

SAGEWILL LIMESTONE QUARRY ENVIRONMENTAL MANAGEMENT PLAN & RECLAMATION PLAN

French Village, New Brunswick
TE181001

Prepared for:

Sagewill Enterprises Ltd.

French Village, New Brunswick

15-Jun-18

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Prepared for:

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15-Jun-18

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Appendix C	Site-Specific Environmental Protection Plans



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Revision Procedure

The document will be maintained by Sagewill and the individual plan holders. Plan holders and readers may initiate proposed revisions by forwarding recommended revisions to Sagewill.

Revision History

Revision No.	Date	Changes



1.0 Introduction

Sagewill Enterprises Ltd. (Sagewill) is committed to completing the development of the Sagewill Quarry (the Project) in a safe and environmentally responsible manner that will promote employee and contractor awareness of safety and environmental issues. To facilitate this, and to meet regulatory requirements, Wood Environment & Infrastructure Solutions, a Division of Wood Americas Limited (Wood) has prepared this Environmental Management Plan and Reclamation Plan (EMP&RP) on behalf of Sagewill.

1.1 Purpose and Scope

This EMP&RP has been developed to outline the required environmental mitigation strategies for the Project and to ensure they are fully implemented. The purpose of the EMP&RP is to:

- ensure that Sagewill and its chosen contractors fulfil commitments to minimize environmental effects of the Project and to comply with regulatory requirements;
- provide concise and clear instructions regarding measures for protecting the environment and archaeological and heritage resources, and minimizing potential adverse environmental effects;
- document environmental concerns and describe appropriate protection measures associated with Project activities;
- provide a reference document for planning and/or conducting specific activities that may have an effect on the environment;
- provide a reference to applicable permits, approvals and authorizations;
- function as a training aid for environmental education and orientation; and
- communicate changes during the Project lifetime through a revision process.

This EMP&RP is comprised of:

- Required Mitigation Measures for Protection of the Environment.
- Environmental Emergency Management.
- Traffic Management Plan.
- Contingency Plans:
 - Erosion and Sedimentation;
 - Spill Response Plan;
 - Wildlife Encounters; and
 - Discovery of Unusual Features.
- Reclamation Plan.

1.2 Maintenance of the Plan

The EMP&RP will be maintained by Sagewill. It is recognized that EMP&RPs are living documents that may evolve over time as new information, issues and/or mitigation measures are identified. The revision number is located in the header of every page. The latest revision of the EMP&RP may be obtained from Sagewill, or the Site Manager.



1.3 Plan Organization

This EMP&RP is meant to be a stand-alone document. It is divided into the following sections:

1.0 Introduction	9.0 Contingency Plans
2.0 Project Description	10.0 Communication
3.0 Relevant Required Authorizations and Legislation	11.0 Monitoring Programs
4.0 Roles and Responsibilities	12.0 Reporting
5.0 Training and Awareness	13.0 Records Management
6.0 Environmental Issues and Protection Measures	14.0 Reclamation Plan
7.0 Environmental Emergency Management	15.0 List of Contacts
8.0 Traffic Management Plan	Appendices

2.0 Project Description

The Sagewill Quarry is located north of the Hammond River at French Village, New Brunswick (NB). The product will primarily be high calcium limestone for industrial users and fertilizer, although some aggregate may also be produced.

The Project will be located within mineral claim areas held by Sagewill (No's 3367, 8422, and 8573). There is an existing quarry operated by Hammond River Aggregates (HRA) immediately south of the site on property owned by HRA. Sagewill plans to develop the new quarry beginning just north of HRA's existing quarry and working northward, targeting areas of concentrated high calcium limestone.

The Site Boundary (Figure 1) is covered by forest and recent clear-cut, without any previous development. The nearest permanent residences are located over one (1) kilometre (km) east and west of the site perimeter. The Hammond River is approximately 350 metres (m) west of the site. The Trans-Canada Highway (Route 1) is approximately 180 m east of the Site Boundary.

