrying.
- f) Waste overburden may be used for sloping but topsoil or organic material may not be used for sloping. Following sloping, topsoil or organic material may be spread over the entire quarry area.
- g) Further conditions regarding sloping and revegetation requirements will be determined through the Decommissioning and Reclamation Plan if required, or as a condition of the quarry permit itself. Each quarry will be evaluated on a site specific basis to determine if, based on topography and presence/absence of PAG material, cliff faces should be converted to rubbish slopes.

## **D. 7 BUFFER ZONES**

### **Environmental Concerns**

The potential for erosion/sedimentation and resulting effects on water quality, fish and fish habitat is a key environmental concern associated with construction activities. In addition, sensitive and rare environmental receptors require protection from activities associated with construction.

Buffer zones of natural vegetation or undisturbed areas that separate these environmental receptors from construction activities are needed to mitigate adverse environmental effects. These undisturbed areas may also provide wildlife habitat or travel corridors near work areas and Project features.

Due to the many buffer zones referenced in various government documents and others that may be stated in regulatory permits yet to be obtained, the appropriate buffer zone to use in a specific area may be a source of confusion. Therefore, the HSE Supervisor, and his/her designate, shall be the only site-based personnel to determine which buffer is applicable, and contractors shall be required to consult with these individuals prior to establishing buffers. For general guidance, however, the following procedures shall define the minimum requirements during construction.

### **Environmental Protection Procedures**

- a. A minimum buffer zone of natural vegetation of 30 m from the high water mark of waterbodies and watercourses shall be maintained around work areas where available space poses a constraint. For ecologically sensitive areas (e.g., spawning habitat, migratory bird nests) a minimum buffer zone of natural vegetation of 50 m will be maintained around work areas where available space poses a constraint. If the available space allows, then wider buffer zones of 100 m shall be maintained between construction areas and watercourses, waterbodies and ecologically sensitive areas.
- b. Sediment runoff control fences shall be constructed at the toe of all slopes outside the buffer zone, as required by the HSE Supervisor or his/her designate. This is required 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 waterbody. Also, repairs and replacement of damaged silt fences shall be addressed immediately (refer to DFO Fact Sheet No. 6. for filter fabric/silt fence construction).
- c. DFO recommends buffer zones to separate resource roads running adjacent to water bodies be calculated by the following formula:  
$$\text{Buffer Width (m)} = 20 \text{ m} + 1.5 \times \text{slope (\%)};$$
 however in accordance with item a), a minimum buffer zone of 30 m and where possible a 100 m buffer zone shall be maintained at all times, except where specified otherwise, e.g., ecologically sensitive areas.
- d. A minimum buffer zone of 20 m shall be maintained around any archaeological site within which no construction activities will take place. Where available space poses constraints, this width may be reduced and supplemented by other protective measures. Site specific mitigation measures for known historic resources in the Project area will be addressed within Newspar's Historic Resources Management Plan.



**Table 11-1: Recommended Buffer Strips for Various Activities**

Activity	Environmental Receptor	Recommended Width (m) of Buffer Strip	Reference
Fuelling/ Vehicle Servicing	Waterbody	30 m	Environment Canada
Fuel Storage	Waterbody	100 m	Gosse, M.M., A.S. Power, D.E. Hyslop, and S.L. Pierce. 1998. Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador. Fisheries and Oceans, St. John's, NF. x + 105 pp., 2 appendices.
Roads	Waterbody	20 m +1.5 x slope (%)	Gosse, M.M., A.S. Power, D.E. Hyslop, and S.L. Pierce. 1998. Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador. Fisheries and Oceans, St. John's, NF. x + 105 pp., 2 appendices.
Quarries / Borrow Pits	Waterbody	100 m	Gosse, M.M., A.S. Power, D.E. Hyslop, and S.L. Pierce. 1998. Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador. Fisheries and Oceans, St. John's, NF. x + 105 pp., 2 appendices..
Controlled Burns	Waterbody	20 m +1.5 x slope (%) where >30%)	Scruton, D.A., Sooley, D.R., Moores, L., Barnes, M.A., Buchanan, R.A., and McCubbin, R.N. 1997. Forestry Guidelines for the Protection of Fish Habitat in Newfoundland and Labrador. Fisheries and Oceans, St. John's, NF. iii + 63pp, 5 appendices.
Cutting	Black Bear Denning Sites (Winter) or during Harvesting	50 m	Department of Natural Resource
Cutting	Waterbody occupied by a beaver	30 m	Department of Natural Resource
Cutting	Center of Highway	100 m	Department of Natural Resource

Activity	Environmental Receptor	Recommended Width (m) of Buffer Strip	Reference
Cutting	Waterbody or stream that is identified on the latest 1:50,000 topographic map, or around other water bodies if they are greater than 1 meter in width	20 m	Department of Natural Resource
Cutting	Bald Eagle or Osprey nest during nesting season (March 15 to July 31)	800 m	Department of Natural Resource
Cutting	Bald Eagle or Osprey nest for the remainder of the year (outside nesting season)	200 m	Department of Natural Resource
Cutting	Designated Water Supply: <ul style="list-style-type: none"> <li>• Major Reservoirs, including river channel intakes,</li> <li>• Main river channel</li> <li>• Major tributaries, lakes and ponds</li> <li>• Other waterbodies</li> </ul>	150 m 75 m 50 m 30 m	Department of Natural Resource
Historic Resource	Historic Resource	20 m	Department of Tourism, Culture and Recreation

## **D.8 EROSION PREVENTION**

### **Environmental Concerns**

The potential for erosion and resulting effects to water quality and fish and fish habitat is a key environmental concern associated with construction activities.

### **Environmental Protection Procedures**

Erosion prevention shall be a main objective in all work areas where soil may be transported by water, wind, or ice. The application of erosion control measures is found throughout Attachment D but reiterated here to provide a more thorough evaluation of site specific activities required by Project personnel.

#### *General*

The primary way to control erosion is to avoid activities that contribute to it. All areas of exposed soil are to be stabilized by back blading or grading to meet engineered slope requirements. Where erosion along an exposed slope is of concern, and a sufficient natural vegetation buffer (Attachment D.7) does not exist between the high water mark of the nearby waterbody and the exposed soil, a silt fence shall be constructed to control sediment runoff.

Engineering requirements will vary depending on the locations of the silt fence and will take such factors into consideration as drainage/surface area of exposed soils and time of year the silt fence is employed.

Specific erosion and sedimentation control measures may be designed for the site to minimize the effects of construction activities on the environment. They may include: site drainage and ditching system, including culverts and risers; installation of piped outlet sedimentation control ponds; temporary run-off interceptor ditches; and check sediment dam traps which will provide both energy dissipation and sedimentation control. However, regardless of these protection measures, if an environmental inspection reveals that sediment is entering a watercourse, further mitigative measures shall be implemented.

Contractors will use erosion and sedimentation control measures to ensure water control on site. Any water discharged into a waterbody, watercourse or ecologically sensitive area, due to construction activities, shall comply with applicable discharge guidelines as presented in the Newfoundland and Labrador Environmental Control Water and Sewer Regulations under the *Environmental Protection Act* for applicable analysis parameters which include, but may not be limited to, pH and Total Suspended Solids. The analyses and frequency of monitoring may be altered to satisfy regulatory requirements.