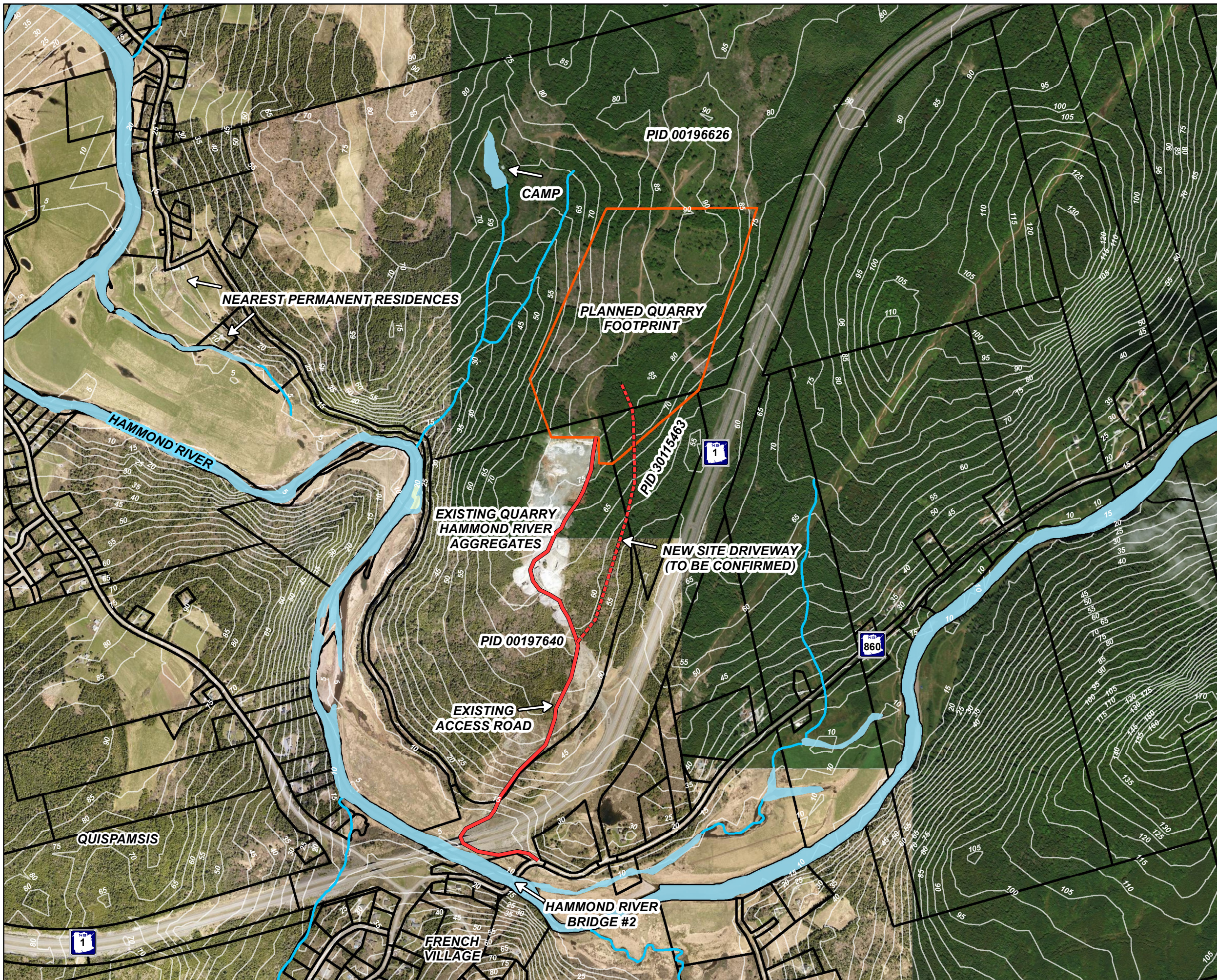
2.1 Project Activities

The quarry will use a simple drill and blast method of production. Since the resource is exposed at the surface, Sagewill can begin mining after overburden is removed. The initial quarry will be advanced northward along the strike of the limestone bedding, with a working face 10 m in height. If selective mining is conducted, the width will vary. The maximum width will be approximately 175 m. The initial quarry development will target and prepare for extraction a total resource of 150,000 tonnes of high calcium limestone, from which the currently planned first years production of 15,000 tonnes will be taken. The Likely dimensions of this area will be approximately 1 hectare, including an ultimate quarry floor about 5,600 m². Additional resource areas will be developed according to market opportunities.

Blasting will be conducted by a certified contractor with a blasting permit, using an approved Blast Monitoring Plan. Blasting patterns and procedures will be used that minimize shock or instantaneous peak noise levels, where possible. It is expected that the details of drilling and blasting, such as optimum hole spacing, hole diameter, and powder factor for these rocks, etc., will be known by the contracted blasting company and will not need to be researched and optimized through experimentation.

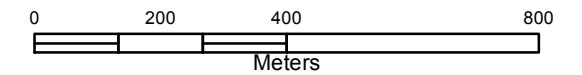
Site preparation (clearing and earthworks) for the planned quarry footprint would be conducted during appropriate seasons shortly in advance of the work, minimizing the area of disturbed overburden at any one time. Tree clearing would be done in winter, to avoid impacts on actively nesting birds. Topsoil will be stored separately for reuse in site reclamation. Overburden stockpiles would be windrowed along the east and west edges of the Site Boundary and stabilized in a manner to minimize dust and run-off from leaving the site.





Legend

- Site Boundary
- SNB Waterbody
- Kings County PID (Lines)
- Watercourse



The map shown here has been created with all due and reasonable care and is strictly for use with AmecFW Project Number: TE181001 This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. AmecFW assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

CLIENT:

Sagwill Enterprises Ltd.



PROJECT:

**Sagwill Limestone Quarry
French Village New Brunswick**

TITLE:

Site Topography and Access

DATUM:	DWN BY:	DATE:
NAD 83 CSRS	RE	January 2018
PROJECTION:	CHK'D BY:	SCALE:
UTM Zone 20 North	GB	1:12,000
PROJECT NO:	REV NO:	FIGURE NO:
TE181001	A	1

2.2 Project Schedule

Sagewill is planning to commence quarrying in mid- to late 2018 if / when all permits and approvals are in place and commercial contracts are obtained, with an initial production volume of 15,000 tonnes per year (t/y) that may be increased up to 320,000 t/y (over 8 months), depending on market opportunities. Table 2.1 shows a tentative project schedule, based on the use of all quarry products (including gabbro and non-high calcium limestone). This is based on a total extraction of about 8 million tonnes of material.

Table 2.1 Project Time Line

Project Phase	Start	End
Obtain Mining Lease and Environmental Approvals	June 2018	Aug 2018
Initial Quarry Development (150,000 tonnes resource / 15,000 tonnes 2018 production)	Aug 2018	Oct 2018
Full Operation (320,000 t/y) (seasonally, May to Dec)	2019	2044
<i>Phase 1 – 1st 10 m bench, advanced 100 m per year</i>	2019	2027
Progressive Reclamation (phase 1) (contour and stabilize abandoned quarry areas)	May 2028	June 2028
<i>Phase 2 – 2nd 10 m bench, advanced 100 m per year</i>	2028	2035
Progressive Reclamation (phase 2) (contour and stabilize abandoned quarry areas)	May 2036	June 2036
<i>Phase 3 – 3rd 10 m bench, advanced 100 m per year</i>	2036	2043
Mine Decommissioning (remove all equipment & waste, contour final quarry faces to safe angle)	Oct 2043	Dec 2043
Final Reclamation (restore overburden/top soil and revegetate)	May 2044	July 2044



3.0 Relevant Required Authorizations and Legislation

The applicable legislation and relevant authorizations required prior to operation are below.

Federal Acts and Regulations:

- *Canadian Environmental Protection Act* (Environment Canada)
- *Fisheries Act* (Fisheries and Oceans Canada)
- *Migratory Birds Convention Act* (Environment Canada)
- *Species at Risk Act* (Environment Canada)
- *Transportation of Dangerous Goods Act* (Transport Canada)

Provincial Acts and Regulations:

- *Clean Air Act*
 - Regulation 97-133 - Air Quality Regulation
- *Clean Environment Act*
 - Regulation 82-126 - Water Quality Regulation
 - Regulation 87-83 - Environmental Impact Assessment Regulation
 - Regulation 87-97 - Petroleum Product Storage & Handling Regulation
- *Clean Water Act*
 - Regulation 90-80 - Watercourse and Wetland Alteration (WAWA) Regulation
 - Regulation 2000-47 - Wellfield Protected Area Designation Order
- *Species at Risk Act*
 - Regulation 2013-38 – List of Species at Risk Regulation
- *Forest Fires Act*
 - Regulation 84-204 - General Regulation
- *Topsoil Preservation Act*
 - Regulation 95-66 – General Regulation
- *Transportation of Dangerous Goods Act*
 - Regulation 86-67 - General Regulation

The following lists the relevant authorizations required prior to quarry development:

- Certificate of Determination under New Brunswick Regulation 87-83 (Environmental Impact Assessment) of the *Clean Environment Act*.
- Approval for Mining Lease, Department of Energy and Resource Development (NBDERD).
- Approval to Operate (attached in Appendix A) under Paragraph 8(1) (Water Quality Regulation) of the *Clean Environment Act* and Paragraph 5(3)(a) (Air Quality Regulation) of the *Clean Air Act*.
- Permit for the storage and handling of petroleum products under New Brunswick Regulation 87-97 (Petroleum Product Storage & Handling Regulation) of the *Clean Environment Act*.

4.0 Roles and Responsibilities

All Personnel

All personnel (including Sagewill, Site Manager, and Contractors) are responsible for:

- becoming familiar with the contents of this EMP&RP;
- identifying and reporting potential environmental concerns to the mine operators;
- implementing environmental protection measures as outlined in this EMP&RP and any supplemental site-specific environmental protection plans (SSEPPs); and
- clarifying any questions regarding the information included in this EMP&RP and SSEPPs with the Site Manager prior to commencement of any Project activities.

Management Responsibility (Sagewill)

Overall responsibility for development and administration of the EMP&RP lies with Sagewill. Specifically, Sagewill responsibilities include:

- Developing and approving an EMP&RP for the Project.
- Ensuring that the EMP&RP is kept current.
- Maintaining the EMP&RP and coordinating revisions to the EMP&RP as required.
- Obtaining required environmental permits and other approvals.
- Responsibilities outlined for "All Personnel" above.

Site Manager

Responsibility for administering environmental protection in the field and onsite lies with the Site Manager, who will report to Sagewill management. The Site Manager is responsible for:

- Developing, approving and implementing all required supplemental environmental plans and programs (i.e. SSEPPs should they be necessary, in addition to those mitigation measures outlined in this EMP&RP).
- Ensuring the environmental plans are consistent with permit requirements and environmental regulations.
- Ensuring tailgate/safety meetings are held daily when onsite work is undertaken.
- Stopping work activities if environmental impacts are identified or are likely to occur.
- Liaising with Regulatory Agencies (including field inspectors).
- Ensuring that the EMP&RP is implemented effectively by all personnel and contractors.
- Verifying that all Project and contractor personnel have received environmental orientation / training prior to commencement of work.
- Compiling and maintaining environmental records.
- Implementing environmental contingency plans, if required.
- Implementing any required monitoring programs.
- Initiating corrective actions if necessary.
- Issuing stop work orders to initiate in-field action when required.
- Responsibilities outlined for "All Personnel" above.

5.0 Training and Awareness

Site personnel will be made aware of the requirements of this EMP&RP (and associated SSEPPs if required) through mandatory orientation sessions. These sessions will be held prior to commencement of the work.

The training will cover, at a minimum, the required authorizations and regulatory requirements; roles and responsibilities; environmental issues and protection measures; and contingency plans. Environmental briefings will be held as part of the Site Manager's daily tailgate/safety meetings and will cover that day's relevant environmental information / issues.



6.0 Environmental Issues and Protection Measures

This section outlines environmental protection measures and procedures that will be implemented during the Project.

6.1 General Requirements

The following general requirements are applicable to this Project:

- A copy of the EMP&RP shall be maintained onsite at all times by the Site Manager.
- EMP&RP requirements shall be noted, referenced or included in Project tender documents or specifications.
- A Site Manager shall be present onsite at all times during work at the site.
- All personnel shall adhere to the Workplace Hazardous Material Information System (WHMIS) requirements for storage and handling of hazardous products.

6.2 Atmospheric Environment

Air quality and the acoustic environment have been identified as valued environmental components (VECs) for this Project. Primary concerns include the degradation of air quality and exceedances in noise levels relative to the surrounding environment.

6.2.1 Air Quality

The main air emission sources of the Project include land clearing and earthworks, crusher operation, blasting, and trucking. Issues associated with air quality relate to the production of particulate matter (fugitive dust), volatile organic compounds (VOCs), sulphur oxides (SOx), nitric oxides (NOx), and greenhouse gases (GHG). Applicable Acts and Regulations include the *Canadian Environmental Protection Act*, the *NB Clean Environment Act*, the *NB Clean Air Act*, NB Air Quality Regulation 97-133 of the *Clean Air Act*, and the *NB Forest Fires Act*.

Mitigation Measures

During operation the primary air quality concern is the effect of particulate matter, mainly fugitive dust, on the surrounding environment. The following table describes the mitigation measures recommended to minimize air emissions during site activities.

Table 6.1 Air Emission Mitigation Measures during Site Activities

Emission Source	Mitigation Measures
Site-wide	<ul style="list-style-type: none"> • Ensure all necessary permits and approvals are obtained and onsite. • Comply with all applicable permits and approvals. • Conduct periodic inspections of all work areas, particularly during dry and windy conditions. • Locate dust-generating activities away from sensitive receptors. • Stabilize clear and disturbed areas. • Prohibit open burning onsite.
Site Earthworks	<ul style="list-style-type: none"> • Site overburden windrows where they are protected from wind. • Limit windrow height and slope. • Apply water as a dust suppressant when needed.
Equipment	<ul style="list-style-type: none"> • Maintain spray bars (if applicable) during crusher operation. • All equipment is to be properly maintained to ensure exhaust emissions are typical for each piece of equipment.
Trucking	<ul style="list-style-type: none"> • Cover with tarps and secure loads of haul trucks. • Minimize drop heights for loading and unloading operations. • Apply water as a dust suppressant when needed. • Enforce speed limits for vehicles, and limit vehicle movement. • Operate and maintain vehicles within the manufacturer's specifications, including regular servicing of vehicles. • Idling is to be minimized.

The Site Manager has overall responsibility for the implementation and usage of dust control measures. Lack of complaints by onsite workers and local residents are to be used as the performance indicator.

6.2.2 Acoustic Environment (Noise)

The main noise emission sources during operation is the onsite equipment, including track-mounted drilling rig, blasting, crusher/screening plant, various conveyors, loaders, and trucks.

Issues associated with the acoustic environment relate to noise exceedance effects during operation on the surrounding environment and population, including recommendations outlined by Health Canada. Noise levels at the nearest residential receptors are expected to be near or slightly above background (i.e., noticeable but not potentially harmful). Since residents have already experienced the operation of the existing HRA quarry, it is not expected that the Sagewill Quarry will have a significant annoyance factor. However, if complaints are received, the Site Manager will investigate and Sagewill will inform the regulator and engage with the concerned resident to resolve the issue. Blasting could generate significant short-term noise impulses; which will be addressed by a Blast Monitoring Plan.

Mitigation Measures

Table 6.2 describes the mitigation measures recommended to minimize noise emissions during site activities.