#### *Streams*

All streambanks that contain loose or erodible materials shall be stabilized. No material shall be deposited within the watercourse. Sloping shall be accomplished by back blading and the material removed is to be deposited above the high water mark of any watercourse. A field survey shall be conducted at all stream crossings prior to construction to determine sensitivity.

## **D.9 EXCAVATIONS, EMBANKMENT AND GRADING**

Excavation, embankment and grading of common rock and other materials may be required at various locations within the Project site.

### **Environmental Concerns**

The principal environmental concerns associated with excavation, embankment and grading are potential effects on water quality, fish and fish habitat, terrestrial habitat and historic resources due to ground disturbance.

### **Environmental Protection Procedures**

All work shall be conducted in a manner that controls potential sedimentation of watercourses and waterbodies in or adjacent to the work areas as outlined in the following procedures:

Excavation, embankment and grading shall be done only when grubbing and stripping is completed. Where engineering requirements do not require grubbing and stripping (e.g., within the buffer zone of a stream crossing), filling shall occur without any disturbance of the vegetation mat and/or the upper soil horizons.

Excavation, embankment and grading in the vicinity of stream crossings shall be done in a manner that minimizes erosion and sedimentation of watercourses and water bodies.

A buffer zone of undisturbed vegetation shall be maintained between construction areas and all watercourses, waterbodies and ecologically sensitive areas (Attachment D.7).

## **D.10 STREAM CROSSINGS**

### **Environmental Concerns**

The environmental concerns associated with stream crossings, culvert installations, bridge construction, and maintenance include direct disturbance to, or mortality of, fish, disturbance to waterfowl, loss of fish habitat caused by sedimentation and removal of substrate, and stream bank vegetation.

### **Environmental Protection Procedures**

Erosion stabilization methods and effective sedimentation control practices shall be implemented when required, and these shall conform to requirements, guidelines, and principles contained in DFO Fact Sheets, Operational Statements, ENVC Environmental Guidelines (Attachment E), and specific requirements of regulatory permits and approvals.

Culvert installation shall comply with permits issued by ENVC and the Letter of Advice for Works and Undertakings Affecting Fish Habitat from DFO. Newspar recognizes that the DFO does not routinely issue Letters of Advice for in-stream work between certain times of the year. However, Newspar will request an extension through DFO and consult with the Department to develop mitigation strategies should in-stream work become a necessity during a time period in which in-stream work is not typically undertaken.

The following measures shall be implemented to minimize negative effects of stream crossings:

- a) Stream crossing construction activities, in areas of fish habitat, will be undertaken under the direct guidance of the HSE Supervisor and/or Site Environmental Monitors.
- b) Work shall be performed in such a way as to ensure that materials such as sediment, fuel and oil do not enter watercourses and water bodies.
- c) The banks and flood plains of watercourses must be adequately protected from erosion by seeding, sodding or placing of riprap.
- d) A suitable buffer (Attachment D.7) of undisturbed natural vegetation shall be left between the access road and the bank of any adjacent watercourse, unless otherwise specified. The buffer width shall be determined through the formula:

$$\text{Buffer width (m)} = 20 \text{ m} + 1.5 \times \text{slope (\%)}$$

- e) In those locations where culverts are required, permit applications shall be made to the Department of Environment and Conservation and application to DFO for a Letter of Advice. The culverts used shall be sized to handle the 1-in-25 year return period flood and will be constructed in accordance with the Environmental Guidelines for Culverts from the ENVC (Water Resources Division, 1992). The following measures shall also be implemented:
  - i. install culvert(s) in accordance with good engineering and environmental practice. Refer to ENVC's environmental guidelines and specific DFO Fact Sheets (e.g., Stream bank Stabilization, In-stream Work in the Dry – Temporary Diversion, Culvert Stabilization, etc.) in Attachment B;
  - ii. unless otherwise indicated, all work shall take place in dry conditions, either by the use of cofferdams or by diverting the stream with pumps and hoses. All work involving major alterations to stream channels must be carried out at a time of low flow, in a manner that prevents downstream sedimentation;

- iii. cylindrical culverts shall be counter sunk only where necessary to protect fish habitat such that the culvert bottom is one-third the diameter below the streambed in the case of culverts less than 750 mm outside diameter; for culverts greater than 750 mm outside diameter, the culvert bottom shall be installed a minimum of 300 mm below the streambed;
- iv. in multiple (gang) culvert installations, install one culvert at an elevation lower than the others;
- v. ensure that the natural low flow regime of the watercourse is not altered; culverts must not disrupt flow of water or cause ponding at the upstream side of the installation;
- vi. a culvert shall not be installed before site specific information such as localized stream gradient, fish habitat type and species present have been evaluated;
- vii. inlet and outlet areas will be adequately protected from erosion by placing riprap, filter stone, or concrete headwalls;
- viii. use culverts of sufficient length to extend a short distance beyond the toe of the fill material;
- ix. use backfill material which is of texture that shall support the culvert and limit seepage and subsequent washing out;
- x. align culverts such that the original direction of stream flow is not significantly altered and the gradient at the culvert follows the stream channel gradient to the extent possible. Infilling or reduction of the natural cross sectional area of the watercourse is not permitted;
- xi. remove fill and construction debris from the culvert area to a location above the peak flow level to prevent its entry into the stream;
- xii. confine construction activity to the immediate area of the culvert;
- xiii. fill material shall not be removed from streambeds or banks except when removal of material is necessary to ensure a flat foundation for installing a culvert;
- xiv. the use of heavy equipment in streams or bodies of water is not permitted (see ENVC - Environmental Guidelines for Watercourse Crossings; Environmental Guidelines for Bridges; Environmental Guidelines for Culverts; Environmental Guidelines for Fording and Fisheries and Oceans Canada - Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador [Gosse et al., 1998], and DFO Fact Sheets in Attachment B);
- xv. as required, cofferdams of non-erodible material shall be installed above and below work areas to separate them from the watercourse when excavating for culverts and footings. All sandbags used in construction must be accounted for and removed after work is completed. Where pumping is used to bypass flow, pumps must have sufficient capacity to prevent washout of the cofferdams. (Refer to Attachment B, DFO Fact Sheet No. 10. Instream Work in the Dry – Cofferdams);
- xvi. cofferdams shall be removed upon completion of construction and the streambed returned as closely as possible to its original condition;
- xvii. water pumped from work areas or other runoff must have sediment and turbidity removed by settling ponds, filtration, or other suitable means before discharging to a waterbody; and
- xviii. The release of sediment laden water into a waterbody, watercourse or ecologically sensitive areas, due to construction activities, shall comply with applicable discharge guidelines as presented in the Newfoundland and Labrador Environmental Control Water and Sewer Regulations under the Environmental Protection Act for applicable analysis parameters which include, but may not be limited to, pH and Total Suspended Solids. The analyses and frequency of monitoring may be altered to satisfy regulatory requirements.