Table 6.2 Noise Emission Mitigation Measures during Site Activities

	Mitigation Measures
Equipment	<ul style="list-style-type: none"> • Ensure all necessary permits and approvals are obtained and onsite. • Comply with all applicable permits and approvals. • All equipment to be designed for low noise emissions where feasible. • Ensure that all equipment has appropriate noise-muffling equipment installed and are in good working order. • Enclosures, piping insulation and silencers are to be used.
Schedule	<ul style="list-style-type: none"> • Activities are to be scheduled to minimize noise impacts. • Restrict (where practical) site activities to the hours of: <ul style="list-style-type: none"> - Monday to Friday, 7:00 am to 6:00 pm - Saturdays, 8:00 am to 1:00 pm - Minimize work on Sundays or public holidays • Restrict (where practical) blasting activities to the hours of: <ul style="list-style-type: none"> - Monday to Friday, 9:00 am to 5:00 pm - Saturdays, 9:00 am to 1:00 pm - No blasting on Sundays or public holidays. • There is to be no mining between the hours of 9:00 pm to 7:00 am.

The Site Manager has overall responsibility for the implementation and usage of noise attenuation measures. Lack of complaints by onsite workers and nearby residents are to be used as the performance indicator.

6.3 Water Resources

Surface water and groundwater quality are protected by regulation. The primary concern is the degradation of surface water and groundwater quality from site runoff or accidental spill.

6.3.1 Surface Water

The nearest watercourse is a small stream located approximately 110 m west of the Site Boundary (Figure 1), with intervening forest. Approximately 180 m east, drainage along Route 1 eventually enters the Hammond River. There is very low risk of site runoff or accidental spills to reach these surface water features; however, mitigation is proposed to prevent erosion / sedimentation and accidental spills in Section 9.0, below. In the event of an accidental spill, reporting to regulators is required, as described in Section 12.0.



6.3.2 Groundwater

Project components that could potentially affect groundwater quality includes operation wash-water, and accidental spills. Although blasting could impact nearby wells, it is anticipated that this risk is negligible, given the great distance to nearest permanent residences (approximately 1 km) and blasting will be conducted by a certified contractor in accordance with a Blast Monitoring Plan.

Issues associated with groundwater quality relate to the degradation of groundwater resources below and down gradient of the Project footprint. Applicable Acts and Regulations include the *Canadian Environmental Protection Act*, the *NB Clean Water Act*, the *NB Clean Environment Act*, and NB Regulation 82-126 (Water Quality Regulation) of the *Clean Environment Act*.

The main concern with respect to groundwater quality related to site activities is the accidental release of petroleum, oil and lubricants (POL) due to equipment failure during site activities. Hazardous materials used during operation may include POL, paints, or solvents. Sources of POL may include parked vehicles, working equipment and refuelling points.

Mitigation Measures

Table 6.3 describes the mitigation measures recommended to minimize degradation of groundwater quality during site activities. Detailed mitigation for accidental spills is described in Section 9.2 and mandatory reporting of spills is identified in Section 12.0.

Table 6.3 Groundwater Quality Mitigation Measures during Site Activities

Source	Mitigation Measures
Site-wide	<ul style="list-style-type: none"> • Ensure fuel and chemicals stored on-site are located within secondary containment equal to 120% of the volume stored. • Refuelling of equipment is to be conducted over a sealed surface contoured to contain accidental spills. • Store and handle all dangerous goods according to TDG. • Conduct routine inspections to ensure accidental spill risks are minimized.
Quarry Wash-water	<ul style="list-style-type: none"> • Collect and retain all quarry wash-water onsite, and recirculate / recycle

The Site Manager has overall responsibility to minimize degradation of groundwater quality through the implementation of best management practices.

6.4 Wildlife

Wildlife, particularly birds, have been identified as VECs for this Project. Since the site is located immediately north of the existing HRA quarry, which has operated since 1999, it is anticipated that wildlife using the area are habituated to the sound of mining activity. Individuals located in the Project footprint can migrate into adjacent habitat, which is relatively abundant.

6.4.1 Birds

Potential effects to birds include alteration/displacement of habitat, noise / disturbance, behavioural changes, and destruction of active nests during vegetation clearing.

Issues associated with birds relate to the disturbance and potential mortality of individual birds. Applicable Acts and Regulations include the *Migratory Birds Convention Act*, the *Canadian Species at Risk Act* and the *NB Species at Risk Act*.

Noise or physical disturbance could encourage adult birds to avoid, or be displaced from, feeding, breeding, or nesting habitat. Similarly, once eggs have been laid, abandonment of nests could occur if adult birds are displaced from the nest. Nests may also be directly harmed if vegetation clearing takes place during the sensitive nesting period of May to September.



Mitigation Measures

Table 6.4 describes the mitigation measures recommended to minimize impacts to birds during site activities.

Table 6.4 Bird Disturbance Mitigation Measures during Site Activities

Site Activity	Mitigation Measures
Vegetation Clearing	<ul style="list-style-type: none"> • Schedule clearing to occur during periods of lowest sensitivity to birds (October to May). • Should clearing or vegetation removal be required during the regional nesting period, a nesting bird survey will be conducted prior to clearing activities by skilled and experienced observers using appropriate methodology with consideration for the potential for nests at ground level. A 20 m buffer will be left around vegetation where nesting birds are found, and will be maintained until the young have fledged. • Should there be a delay (more than one week) between clearing and operational activities during the regional nesting period, an updated nesting bird survey is to be carried out. A 20 m buffer will be left around vegetation where nesting birds are found, and will be maintained until the young have fledged.

If site reclamation is commenced during the sensitive bird breeding season, overburden stockpiles will be inspected for possible active bird nests prior to start of earthworks.

6.5 Waste Management

In the following section, “wastes” refer to occupational waste (garbage, food wastes, waste paper, plastic litter, paints, POLs, etc.).

6.5.1 Solid Waste

Solid waste will be generated during site activities. The issues associated with wastes are protection of local environments from improper disposal of waste materials, and limiting wildlife encounters by eliminating attraction of wildlife to the site.

Mitigation Measures

Solid wastes are to be collected and disposed in a manner consistent with the applicable local and provincial regulations. Materials that can be reused or recycled are to be taken to the appropriate facilities.

Table 6.5 presents the mitigation measures recommended to minimize impact to the aquatic and terrestrial environment as well as wildlife during operation due to solid wastes.

Table 6.5 Solid Waste Mitigation Measures during Site Activities

Waste Type	Mitigation Measures
Solid Waste	<ul style="list-style-type: none"> • Waste containers shall be placed onsite for collection of domestic waste. Containers shall have tightly-fitting lids to prevent wildlife attraction and to prevent waste from being blown around the site. • Personnel may also keep wastes in their own vehicles for eventual disposal at an off-site garbage collection site (such as office, gas station or at their home). • Waste materials will be collected from the work area regularly and transported to a central location for temporary storage until final disposal. • The work area is to be maintained in a neat, orderly state at all times. Litter is not permitted to accumulate or be strewn about the work site. • Collect and properly dispose of items which can be recycled (such as cardboard, packaging, drums, pallets, plastic wrapping, etc.). • There shall be no burning of wastes on or off site.