- f) When fording any watercourse, the Environmental Guidelines for Fording from the ENVC, Water Resources Division and the guidelines outlined in the Attachment B DFO Fact Sheet No. 4 shall be followed in conjunction with the following:
- i. areas of spawning habitat shall be avoided;
  - ii. where feasible crossings shall be restricted to a single location and made at right angles to the watercourse;
  - iii. equipment activity within the watercourse shall be minimized by limiting the number of crossings;
  - iv. all equipment shall be clean and mechanically sound to avoid the introduction of oil, gasoline, and hydraulic fluids to waterbodies;
  - v. no servicing or washing of heavy equipment shall occur adjacent to a watercourse, waterbody, or ecologically sensitive area unless it is at a location approved by the Site Environmental Monitors;
  - vi. temporary fuelling services or washing of equipment in areas other than the main fuel storage site shall not be allowed within 30 m of a watercourse, waterbody, or ecologically sensitive area except, within a refuelling site approved by the Site Environmental Monitors, where conditions allow for containment of accidentally spilled fuels. All waste oil, filters, containers or other such debris shall be removed from the work area and disposed of in an approved waste disposal site;
  - vii. where the ford area is not natural bedrock or is easily disturbed by fording, the entire ford area shall be stabilized using vegetation mats, corduroy roads or coarse material (125 mm diameter or greater) when such material is available from a reasonably close location within the right-of-way; when the substrate of the ford area is not subject to easy disturbance by fording or coarse material is not easily available within the right-of-way, fording under existing substrate conditions may occur under the guidance of the HSE Supervisor and the Site Environmental Monitors;
  - viii. fording activities shall not decrease the depth of the watercourses to less than 20 cm. Where the existing depth is less than 20 cm, that depth shall be maintained;
  - ix. waterbodies shall not be forded during high flow periods;
  - x. all bank sections which contain loose or erodible materials shall be stabilized or avoided if possible; if banks must be sloped for stabilization, no material shall be deposited within the watercourse; sloping shall be accomplished by back blading and the material removed shall be deposited above the high water mark of the watercourse.
  - xi. the flow of water shall be diverted around the work area during the installation of a culvert to ensure dry conditions are prevalent for construction activities; and
  - xii. culverts shall be marked to indicate their position under the snow.
- g) Bridges:
- i. Environmental protection measures outlined in a) to g) above which are applicable to bridge construction and maintenance will be adhered to;
  - ii. During bridge construction all applicable guidelines outlined in the Attachment B DFO Fact Sheets shall be adhered to (e.g., Fact Sheet No. 8. Temporary Bridges, No. 11. Stream bank Stabilization, No. 18. Bridge Construction/ Demolition, Clear Span Bridges Operational Statement, etc.);
  - iii. To safely convey peak flows, bridges must be designed for a 100 year return period stream

flow;

- iv. Bridge abutments must be set back above the high water mark, in accordance with the engineering design. However, each installation will take into consideration site specific conditions and additional set back may be required;
- v. The upstream and downstream sides of abutments must be protected with riprap, concrete or heavy timber to prevent erosion and scouring;
- vi. Roadside embankments near the watercourse must be adequately protected from erosion by sodding, seeding or placing of riprap;
- vii. Adequate erosion protection must be provided where roadside ditches discharge into the watercourse near the bridge;
- viii. Abutments and piers must be constructed in the dry and during times of low flow;
- ix. During construction of concrete components, formwork will be constructed to prevent any fresh concrete from entering bodies of water. Dumping of concrete or washing of tools and equipment in any body of water is prohibited;
- x. Wood preservatives such as penta, CCA or creosote or treated wood products will not be used for bridgework;
- xi. Periodic maintenance such as painting, resurfacing, clearing of debris, or minor repairs, must be carried out without causing any physical disruption of the watercourse. Care must be taken to prevent spillage of pollutants into the water; and
- xii. All waste materials must be disposed of in accordance with the Waste Management Plan.
- xiii. All areas affected must be returned to a state that resembles local natural conditions.



## **D.11 DUST CONTROL**

### **Environmental Concerns**

The environmental concerns associated with dust include effects on human health and aquatic ecosystems, waterfowl and vegetation.

### **Environmental Protection Procedures**

The following measures shall be taken to mitigate potential effects of dust:

- a) Dust from construction activities shall be controlled where possible by using frequent applications of water. Waste oil and calcium chloride shall not be used for dust control but other agents such as wood chips, matting and revegetation will be considered on a site-specific or as needed basis.
- b) Dust control agents (wood chips, matting, etc.) shall be stored at suitable distances from all watercourse, water body, or ecologically sensitive areas using proper Buffer Zones (see Section D.7).

## **D.12 TRENCHING**

### **Environmental Concerns**

Where excavation for the construction of water lines or any other infrastructure is undertaken, potential runoff of sediment laden water could result in effects on marine or freshwater fish and fish habitat, water quality and historic resources.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of trenching:

- a) Topsoil and excavated overburden and bedrock shall be stored in separate stockpiles for later use during rehabilitation.
- b) Any unsuitable material shall be disposed of in a disposal area approved by the HSE Supervisor in consultation with the Site Environmental Monitors.
- c) Dewatering of trenches shall make use of measures to minimize and control the release of sediment laden water through the use of filtration, erosion control devices, settling ponds, straw bales, geotextiles or other devices.

## **D.13 DEWATERING - WORK AREAS**

### **Environmental Concerns**

The major concerns associated with dewatering are groundwater quality, groundwater drawdown, sedimentation, direct fish mortality, and/or habitat destruction for freshwater and marine fish species and will be reflected in the dewatering plan which is currently under development.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of dewatering:

- a) Filtration or other suitable measures, such as settling ponds, silt fences and dykes, shall be implemented for sediment removal and turbidity reduction in water pumped from work areas before discharging (Attachment D.8).
- b) Where possible, clean water shall be discharged to vegetated areas to further reduce any potential effects on watercourses. Additionally, mechanisms for energy dissipation shall be implemented to prevent scouring and erosion of the discharge location (impervious geotextile mats, perforated end of pipe, discharge to small settling sump, etc.).
- c) The size of sedimentation ponds shall be designed to accommodate the anticipated volume of collected water and meet discharge criteria for water quality.
- d) Discharged water shall be encouraged to follow natural surface drainage patterns.
- e) Harmful alteration, disruption and destruction (HADD) of fish habitat shall not be permitted unless a formal HADD Authorization has been obtained from DFO.
- f) Water pumped from excavations or work areas, or any runoff or effluent directed out of the Project site shall have sediment removed by settling ponds, filtration or other suitable treatment before discharging to a watercourse, waterbody or other ecological sensitive area. In addition, any effluent directed out of the Project site shall be tested for Total Suspended Solids (TSS) and hydrocarbons (if there are any indications of hydrocarbon contamination, such as a sheen or odour) before being discharged to any watercourse, waterbody or other ecological sensitive area. Effluent discharge shall comply with the provincial Environmental Control Water and Sewage Regulations under the provincial Water Resources Act.
- g) Contingency measures shall be implemented to deal with storm events and high runoff in order to minimize adverse environmental effects from these events. Erosion prevention and sediment containment materials such as silt fence material, riprap, straw bales, filter fabric and designated equipment shall be available to address contingency/emergency situations.
- h) All contractors on site shall follow the above environmental protection procedures to ensure water control at site. Any water discharged into a waterbody, watercourse or ecologically sensitive area, due to construction activities, shall comply with applicable discharge guidelines as presented in the Newfoundland and Labrador Environmental Control Water and Sewer Regulations under the *Environmental Protection Act* for applicable analysis parameters which include, but may not be limited to, pH and Total Suspended Solids. The analyses and frequency of monitoring may be altered to satisfy regulatory requirements.