6.5.2 Liquid Waste

Portable washroom facilities will be used at the site; therefore, no permanent sewage treatment facilities will be installed. The release of untreated sewage is a concern to human health and drinking water quality. The issues associated with uncontrolled liquid wastes are:

- human health and safety;
- protection of water resources; and
- protection of birds and wildlife.

Mitigation Measures

All liquid wastes are considered hazardous and are to be collected and disposed in accordance with applicable local and provincial requirements.

Table 6.6 lists mitigation measures that are recommended during operation to minimize effects to the aquatic and terrestrial environment, as well as wildlife, from liquid wastes.

Table 6.6 Uncontrolled Liquid Waste Mitigation Measures during Site Activities

Waste Type	Mitigation Measures
Sewage and Grey Water	<ul style="list-style-type: none"> • Portable washroom facilities are to be provided for the use of workers employed onsite. • Washroom facilities are to be installed away from vehicular traffic and adequately secured on a flat surface area to prevent accidental spills. • Washroom facilities are to be emptied regularly by a certified contractor. • Washroom facilities are to be inspected on a regular basis.

6.5.3 Controlled Products

Controlled hazardous wastes generated during site activities may include various products from the operation of equipment and maintenance vehicles. Controlled hazardous wastes include POL, paints and organic solvents, acetylene, etc. These wastes are controlled and considered hazardous. They are to be collected and disposed in accordance with applicable local and provincial requirements.

The issues associated with uncontrolled liquid wastes are:

- human health and safety;
- protection of water resources; and
- protection of birds and wildlife.

Mitigation Measures

Table 6.7 describes the mitigation measures recommended to minimize impacts to wildlife, the environment and personnel during site activities.

Table 6.7 Controlled Liquid Waste Mitigation Measures during Site Activities

Waste Type	Mitigation Measures
Controlled Liquid Products	<ul style="list-style-type: none"> • WHMIS program to be implemented. • Hazardous materials to be used only by personnel trained and qualified in the handling of these materials and only in accordance with manufacturer's instruction and applicable regulations. • A complete inventory of hazardous materials will be maintained onsite according to WHMIS Regulations and will be made available. • Material Safety Data Sheets (MSDS) are to be readily available for all hazardous materials used or stored onsite. • Transportation of hazardous materials to comply with the <i>Transportation of Dangerous Goods Act</i>. • The number and volume of hazardous materials onsite will be minimized to the extent possible.



	<ul style="list-style-type: none"> • All containers are to bear labels that identify their contents. • All containers are to be lined or constructed of materials that are compatible with the waste being stored. • All containers are to be in good condition, free from corrosion, leaks or ruptures. • Lids are to be kept on containers at all times when not in use. • All hazardous materials are to be stored in a designated location to be determined by the Site Manager. • Hazardous materials, including POL, may not be stored within 30 m of a watercourse or wetland, including small containers. • All hazardous materials are to be stored on an impermeable surface. • All hazardous materials are to be collected and disposed in accordance with applicable local and Provincial requirements. • Appropriate spill response equipment must be maintained in a readily accessible location during Project operations and in sufficient quantity for the relative amount of POL onsite (see also Section 9.2 on Fuel and/or Hazardous Materials Spills). • All large machinery shall have a spill kit on-board. • All spills and releases shall be promptly contained, cleaned up and reported. Refer to Spill Contingency Plan of Section 9.2 for additional information on spill response measures.
<p>Petroleum Products</p>	<ul style="list-style-type: none"> • Inspect storage containers, vehicles and equipment regularly for leakage. • Maintain equipment in good repair to avoid leakage of hydraulic, fuel, cooling and system fluids. • Do not cut, puncture or weld on fuel storage containers. • Keep fuel and waste oils away from heat, sparks, open flames and any other sources of ignition. • Refuelling and maintenance (including lubrication and oil change) of equipment must take place off-site or in designated areas only. These designated areas are to be determined by the Site Manager. • Designated refuelling areas (if used) are to be on level terrain, a minimum of 30 m away from any surface water, wetland or potable water supply well, on a prepared impermeable surface with collection system to contain oil, gasoline and hydraulic fluids. • All containers, hoses and nozzles shall be free of leaks. • All fuel nozzles shall be equipped with automatic shut-offs. • During fuel dispensing, operators must be present at all times. • Petroleum contaminated wastes, waste rags, spill clean-up materials, etc. are to be collected in an approved container (sealed and contaminant-proof) for pickup and disposal by an approved contaminated material disposal company or recycling firm.



7.0 Environmental Emergency Reporting

The following summarizes the reporting steps to be followed for an environmental emergency.

An “Environmental Emergency” as related to this Project is defined as:

- A situation where there has been or will be a release, discharge or deposit of a contaminant(s) to the atmosphere, soil, surface water and/or groundwater of such magnitude or duration that it could cause significant harm to the environment or put the health of the public at risk.

7.1 Procedure

- Immediately following the discovery of an environmental emergency, the Site Manager shall notify the NB Department of Environment and Local Government (NBDELG) as follows:
 - During normal business hours (8:15 a.m. to 4:30 p.m., Monday to Friday excluding statutory holidays) – call the Saint John Regional Office of the NBDELG (1-506-658-2558) until personal contact is made (i.e. no voice-mails).
 - After hours – call the Canadian Coast Guard (1-800-565-1633) until personal contact is made (i.e. no voice-mails).
 - Provide these agencies with all information that is known about the environmental emergency.
- Within 24 hours of initial notification – the Site Manager shall provide a Preliminary Emergency Report to the Saint John Regional Office of the NBDELG (1-506-658-3046) and to the Central NBDELG office (1-506-457-7805).
 - The preliminary report shall have all information available at the time about the environmental emergency.
- Within 5 days of initial notification – the Site Manager Site Manager shall provide a Detailed Emergency Report to the Saint John Regional Office of NBDELG (1-506-658-3046) and to the Central NBDELG office (1-506-457-7805).
 - The detailed report shall include: i) a description of the problem that occurred, ii) a description of the impact that occurred, iii) a description of what was done to minimize the impact and iv) a description of what was done to prevent recurrence of the problem.