## **D.14 MARINE VESSELS**

Vessel traffic during construction will consist of barges and tugs for the construction of the marine facilities and ocean going barges and tugs for the transportation of construction equipment and supplies to the fluorspar construction site. Heavy lift vessels will be used for some of the larger components, particularly if they are being transported on the high seas. All vessels will meet Transport Canada regulations and standards, under the *Canada Shipping Act*, as well as international regulations established by the International Maritime Organization (IMO).

This section of the *EPP for Construction Phase* is intended to provide general guidance for Project supervision and environmental staff to prevent or minimize potential effects in the biophysical environment.

### **Environmental Concerns**

Project vessel traffic will increase the density of vessel traffic in the Placentia Bay shipping lanes. The Great St. Lawrence harbour is located on the western edge of the Placentia Bay shipping lanes. There is a small risk due to increase in vessel traffic for vessels to collide, run aground and/or sink. Such events may lead to the accidental release of fuel and other hazardous materials to the marine environment. The release of non-compliant ballast could introduce non-indigenous species or deleterious substances into Placentia Bay and/or St. Lawrence Harbour.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of marine vessels

- a) All vessel activities will be governed in accordance with Pollutant Discharge Reporting Regulations, Regulations for Prevention of Pollution from Ships and for Dangerous Chemicals and Vessel Traffic Service Zones Regulations as required by the *Canada Shipping Act*.
- b) Newspar will establish a Construction Safety Zone (CSZ), before the start of marine construction activities, of approximately 500 m x 1000 m in Great St. Lawrence harbour near shore area. This CSZ will encompass the marine area in which the construction dock, and later the wharf will be built. For safety and security purposes, the CSZ will be closed to all fishing activities and fishing vessel transits, at least until the Construction Dock is operational.
- c) At any given time, there would likely be no more than six vessels operating concurrently on the marine wharf.
- d) The HSE Supervisor, Site Environmental Monitors and the local public will be advised of all particulars with regard to incoming/outgoing vessel traffic on a timely basis including updates regarding the estimated time of arrival/estimated time of departure (ETA/ETD) as advised by vessel masters.
- e) Project vessel masters will observe the following basic rules:
  - i. demonstrate that they have a set of safety and emergency procedures on board;
  - ii. advise the Newspar site office of their time of departure from their port of origin and their estimated time of arrival at Great St. Lawrence Harbour, Placentia Bay;
  - iii. notify the Newspar site office of their progress at sea or, if stopping at other ports enroute, update their ETA;

- iv. relevant Canadian Hydrographic Charts or electronic charting systems must be on board prior to leaving their port of origin; these charts must be kept on board at all times.
  - v. implement best management practices designed to achieve zero discharge of oily waste while at the site and along the Project shipping route;
  - vi. all Project related vessels shall have onboard adequate oil spill response equipment to handle an accidental release of product into the environment; and
  - vii. notify the Canadian Coast Guard and the Newspar site office of any releases or spills of substances (emergencies) immediately and identify the location.
- f) No Project-related vessels will discharge wastes into surrounding waters. The discharge of garbage from ships into Canadian waters and the waters of the Fishing Zones of Canada is prohibited.
- g) All crewmembers will be familiar with emergency procedures for both life threatening and potentially polluting situations.
- h) All stationary hazards, such as moored platforms or vessels, will be clearly marked according to the *Navigable Waters Protection Act* approvals and/or Collision Regulations under the *Canada Shipping Act*.
- i) All vessels will have to comply with the *Canada Shipping Act* 2001 Ballast Water Control and Management Regulations SOR/2006-129.

## **D.15 PUMPS AND GENERATORS**

### **Environmental Concerns**

A variety of water pumps, hoses and generators will be in frequent use in many areas of the construction site and the support and supply for remote work camps. Environmental concerns are associated with any accidental spills or chronic leaks contaminating water bodies. There may also be concerns with air emissions from generators on the site.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of pumps and generators:

- a) Oils, grease, gasoline, diesel, or other fuels shall be stored at least 100 m from any surface water.
- b) Drip pans shall be placed underneath pumps and generators. Absorbent material will be kept at all sites where pumps and generators are in use.
- c) Hoses and connections on equipment located near water bodies shall be inspected routinely for leaks and drips.
- d) All leaks shall be reported immediately to the HSE Supervisor, who will then inform the Site Environmental Monitors. Upon detection of a leak, the equipment (i.e., pump, generator, etc.) should be shut down immediately and corrective action taken to repair the leak and clean up any contaminated soil and/or water.

## **D.16 NOISE CONTROL**

### **Environmental Concerns**

A variety of noises associated with construction and operation activity can negatively affect wildlife distribution and abundance. Noises associated with blasting are temporary in nature and noises associated with drilling are considered long-term, but localized.

### **Environmental Protection Procedures**

Measures shall be implemented wherever possible to minimize potential effects arising from a variety of noise sources, including:

- a) Adherence to all applicable permits and approvals.
- b) All equipment shall have exhaust systems regularly inspected and mufflers will be operating properly.
- c) Reduce travel speeds around potentially sensitive habitats and reschedule high disturbance activities during ecologically sensitive time periods where applicable.
- d) Low level flying of aircraft should be avoided in areas where wildlife, particularly caribou, are present.
- e) No blasting is to be carried out in the marine environment.

## **D.17 BLASTING**

### **Environmental Concerns**

The general environmental concerns associated with on-land blasting include:

- a) destruction of vegetation outside excavation limits;
- b) noise disturbances to wildlife;
- c) disturbance of archaeological resources; and
- d) dust generation.

Blasting in or near water bodies can affect organisms with swim bladders (fish) but may also affect a variety of aquatic animals including shellfish, marine mammals, otters, seabirds and waterfowl. The introduction of sediment into the water column is also a concern for marine/freshwater water quality and related effects on aquatic life.

### **Environmental Protection Procedures**

The handling, transportation, storage and use of explosives and all other hazardous materials shall be conducted in compliance with all applicable laws, regulations, orders of the Department of Environment and Conservation and the Department of Government Services, the Explosives Act, and the Transportation of Dangerous Goods Act.

The following measures shall be implemented to minimize the potential effects of blasting:

- a) Explosives shall be used in a manner that will minimize damage or defacement of landscape features, trees, ecologically sensitive areas such as wetlands, and other surrounding objects by controlling through the best methods possible (including precisely calculated explosive loads and adequate stemming) the scatter of blasted material beyond the limits of activity. Outside of cleared areas, inadvertently damaged trees shall be cut, removed, and salvaged if merchantable (Attachment D.1). Fly rock that inadvertently enters a waterbody, watercourse or any ecologically sensitive area, and that can be recovered without further damage to the environment shall be removed. Instances where larger fly rock (boulders) enters these areas or deep waterbodies, recovery of this shall be discussed with the Site Environmental Monitor, who will decide whether or not it is practical to proceed.
- b) Blasting patterns and procedures shall be used which minimize shock or instantaneous peak noise levels.
- c) Time delay blasting cycles or blasting mats shall be used, if necessary, to control the scatter of blasted material.
- d) Blasting shall not occur in the vicinity of fuel storage facilities.
- e) Blasters' Safety Certificates and the Temporary Magazine License shall be obtained prior to drilling and blasting.
- f) Use of explosives shall be restricted to authorized personnel who have been trained in their use.
- g) There shall be separate magazines on site for explosives and for dynamite blasting caps. All temporary magazines for explosive storage shall have appropriate approvals.



- h) The immediate area of the blast site shall be surveyed within one hour prior to a blast and operations will be curtailed if wildlife is observed within 500 m. Environmental personnel and Site Environmental Monitors shall conduct pre-blast monitoring where knowledge and competency is required to see and identify species of concern. Additionally, any individual animal sightings by other personnel shall be reported to the HSE Supervisor and the Site Environmental Monitors.
- i) All blasting associated debris, such as explosive boxes and used blasting wire, must be collected for proper disposal as soon as possible following blasting activity.

If blasting is necessary within the vicinity of an archaeological site, precautions shall be taken to ensure that blasted material and shock waves do not disturb any part of the site. If necessary, protective covering shall be applied to the site under the supervision of an approved archaeologist. Blasting shall not be undertaken in these areas without first notifying the HSE Supervisor and the Site Environmental Monitors.

#### *Blasting in Close Proximity to Waterbodies*

If blasting is necessary within a waterbody, it shall be undertaken in compliance with the required Water Resources permits from the ENVC and DFO guidelines (Attachment B). Reference may also be made to "Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters" (Wright and Hopky, 1998). A copy of this reference shall be kept at the Newspar HSE office at the Project site and made available to all contractors.

- a) Drilling and blasting activities shall be undertaken in a manner that ensures the magnitude of explosions is limited to that which is absolutely necessary. A blasting plan shall be reviewed with one of the local Fisheries Officers in advance of work in close proximity to water bodies.
- b) For multiple charges, time delay detonators should be used to reduce the overall detonation to a series of single explosions separated by minimum delay.
- c) Large charges should be subdivided into a series of smaller charges with minimum delay detonation.
- d) The on-land set back distance from the blast site to the waterbody or the set back distance around the blast site in the waterbody are based on the maximum weight of charge to be detonated at one instant in time and the type of fish or fish habitat in the area of the blast. Reference shall be made to the DFO Fact Sheet – Blasting and Fish Habitat Protection, (Attachment B).
- e) Blast holes must be stemmed with sand or gravel to grade or to streambed/water interface to confine the blast.
- f) Ammonium nitrite based explosives shall not be used in or near water due to the production of toxic by-products.
- g) If large numbers of fish or marine mammals are detected in the area described, blasting may proceed only when the fish or marine mammals have left the area. Blasting activities shall not be carried out in the marine environment.

## **D.18 DRILLING – GEOTECHNICAL**

Drilling may be required on land during geotechnical investigations to determine foundation conditions - assess stability, and underlying geology for Project infrastructure.

### **Environmental Concerns**

The environmental concerns associated with drilling on land are surface disturbances, disposal of drilling fluids and cuttings, generation of dust, noise, and the potential effects on terrestrial habitats, historic resources, air quality and aquatic ecosystems.

### **Environmental Protection Procedures**

Potential drilling sites in sensitive areas shall be inspected by the HSE Supervisor and Site Environmental Monitors.

The following measures shall be implemented to minimize the potential effects of drilling:

- a) Drilling sites shall be cleared of vegetation following the procedures detailed in Attachment D.1.
- b) Disposal of all drilling materials and associated solid wastes shall be undertaken in accordance with the procedures in Attachment D.5.
- c) Fuel shall be stored, handled and transported according to Attachment D.3.
- d) Water applications shall be used to control dust, where necessary and the source of water shall be approved for use. The use of water for dust control or coring/wash boring shall be undertaken in a manner, which ensures that runoff does not enter watercourses.
- e) Drilling equipment shall have muffled exhaust to minimize generated noise.
- f) Drilling of water wells shall be conducted in compliance with the Water Resources Act and the Well Drilling Regulations.

## **D.19 CONCRETE PRODUCTION**

### **Environmental Concerns**

The major concern relating to concrete production activities is the effects of washwater released to the environment. Liquid wastes may contain hazardous materials such as cement, concrete additives, and form oil.

Cement is very alkaline and washwater from spoiled concrete or from the cleaning of the batch plant mixers and mixer trucks, conveyors and pipe delivery systems can be expected to have a very high pH which may exceed the acceptable limit, as determined by the Environmental Control Water and Sewage Regulations. Similarly, spoiled concrete or washwater would contain concrete additives and agents, some of which are toxic to aquatic species. Aggregates, particularly the finer sand fractions may be washed from spoiled concrete or discharged in washwater. Uncontrolled release of such washwater, chemicals and sediments could adversely affect aquatic life and aquatic habitat.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of concrete production:

- a) Washwater from the cleaning of mixers, mixer trucks and concrete delivery systems shall be directed to a closed system rinsing/settling basin.
- b) In the event that water from the closed settling system is to be released, it shall be tested prior to release, for parameters related to any concrete additives to be used in the production of concrete (e.g., total hydrocarbons, sodium hydroxide), pH, and total suspended solids. The water to be released shall also meet the limits specified by the ENVC as referenced in the Environmental Control Water and Sewage Regulations, and shall adhere to those portions of the Fisheries Act that relate to fish habitat protection and pollution prevention. Release shall be via runoff control procedures.
- c) If water to be released does not meet discharge criteria, it will be further treated until these discharge criteria have been met.
- d) The settling basin shall be cleaned, on an as required basis, to ensure that the retention capacity is maintained at all times.
- e) The Environmental Code of Practice for Concrete Batch Plant and Rock Washing Operations should be adhered to during concrete production activities.

## **D.20 LINEAR DEVELOPMENTS**

### **Environmental Concerns**

Linear developments encompass a diverse range of standard construction related activities such as ditching, right-of-way clearing and grubbing, roads, pipelines and transmission line construction. Environmental concerns associated with linear developments include potential sedimentation/erosion, and the loss of vegetation and fish/wildlife habitat.

### **Environmental Protection Procedures**

In addition to environmental protection procedures stated below, reference may be made to Gosse *et al.*, 1998, pp 84-88.