8.0 Traffic Management Plan

The Site will be accessed from Route 860, just north of the Hammond River, using the existing HRA quarry access road which traverses beneath the Trans-Canada Highway. During initial mine development, Sagewill has obtained an agreement with HRA to access the site through the existing quarry, which connects to a logging road that runs north all the way through the middle of the proposed Site Boundary area. The existing quarry has a locked gate, for which Sagewill now has its own padlock. Quarry production truck traffic will be able to access Route 1 via Route 860 north or south (within 10-15 km), and can access Route 100 via Stock Farm Road to the west.

9.0 Contingency Plans

Contingency plans have been developed for several possible scenarios, including:

- Erosion and Sedimentation;
- Fuel and/or Hazardous Materials Spills;
- Wildlife Encounters; and
- Discovery of Unusual Features.

These contingency plans will be reviewed regularly and new plans may be added, if warranted.

9.1 Erosion and Sedimentation

Control of erosion and potential sedimentation of receiving waterbodies is a critical environmental management concern. Erosion control methods will be applied where there is the potential for erosion due to rain, flowing water, steep slopes and highly erodible soils. The purpose of the following contingency plan is to outline steps to take if sedimentation events occur.

The principal environmental concern is the associated sediment-laden runoff and the resulting effects on water quality, aquatic ecosystems and environmentally sensitive areas such as wetlands. Any deposit of deleterious substances into a waterbody is in contravention of the *Fisheries Act*.

9.1.1 Procedure

In the event of a sedimentation event in a watercourse or wetland, the following procedure will be followed:

- If siltation of nearby watercourses/wetlands is observed, notify the Site Manager, and identify the source of the siltation. Siltation indicates preventative measures have been ineffective.
- Halt work in the immediate area of the sedimentation occurrence until the situation can be assessed. The Site Manager will advise when work can resume (typically work can resume once deficiencies in the area have been addressed, once major rainfall events have ceased, once significant rutting of the ground no longer occurs or when the area has been sufficiently stabilized).
- Isolate, contain, and control the source using measures such as straw bales or brush mats. Erosion control structures will be fixed immediately.
- Collect water samples in the centre of the visible plume (contact an environmental consultant and have them collect the water samples, including Quality Assurance/Quality Control (QA/QC) samples, using accepted industry practices).
- Concentration of suspended sediments must not increase over background by more than 25 mg/L for short term exposure periods and 5 mg/L for long term exposure. During periods of high flow, when background levels of suspended sediments are between 25 mg/L and 250 mg/L the increase should be less than 25 mg/L. Suspended sediments should not increase more than 10% above background levels when background is greater than 250 mg/L (Canadian Council of Ministers of the Environment (CCME), 1999¹).
- Record information on the sedimentation event, such as approximate start time, end time, weather conditions, work being undertaken at the time, erosion and sedimentation control measures in place before the event started, source of the sedimentation, etc.
- Review the situation and identify whether additional erosion and sedimentation control measures can be installed. Proceed with installation of additional measures if applicable.
- If the release has affected, or has the potential to affect, a sensitive area (i.e., a wetland or watercourse), the Site Manager will contact and consult with the appropriate regulatory authorities (eg, NBDELG, Fisheries and Oceans Canada (DFO)) as required for notification and planning.

¹ Canadian Council of Ministers of the Environment, 1999. Canadian water quality guidelines for the protection of aquatic life: Dissolved oxygen (marine). In: Canadian environment quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg. *Canadian Environmental Assessment Act*, 1992. c. 37. Source: <http://laws.justice.gc.ca/en/C-15.2/text.html>



9.2 Fuel and/or Hazardous Materials Spills

During the course of operation, the transfer of fuel and chemicals from storage containers or tanker trucks, vehicle accidents and leaks from vehicles, storage facilities or delivery lines can cause damage to humans, soils, vegetation, wetland, surface water, groundwater and wildlife. Safe and proper containment and disposal of spilled materials is essential. The purpose of the following contingency plan is to protect the public and staff and to minimize the release of contaminants to the natural environment.

9.2.1 Inventory of Spill Response Materials

The contractor shall maintain adequate spill response equipment onsite at all times, including, but not limited to the following:

- Spill kits shall be present in each commercial vehicle and piece of heavy equipment. These spill kits shall be of appropriate size for the type of vehicle/equipment and spill which may occur.
- Vehicle/equipment spill kits should contain at least: sorbent mats/pads, small sorbent booms/socks, nitrile gloves, disposal bags and ties.
- One large spill kit shall be maintained onsite, be easily accessible and identifiable and easy to locate (such as a barrel with "SPILL KIT" label on its top and side). This spill kit shall contain at least: sorbent mats/pads of various sizes (minimum 10), bags of loose sorbent material (minimum 5 pounds (lbs) (2.2 kilogram (kg)) each), sorbent booms of various sizes (at least 3), several pairs nitrile gloves, disposal bags and ties, hand wipes, knife, duct tape, disposable respirator, disposable goggles, disposable coveralls.
- Other spill response equipment such as shovels, rakes, buckets / drums and tarps shall also be maintained at the work site at all times.

9.2.2 Roles and Responsibilities

All Project personnel and contractor personnel are responsible for immediate action in the event of a spill, whether they caused the spill or not.

Contractors are responsible for spills related to their vehicles and equipment and are expected to respond to such spills immediately, including clean-up and coordination of the clean-up and reporting.

9.2.3 Spill Response Procedure

If a spill or leak (whether accidental or not) of hazardous materials occurs, the following procedures will be implemented:

- Eliminate fire danger by shutting off any power supply or source of ignition at and near the spill location.
- Locate the source of the spill and attempt to stop the flow (such as up righting the container which has fallen over, closing a valve to stop the flow of product, etc.).
- Contact the Site Manager immediately and inform them of the spill and situation.
- If the spill is considered an "environmental emergency" as noted in Section 7.0, refer to Section 7.0 for reporting requirements. The Site Manager will report the spill.
- If the spill is not considered an "environmental emergency", the Site Manager shall report the event to the Saint John Regional office of the NBDELG by fax within 1 business day. This report must identify the material spilled, the approximate amount spilled, the location of the spill and the methods used to clean up the spill.
- Evacuate people and restrict access to the spill site, if required.
- For large spills, nonessential personnel should be evacuated to a safe distance.
- Contain the spill to the extent possible by spreading absorbent products, booms, blocking drainage ditches, catch basins, digging trenches or creating dikes.
- The Site Manager or designate will complete a Spill Report within 12 hours.



- Clean-up, depending on the size and potential impact of the spill, may involve consultation with the NBDELG and potentially with other regulatory authorities.

9.3 Wildlife Encounters

Encounters with wildlife may result in distress for both the animal and the employee. Serious injury could result to site workers in some instances. Threats to personnel include encounters with wildlife, especially animals with young and rabid animals. Bites from any animals are potentially dangerous. Wildlife encounters have the potential to distress animals to the point of altering feeding and breeding behaviour. Physical injury or death to wildlife could also occur. The following contingency plan outlines steps to follow in the event of wildlife encounters at the site.