The following measures shall be implemented to minimize the potential effects of linear developments:

#### *Road Construction*

- a) Aggregate (fill) materials for construction purposes shall not be removed from any stream.
- b) Sedimentation control measures such as sediment traps and check dams shall be installed where required (Attachment D.8). Solids that accumulate in a settling pond or behind a sediment trap shall be removed on a regular basis to ensure such devices remain effective.
- c) Work shall not be undertaken on easily erodible materials, during or immediately following heavy rainfalls without appropriate protection measures in place.
- d) Buffer zones shall be flagged prior to any disturbance activities.
- e) Mechanical methods of brush control shall be used at all times.
- f) Natural vegetation shall be left in place where possible. Buffer zones (Attachment D.7) shall be maintained around all fill areas adjacent to wetlands. Rights-of-way, particularly in areas of dense vegetation, shall be as narrow as practicable; loss of ground vegetation shall be kept to a minimum.
- g) Drainage from areas of exposed fill shall be controlled by grade or ditching and directed away from watercourses. Surface water shall be directed away from work areas by ditching. Runoff from these areas shall have sediment removed by filtration or other suitable methods.
- h) The requirements of ditch blocks/check dams or sediment traps to intercept runoff shall be determined in the field in consultation with the HSE Supervisor, Site Environmental Monitors, and Contractor personnel.
- i) Check dams shall be used as required to reduce runoff from work areas with exposed soil.
- j) In areas where natural vegetation must be removed, the vegetation layer shall be stored for possible use as erosion control material on exposed slopes.
- k) Temporary erosion control shall be applied on exposed slopes in sensitive areas immediately following exposure of a slope.
- l) The cutting and filling phase of road construction, and the development of other work areas, shall be conducted in a manner which ensures minimum disturbance, and which controls potential sedimentation of watercourses, water bodies and other ecologically sensitive areas such as wetlands in or adjacent to the roads, as outlined in the following procedures:
- m) cutting and filling shall be done only upon completion of grubbing as outlined in Attachment D.2. Where engineering requirements do not require grubbing (e.g., within the buffer zone of a stream

crossing, Attachment D.7), filling shall occur without any disturbance of the vegetation mat and/or the upper soil horizons;

- n) filling in the vicinity of stream crossings shall be done in a manner which ensures that erosion and sedimentation of watercourses, waterbodies and other ecologically sensitive areas such as wetlands is minimized and done in strict compliance with the required watercourse alteration permits from ENVC;
- o) the infilling of watercourses and waterbodies shall not be permitted except, where it is necessary, at an approved stream crossing or where the road alignment cannot avoid some infilling. Newspar, in consultation with the Site Environmental Monitors shall ensure that the work is completed in strict compliance with the required watercourse alteration permits from ENVC and the Authorization for Works or Undertakings Affecting Fish Habitat from the DFO, if required;
- p) buffer zones (Attachment D.7) shall be maintained between the roads and the bank of any watercourse they parallel; and
- q) road fill shall be dry and ice free. On areas of sensitive terrain, the fill shall be end-dumped from the established roadbed.
- r) Culverts shall be installed to maintain natural cross drainage and to prevent ponding.
- s) The number of stream crossings will be minimized. Where the road must cross a stream, the environmental protection procedures detailed in Attachment D.10 shall be followed.
- t) Where possible, construction activities shall avoid areas of wildlife concentrations to prevent undue disturbance of wildlife during critical periods. If encounters with wildlife are unavoidable, then contingency measures detailed in Section 11.2 will be followed.
- u) Rights-of-way shall avoid known archaeological sites and required buffers shall be respected. If any archaeological sites are encountered, then all work in the immediate area within 20 m shall cease pending written approval to recommence the work from the Construction Manager.

#### *Pipeline Development*

- a) Pipelines such as those for the tailings discharge and for the Clarke's Pond Brook diversion shall be constructed above ground and follow the access or service roads where possible.
- b) All exterior surface pipelines with the potential to freeze shall be self draining to containment or employ other protection measures to prevent spillage to the environment. The environmental protection procedures for road construction as outlined above shall be used for pipeline construction where applicable.

#### *Transmission Line Development*

- a) Transmission lines will be constructed from the mill site to each of the mine sites (Blue Beach North and Tarefare). The environmental protection procedures for road construction as outlined above shall be used for transmission line construction where applicable.
- b) Wood, pressure-treated with pentachlorophenol (PCP) or ammonical copper arsenate (ACA) shall not be used. Alternatives to wood will be preferred, or where necessary wood treated with either ACQ (amine) or Copper Azole.
- c) Vegetation control along the transmission line shall use mechanical methods of brush control rather than chemical (herbicides).

#### *Drainage*

- a) Drainage discharge locations shall be determined in consultation with the EH&S Supervisor and the Site Environmental Monitors.
- b) Roads shall be adequately ditched so as to allow for good drainage.
- c) Roadside ditches shall discharge onto vegetated or forested areas, never directly into a watercourse.
- d) Wherever possible, ditches shall be kept at the same gradient as the road.
- e) The location of all culverts shall be marked with a post so they can be located during snow removal operations or if they become covered from debris accumulation.
- f) Reference should be made to DFO Fact Sheet No. 3 – Ditching, and Gosse *et. al.* (1998) – Guidelines for the Protection of Freshwater Fish Habitat in Newfoundland and Labrador.

## **D.21 VEHICULAR TRAFFIC**

### **Environmental Concerns**

Direct physical disturbances from vehicular movements can adversely affect both terrestrial and aquatic environments as well as historic resources. During any construction related operation, the level of activity involving equipment movement, types of equipment and supply, etc. requires various infrastructures such as roads, to conduct the work efficiently and in an environmentally acceptable manner. Typically, vehicles ranging in size from all-terrain vehicles (ATVs) to heavy equipment, all of which can result in ground disturbance, may be used during access road construction. CFI/Newspar shall ensure roads are developed properly to minimize environmental damage resulting from equipment movement and supply of operations.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of vehicular traffic:

- a) ATVs shall not be allowed on the site except as required by field personnel in the performance of the work.
- b) Where possible, the use of ATVs shall be restricted to designated trails, thus minimizing ground disturbance. ATV use shall comply with All Terrain Vehicle Use Regulations and ENVC Environmental Guidelines for Stream Crossings by All Terrain Vehicles.
- c) Vehicle movements shall be restricted to developed areas and roadways.
- d) Appropriate speed limits and road signage shall be established and enforced to minimize environmental disturbance and accidents.
- e) During winter when the ground is covered with snow, snowmobiles and heavy equipment, whether equipped with low impact tread or not, shall not be used for equipment movement and supply outside of established roadways, pathways or trailways.
- f) Equipment and vehicles will yield the right-of-way to wildlife. Any attempt to interfere with the natural movement of wildlife shall be considered harassment and dealt with accordingly.
- g) All Project vehicles, including ATVs, will be properly inspected and maintained in good working order including all exhaust systems, mufflers and any other pollution control devices.