9.3.1 Migratory Birds

- If an active migratory bird nest is encountered during clearing, notify the Site Manager of the nest location.
- The surrounding area will be marked (20 m setback) and avoided until the young have fledged from the nest.
- Should a ground nesting species choose to nest in cleared areas, a species-specific buffer will be established in consultation with regulators.

9.3.2 Other Wildlife

- Do not approach wildlife which has entered the site area.
- Notify the Site Manager of any large or potentially dangerous wildlife (moose, deer, bear, coyote, etc.), so that onsite personnel can be warned.

9.4 Discovery of Unusual Features

This contingency plan outlines steps to be taken upon the discovery of any unusual features at the site (including illegal activity, suspected human remains, etc.).

9.4.1 Procedure

- All personnel are responsible for reporting any unusual materials discovered or unearthed during site activities to the Site Manager.
- If the unusual materials appear to be human remains or related to illegal activity, stop work – halt all activities in the vicinity of the find at once (minimum 10 x 10 m area) and contact local or lead police agency (911). Until determined otherwise, the items should be treated as evidence in a criminal investigation. If the items are found in the bucket of heavy equipment, the bucket should not be emptied as physical evidence may be destroyed.
- The area should immediately be designated as “Out of Bounds” to all personnel and the public.
- Depending on the weather and other conditions, provide non-intrusive protection, such as covering the find with a cloth or canvas tarp (non-plastic preferred).
- All personnel and traffic should exit the site by one common non-intrusive path. Curiosity seekers should be kept off the site.
- Work can only restart in the vicinity of the discovery once clearance has been received from the authorities and agencies concerned.



10.0 Communication

Any public complaints and enquiries regarding environmental matters shall be directed to the Site Manager to be logged. The Site Manager must provide a copy of the complaint to the Saint John Regional Office of the NBDELG (1-506-658-3046) within 1 business day of receiving the complaint.

Any issues regarding environmental matters brought forth by project personnel and contractor personnel shall be addressed to the Site Manager, who will log these.

Once logged, complaints/enquiries can be addressed through a review of the complaint / enquiry, initiation of a Non-Conformance and Corrective Action Report (if applicable), as described in Section 11.3 below and formal response to the person making the enquiry / complaint (if they have requested a formal response).

11.0 Monitoring Programs

11.1 Compliance Monitoring

The Site Manager will undertake regular field inspections of the work activities and locations to assess compliance with this EMP&RP. Any items which are in non-compliance with this EMP&RP shall be recorded through a contractor-supplied Non-Conformance and Corrective Action Report.

11.2 Effects Monitoring

Effects monitoring will consist of visual inspection for potential erosion within the Project area during significant rainfall events.

Heavy rainfall events are those considered hindering access and clearing activities, causing significant rutting of the ground and those which may cause a threat of local flooding. Heavy rainfall events for the purposes of monitoring also include those as identified by Environment Canada's weather forecasts. These warnings are issued within 24 hours of the event and vary regionally; therefore, the weather forecasts must be consulted on a regular basis (at least twice daily) to ensure current warnings are communicated.

Total suspended solids (TSS) monitoring is to be conducted if sedimentation by Project activities is observed in a watercourse. Refer to the contingency plan in Section 9.1. Effects on the environment are to be judged based on duration and intensity of the event, with consequences of severe effects negotiated between Sagewill and NBDELG. Monitoring will continue until all areas of disturbed soil are revegetated.

11.3 Mitigation and Corrective Action

All non-conformances shall be documented using a contractor-supplied Non-Conformance and Corrective Action Report or similar documentation.

Non-conformances include any activities/events which do not conform to the requirements of this EMP&RP and those activities/events which may be in non-compliance with environmental regulations. Note that accidental events are not considered non-conformances, but rather, any related actions not conforming to this EMP&RP may be non-conformances.

The report shall include a description of corrective action and preventive measures which shall be undertaken, including timeline for implementation.

12.0 Mandatory Reporting During Mining Activities

In the event that there is a violation any Term and Condition of the Approval to Operate or the Air Quality Regulation, the Site Manager is to immediately report this violation to the NBDELG's applicable Regional Office. In the event that the violation may cause the health or safety of the general public to be at risk, and/or significant harm to the environment could / has resulted, the Site Manager shall follow the Emergency Reporting procedures contained in the Approval to Operate.

The Site Manager shall notify NBDELG, in writing, of the date that the quarry begins operating for each season. This notification shall be made before such operation begins. The Site Manager shall also notify NBDELG, in writing, of the date that the quarry ceases operation for each season. This notification shall be made no later than one week after the quarry has ceased operation for the season. If Sagewill is operating year-round, the Site Manager shall notify NBDELG of this, in writing, by October 1 of the year that this operating schedule begins, and no further notification will be required, provided that the operating schedule does not change.

By the end of the business day following each blast, the Site Manager shall submit a blasting report to the NBDELG. The Site Manager shall maintain records of the blast design used for each blast at the quarry, for a period of not less than two (2) years. These records shall be made available to NBDELG on request.

Within 30 days of the end of each month, the Site Manager shall submit to NBDELG a Monthly Environmental Report containing the following information:

- a summary of the blasting reports for all blasts that occurred during the previous month, including, as a minimum, the date and time of the blast, the trigger settings of the monitors, and the monitoring results; and
- a summary report of all small spill and/or leak events at Sagewill during the previous month, including the date, location, approximate volume, and method of clean-up for each spill and/or leak.

If no blasting has taken place during any month, and/or if no small spills have occurred, the monthly environmental report for that month shall contain a statement explaining that there is no information to report pertaining to blasting.

If the quarry will be shut down for more than one month, the Site Manager shall notify NBDELG in writing of this at the commencement of the shutdown period. Such notification will fulfil the requirements of the monthly report, while the quarry remains shut down.

13.0 Records Management

The Site Manager will be responsible for maintaining all records related to environmental matters, such as spill reports, monitoring results, etc. during the life of the Project. The records are to be maintained by Sagewill for a minimum of 5 years after completion of the Project.

The Site Manager shall maintain records of the blast design used for each blast at Sagewill, for a period of not less than two (2) years. These records shall be made available to NBDELG on request.



14.0 Reclamation Plan

This section is designed to meet the requirements of a reclamation plan as identified in Part 3 of the provincial *Guide to the Development of a Mining and Reclamation Plan in New Brunswick*.