## **D.22 WORKS IN/AROUND MARINE ENVIRONMENT**

### **Environmental Concern**

Works required to take place in the marine environment will include pile driving, marine infilling for the marine wharf, causeway and erection of structures associated with the ship loading topside equipment. The principle environmental concerns from marine construction include the release of fines, hazardous liquids, and toxic substances to the water and substrate, and disturbance to fish and fish habitat. Marine construction activities can also disturb nearshore terrestrial habitat and cause seabirds, waterfowl and marine mammals to avoid the area.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of works in/around the marine environment:

- a) Infilling will be conducted in strict compliance with the Letter of Advice or Authorization for Works Undertakings Affecting Fish Habitat, issued by DFO under the Fisheries Act, the Permit for the Alternation of a Waterbody under the Newfoundland and Labrador Water Resources Act, and the *Federal Navigable Waters Protection Act*.
- b) Clean blasted rock will be used for infilling. Armour stone protection will be placed progressively to minimize erosion and to prevent the loss of infill material. All ballast material will be taken from an approved quarry site.
- c) The operation of heavy equipment will be confined to dry, stable areas or approved barges.
- d) Infilling will be done in compliance with the *Navigable Waters Protection Act* authorization.
- e) Any timber cribbing used for construction of temporary or permanent structures will consist of untreated wood (or preservatives safe for the marine environment).
- f) Silt curtains will be used where appropriate to control sedimentation into the marine environment during infilling.
- g) Bubble curtains may be employed (in consultation with DFO) to mitigate the potential impacts of the percussive noise of pile driving (if required);
- h) All equipment will have muffled exhausts to minimize noise.
- i) All equipment will be serviced and fuelled on land at least 30 m from the marine environment or in designated areas designed for spill containment.
- j) All vehicles must be clean and in good repairs. Regular mechanical inspections for leaks on all equipment will be made and repairs undertaken immediately.
- k) Project staff should not approach concentrations of seabirds, sea ducks or shorebirds.
- l) Food scraps and other garbage will not be left in coastal areas by their staff and/or contractors.
- m) A Fuel and Other Hazardous Material Spill Contingency Plan (Section 11) will be in place and appropriate emergency spill equipment available on site.



## **D.23 SURVEYING**

### **Environmental Concerns**

Surveying activities may include: vegetation removal; traversing; and establishing targets, permanent benchmarks and transponder stations. Surveying activities may disturb vegetation, wildlife, and historic resources.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of surveying:

#### *Vegetation Removal*

- a) Width of survey lines will be limited to that which is absolutely necessary for line of sight and unobstructed passage.
- b) Whenever possible, cutting lines to the edge of open areas will be avoided.
- c) Trees and shrubs will be cut flush with the ground wherever possible (Attachment D.1), with stumps not to exceed 15 cm in height
- d) Cutting of survey lines will be kept to a minimum.
- e) All trees not exactly on transit lines shall be left standing and trees partly on line should be notched (notch not to exceed 1/3 tree's diameter) instead of removed, to allow sighting.
- f) Discretion should be used when large trees are encountered. For example, trees 30 cm at diameter breast height (dbh) or larger should, whenever possible, not be cut. On grid lines, trees of 30 cm diameter or larger shall be left intact and shall be traversed to continue the line.
- g) No attempt to harass or disturb wildlife will be made by any person.
- h) Vehicles will yield the right-of-way to wildlife.
- i) There will be no cutting in areas designated as sensitive without notification and written approval of the HSE Supervisor and consultation with the Site Environmental Monitors.
- j) Archaeological sites and features will not be disturbed during survey work. Any historic resource discoveries will be reported as per the Historic Resources Management Plan.

#### *Traversing*

- a) ATVs will not be allowed off the right-of-way except as approved by the HSE Supervisor, in consultation with the Site Environmental Monitors.
- b) No attempt to harass or disturb wildlife will be made by any person.
- c) No motorized vehicles will enter the areas designated as sensitive without notification and approval of the HSE Supervisor, in consultation with the environmental monitors.
- d) The extent of activities in sensitive areas will be minimized.
- e) Walking in sensitive areas will be restricted to established walking paths, where available.

#### *Establishing Targets, Permanent Benchmarks and Transponder Locations*

- a) A driven T-bar, well embedded to readily identify each benchmark location will be used.

- b) No attempt to harass or disturb wildlife will be made by any person.
- c) Access to sensitive areas is to be approved in writing by the HSE Supervisor.
- d) Standard iron bars and sledgehammers are to be used to establish benchmarks.
- e) Heavy equipment will not be used to access sensitive areas.

## **D.24 EQUIPMENT OPERATIONS**

A variety of equipment will be used on site during construction, which are potential sources of noise, air emissions, and potential leaks or spills.

### **Environmental Concerns**

Noises associated with construction activity may negatively affect wildlife. Air emissions may have air quality implications. Accidental leaks or spills of fuel or other hazardous materials may affect soils, water, fish, vegetation and wildlife.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of equipment operations:

- a) All approvals, authorizations and permits for Project activities will be followed.
- b) Noise control procedures will be put in place during construction (Attachment D.16).
- c) All equipment will have exhaust systems regularly inspected and mufflers will be operating properly.
- d) All equipment (e.g., diesel generators, etc.) will meet the requirements of the provincial Air Pollution Control Regulations under the Environmental Protection Act.
- e) All equipment used during construction will follow the environmental protection procedures outlined in this EPP. In the case of an accidental event resulting from the use of equipment (e.g., a fuel spill), the appropriate contingency plans (Section 11.1) will be implemented.
- f) Regular maintenance inspections for leaks will be made on all equipment. If problems are identified the equipment will be taken out of service and repaired to prevent release of hydrocarbons into the environment (drip tray, spill pan, absorbent material, etc.).

## **D.25 DRILLING – GEOTECHNICAL DRILLING IN THE MARINE ENVIRONMENT**

Marine drilling will be required during geotechnical investigations to determine foundation conditions - assess stability, and general condition of underlying seabed for Project infrastructure. Drilling shall be conducted from a barge of suitable size.

### **Environmental Concerns**

The environmental concerns associated with this type of geotechnical drilling in a marine environment include marine pollution from the release of drill cuttings and other drilling related debris, fuel or other hazardous material; noise generated by drill operations; and disturbance of aquatic ecosystems (marine communities and/or individual species) caused by increased turbidity near the ocean floor in the area proximal to the drill collar location.

### **Environmental Protection Procedures**

The following measures shall be implemented to minimize the potential effects of drilling:

- a) All drilling activity should utilize best environmental techniques and environmental products possible, such as biodegradable or water-based drilling fluids.
- b) Potential drilling sites in the marine environment shall be inspected by the HSE Supervisor and/or Site Environmental Monitors.
- c) An attempt will be made to collect drill cuttings at the surface before discharging to the marine environment.
- d) The diamond drill rig shall be inspected for mechanical soundness prior to mobilization onto the initial drill setup. Barges used to support drilling shall be inspected for seaworthiness prior to drill mounting onto barge. The drill crew shall also keep a daily log of inspections for seaworthiness and mechanical soundness of the barge and drill. Daily logs will note the general stability of the drill rig and overall assessment of the surrounding sea state.
- e) Following the initial inspection and prior to each drill mobilization, the drill rig and barge shall be inspected by the HSE Supervisor and/or Site Environmental Monitors for potential environmental risks.
- f) All fuel, lubricants and other hydrocarbons shall be stored, handled and transported according to Attachment D.3 - Storage, Handling and Transfer of Fuel and Other Hazardous Materials. Only necessary quantities are to be stored at the drill rig at any time.
- g) A spill containment boom shall be deployed around the barge drilling until it is removed from the collar location.
- h) Disposal of drilling materials and all solid wastes shall be undertaken according to Attachment D.5 – Solid Waste Disposal.
- i) Drilling equipment shall have muffled exhaust to minimize generated noise.
- j) Drilling of boreholes shall be conducted in compliance with all conditions of the Exploration Approval for the work required under the Mineral Regulations.
- k) Turbidity along the seabed caused by the release of drill water will be localized to the area proximal to the base of the drill casing and cease after drilling is complete. Release of suspended solids causing an increase in turbidity beyond this immediate area of the seabed shall not be permitted.