14.1 Infrastructure Removal

14.1.1 Building(s) and Equipment

All buildings and equipment will be removed / relocated. It is expected that all facilities will be mobile and can be towed or trucked away. Any remaining waste will be disposed of off-site at an approved facility. There will be no foundations or below ground infrastructure remaining on-site.

14.1.2 Utilities

All site utilities (if any) will be removed and disposed of at an approved facility. On-site water well(s) (if any) will be permanently plugged, cut off 15 cm below grade and buried.

14.1.3 Transportation Access

All access roads to the quarry will be permanently barred (with large boulders) and abandoned roadways will be removed and revegetated.

14.2 Site Stabilization

14.2.1 Contouring and Grading

All slopes related to the quarry walls or temporary earthworks will be recontoured to a safe angle and graded in preparation for final restoration and revegetation. Remaining benches will be cut-back or infilled with waste rock and /or excess soil, to achieve final profiles. Quarry surfaces will be evenly covered with stockpiled overburden, and then a layer of topsoil will be placed to a depth of at least 10 cm.

14.2.2 Re-vegetation

An experienced contractor will be selected to implement site revegetation. Revegetation will include seeding with commercially available native/non-invasive grasses and planting of tree seedlings. Grass seed-mix will be applied to achieve soil stabilization as quickly as possible. Tree seedlings will include a mixture of native hardwood and softwood species, and will have a minimum spacing of 5 metres on centre.

14.3 Site Description at Closure

The quarry footprint will have restored side-slopes not greater than 1:3, for public safety and slope stability. All surfaces will have overburden and topsoil and be fully vegetated with native grasses and trees. There will be no remaining drainage features or waterbodies. There will be no underground cavities or abandoned infrastructure.

It is anticipated that the site will eventually reach a similar condition to that prior to quarrying, and would be suitable for land uses that occurred previously, mainly selective timber harvesting.

14.4 Site Safety and Security

Following reclamation, the site will not require any safety or security features, with the exception of access road barriers described above.

14.5 Post Reclamation Monitoring

Sagewill will monitor the reclamation site to ensure the success of reclamation, to the satisfaction of the landowner. If severe erosion or site drainage develops which threatens the migration of sediment laden run-off to a waterbody, or major inconvenience to a landowner, Sagewill will take measures to mitigate the issues by strategic erosion control and/or local recontouring, followed by additional revegetation if necessary. The reclamation will be considered successful if after 3 years, the restored area is at least 85% vegetated with native/non-invasive species, and tree seedling survival is at least 65%. If these criteria have not been met, then Sagewill will conduct additional strategic planting of grass and tree seedlings to the satisfaction of the landowner.

No other environmental monitoring is anticipated.

14.6 Schedule of Work

Progressive reclamation, consisting of contouring and stabilization of abandoned quarry areas, is planned to take place at the completion of each major bench phase of quarry development, tentatively planned for early 2028 (Phase 1) and 2036 (Phase 2).

Final mine decommissioning consisting of the removal of all equipment and waste and contouring of final quarry faces to safe angles is anticipated to occur between October and December of 2043.

Final reclamation, consisting of the restoration of overburden and top soil and revegetation is anticipated to occur between May and July 2044.

14.7 Reclamation Cost Estimate

14.7.1 Capital Construction Costs

For the initial quarry development of a 150,000-tonne resource, the quarry footprint requiring reclamation is estimated to be approximately 1 ha, with a 300-m length of 10 m bench requiring slope contouring to 1:3.

The cost to cut back the slope will be approximately \$100,000 dollars.

The restored overburden depth would be approximately 0.5 m, with topsoil to a depth of at least 10 cm. The cost of earthworks to move these volumes of material will be approximately \$50,000 dollars.

Revegetation costs to cover the 1 ha area with grass and plant approximately 400 tree seedlings (5 m spacing) will be approximately \$20,000 dollars.

Sagewill estimates the total cost of reclamation for the initial quarry development of a 150,000-tonne resource to be approximately \$170,000 dollars.

14.7.2 Long-term Maintenance, Monitoring, and Treatment

No long-term monitoring requirements are anticipated.

15.0 List of Contacts

Table 15.1 Project Contacts

Agency	Telephone Numbers
DANGEROUS GOODS INCIDENTS	
Police / RCMP	911
New Brunswick Emergency Measures Organization, (NBEMO)	1-800-561-4034
Federal Emergency Response Centre (CANUTEC) *	(613) 996-6666 (collect)
Dept. of Environment and Local Government, Environmental Emergencies (Canadian Coast Guard)	1-800-565-1633 911
Dept. of Environment and Local Government, Saint John Regional Office	(506) 658-2558
Fire Department (any community)	911
Worksafe NB (New Brunswick)	1-800-222-9775
Provincial Mobile Communications Centre (PMCC) **	1- 866-942-9628
UTILITIES	
NB Power (report power interruption)	1-800-442-4424
FOREST FIRE	
New Brunswick Department of Energy and Resource Development – Forest Fire Management	(506) 453-2530
HOSPITALS or MEDICAL FACILITIES	
Ambulance	911
Sussex Health Centre, 75 Leonard Drive, Sussex, NB	(506) 432-3100, 911
Saint John Regional Hospital, 400 University Ave., Saint John, NB	(506) 648-6000, 911
New Brunswick Poison Control Centre, Moncton Hospital, 135 McBeath Ave., Moncton, NB	(506) 857-5555, 911
AREAS OF ENVIRONMENTAL CONSIDERATION	
Dept. of Energy and Resource Development – Saint John Regional Office	(506) 658-2558 1-800-565-1633
Dept. of Energy and Resource Development – Wildlife Encounters	(506) 832-6055
Garrett Bell (Wood) – Species at risk issues, watercourses, wetlands, archaeological, heritage	(506) 458-1000 (506) 238-1358 (after hours)
PROJECT CONTACTS	
Sally and George Williamson (Owners)	(250) 300-0718
Darren Slaunwhite (Owners Representative)	(902) 456-8061

* Transport Canada has established CANUTEC, a 24-hour emergency information centre for dangerous goods, at Ottawa, Ontario. CANUTEC can be contacted by collect telephone at 1-613-996-6666. The centre will quickly provide accurate information about dangerous goods, their hazards and what immediate action should be taken. They will also contact, on request, the various agencies as required under law and those who can provide assistance in the accident.

** In an emergency, contact the Coast Guard at 1-800-565-1633. They will contact the PMCC. This number is to be used for communication with the PMCC after the Coast Guard has contacted the PMCC.



Appendix A Site Plan

detailed Site Plan to be inserted when available



Appendix B

Approval to Operate

latest Approval to Operate to be inserted when available



Appendix C
Site-Specific
Environmental Protection Plans

SSEPPs (if any) to be inserted when available