- l) Operations shall be suspended when weather conditions exceed the capabilities of the drill, moorings and boom to operate in a safe and effective manner. Guidelines relating to drill, moorings and boom performance capabilities shall be established by HSE Supervisor in consultation with the drilling foreman.
- m) All drill workers must be familiar with oil spill response procedures. Spill response equipment must be on the barge at all times. All fuel spills will be handled in accordance with Section 11.1 - Fuel and Hazardous Materials Spills, which will be superseded by Newspar's Emergency Preparedness and Response Plan.
- n) In the event of a spill, all drilling activity must cease until cleanup is performed. Priority in the event of a spill will be the safety of all crewmembers.
- o) All workers must be familiar with Section 11.4 – Vessel Accidents Contingency Planning. Priority in the event of an accident involving the barge or drill will be the safety of all crewmembers.

## **D.26 FISH RELOCATION**

The Great St. Lawrence Harbour is a habitat for a number of fish species. There are two significant freshwater bodies; Clarke's Pond and Shoal Cove Pond in the project area, in addition to a number of streams and ponds.

### **Environmental Concerns**

Clarke's Pond has a surface area of approximately 10 hectares and an average depth of 1.5 m. Groundwater and underground springs are the principle water supply sources for the pond. Clarke's Pond Brook is approximately 1 km in length and flows from Clarke's Pond into Shoal Cove Pond. Approximately 20 units (1 unit = 100 m<sup>2</sup>) of Type II (primarily rearing/limited spawning) fish habitat was identified in a screening report completed in 1997, with some spawning habitat in upper portions.

Shoal Cove Pond has a surface area of approximately 15.7 hectares. The maximum depth at the south end is approximately 1.8 m, whereas the remainder of the pond is relatively shallow. The north end of the pond has been partially infilled with tailings from previous mining activities and the bottom of the pond is covered by fine silt. Shoal Cove Pond Brook extends from Shoal Cove Pond for approximately 600 m and empties into Shoal Cove. It has an average depth of 22.2 cm and an average width of 3.5 m. Approximately 32 units of type II habitat has been identified, with small pockets of Type III (Migratory habitat characterized by faster flow and larger substrate) and Type IV (overwintering/poor rearing habitat characterized by steadies and muddy substrate).

### **Environmental Protection Procedures**

Newspar is currently designing the compensation structure and monitoring program in consultation with DFO and ENVC. In addition, a Fish Capture and Relocation Plan will be developed prior to construction of the impervious tailings dam associated with the TMF and Clarke's Pond cut-off wall.

## **D.27 HISTORIC RESOURCES**

Sites of historic or archaeological significance have been identified in the general area of St. Lawrence. There is a registered archaeological site in Blue Beach Cove; the wreck of the tug Rio Sama from 1946. However, the preferred location for the marine terminal will not disturb the two largest pieces of wreckage, which are also the only segments whose origin is obvious upon viewing. A 20 m buffer will be maintained around the individual pieces of wreckage belong to the wreckage field. In the event that a 20 m buffer cannot be maintained or it is apparent that an individual piece of wreckage will be directly impacted, work within the 20 m buffer zone will immediately stop and the Provincial Archaeology Office (PAO) will be notified immediately to discuss appropriate mitigation measures.

There is a Provincial park located in Frenchman's Cove and privately owned park facilities in Lewin's Cove (which is approximately 28 km from the project area). The Fortune Head Ecological Reserve is located in Fortune, approximately 70 km away.

### **Environmental Concerns**

Construction activities in Blue Beach Cove will consist of pile driving, marine infilling for the marine wharf, causeway and erection of structures associated with the ship loading topside equipment. The environmental concern for the archaeological site includes the disruption of the seafloor and/or shoreline.

### **Environmental Protection Procedures**

All field personnel shall be informed of the historic resources potential of the area, of their responsibility to report any unusual findings, and to leave such findings undisturbed.

In case of the discovery of an archaeological site or artefact the following procedures will apply:

- a) Under the provincial Historic Resources Act (1985), all archaeological sites and artefacts are considered the property of the Crown, and must not be disturbed. Newspar and their contractors will take all reasonable precautions to prevent employees or other persons from removing or damaging any such articles or sites and may be held liable for prosecution under Section 35.1 and 35.2 of the provincial Historic Resources Act (1985) for all contravention. Personnel working in the vicinity will be advised of the find, including the HSE Supervisor and Site Environmental Monitors. The site area will be flagged for protection and avoidance.
- b) All work will cease within 20 m of the discovery until Newspar advises the PAO of the discovery. The PAO, in consultation with Newspar will provide direction regarding the discovery and may authorize a resumption of the work. If required, a full archaeological assessment will be conducted of the site and immediate area.
- c) Archaeological materials encountered will be reported initially to the HSE Supervisor, and immediately thereafter by the HSE Supervisor to the Provincial Archaeologist at PAO with the following information:
  - i. nature of activity;
  - ii. nature of the material discovered; and
  - iii. precise location of the find.
- d) The PAO will assess the significance of the discovery and determine if mitigation is required. The PAO will develop mitigation measures and advise Newspar of any such decisions.

- e) Regular monitoring will be conducted by the Site Environmental Monitors to ensure that site protection measures are adequate and that the terms and intent of the EPP requirements are being met. Key sites outside the immediate Project area are to be visited annually during periods when the sites are not snow covered to determine if they have been disturbed in any way.
- f) PAO has recommended that if for any reason Project infrastructure needs to be relocated within 20 meters of the registered archaeological or ethnographic sites, details should be forwarded to the PAO for review.



**ATTACHMENT E**  
**Newfoundland and Labrador Department of Environment and Conservation Water Resources**  
**Management Division - Environmental Guidelines**

Chapter #	Title
3	Environmental Guidelines for Watercourse Crossings
3A	Environmental Guidelines for Stream Crossings by ATVs
4	Environmental Guidelines for Bridges
5	Environmental Guidelines for Culverts
6	Environmental Guidelines for Fording
7	Environmental Guidelines for Diversions, New Channels, Major Alterations
9	Environmental Guidelines for Pipe Crossings
13	Environmental Guidelines for General Construction Practices



**SNC • LAVALIN**

1133 Topsail Road  
Mount Pearl, NL A1N 5G2  
(709) 368-0118 - (709) 368-0158