BACK RIVER PROJECT
Environmental Management and Protection Plan

October 2017

BACK RIVER PROJECT
ENVIRONMENTAL MANAGEMENT AND PROTECTION PLAN

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1	October 2017	All	All	Supporting Document for Type A Water Licence Application, submitted to Nunavut Water Board for review and approval

Acronyms

EMP	Environmental Management Plan
EMPP or Plan	Environmental Management and Protection Plan
EMS	Environmental Management System
FEIS	Final Environmental Impact Statement
HSE	Health, Safety, and Environment
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
MAD	Main Application Document
MLA	Marine Laydown Area
Project	Back River Project
Sabina	Sabina Gold & Silver Corp.
TK	Traditional Knowledge

1. Introduction

The Back River Project (the Project) is a proposed gold project owned by Sabina Gold & Silver Corp. (Sabina) within the West Kitikmeot region of southwestern Nunavut. It is situated approximately 400 kilometres (km) southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet, and 520 km northeast of Yellowknife, Northwest Territories. The Project is located predominantly within the Queen Maud Gulf Watershed (Nunavut Water Regulations, Schedule 4).

The Project is comprised of two main areas with interconnecting winter ice roads (Main Application Document [MAD] Appendix A, base Figure 2): Goose Property (MAD Appendix A, base Figure 3) and the Marine Laydown Area (MLA) (MAD Appendix A, base Figure 4) situated along the western shore of southern Bathurst Inlet. The majority of annual resupply will be completed using the MLA, and an approximately 160 km long winter ice road will interconnect these sites. Refer to the MAD Appendix A, base Figures 1 to 5 for general site layout and locations. A detailed project description is provided in the MAD.

The Environmental Management and Protection Plan (EMPP or Plan) describes how Sabina intends to implement a range of environmental monitoring and management measures throughout the life of the Project. These measures demonstrate how Sabina will avoid, or minimize, mitigate and/or manage to an acceptable level, the potential adverse effects on the environmental while systematically seeking to enhance positive effects.

The Plan was prepared following the requirements of the Supplementary Information Guidelines (SIG) for Mining and Milling MM3 and Water Works M1, issued by Nunavut Water Board (NWB 2010 a, b) and the Environmental Impact Statement Guidelines issued by the Nunavut Impact Review Board (NIRB) to Sabina (NIRB 2013) and in accordance with best management practices and in conformance with current Federal and Territorial statutory requirements.

This plan is a living document to be updated upon changes in related regulatory requirements, management reviews, incident investigations, changes to facility operation or maintenance, and environmental monitoring results, best practice updates or other Project specific protocols once construction starts through to Project closure activities. Any updates will be filed with the Annual Report submitted under the Type A Water Licence.

The information presented herein is current as of September 2017. The Plan will be reviewed as needed for changes in operation and technology and as directed by the Nunavut Water Board (NWB) in the Type A Water Licence or other regulatory authorization where appropriate. Completion of the updated Plan will be documented through signatures of the personnel responsible for reviewing, updating, and approving the Plan.

A record will document all significant changes that have been incorporated in the Plan subsequent to the latest review. The record will include the names of the persons who made and approved the change, as well as the date of the approval.

Sabina will maintain a distribution list providing contact details for all parties to receive the Plan including key personnel, contractors, organizations, and external agencies.

1.1 ENVIRONMENTAL MANAGEMENT AND PROTECTION PLAN

1.1.1 Environmental Management System

Sabina's Environmental Management System (EMS) provides the framework through which the Environmental Management Plans (EMPs) will be delivered. The EMS is the system through which Sabina will verify that the conditions set in the Project Certificate, permits, authorizations, and licenses and the associated legislative requirements are met. The EMS is a tool for managing the effects of its activities on the environment, as well as providing a structured approach to planning and implementing environmental protection measures. This EMS will continue to be further developed as the Project advances. Planning for the EMS started with the development of the Draft Environmental Impact Statement, which identified existing (baseline) conditions, assessed potential effects of the Project, developed conceptual mitigation strategies, and developed specific mitigation measures to execute these strategies.

The EMS will offer flexibility for each EMP to respond to changes in the mine execution plan, the regulatory regime, the biophysical and socio-economic environments, technology, research results, and the understanding of Traditional Knowledge (TK), or any other situations that arise. Threshold values and indicators will be established and will be used to trigger management actions that are outlined in each EMP. A system of accountability will be implemented.

Significance criteria have been developed for each EMP that assist in identifying priority aspects, establish management criteria, and activity-specific mitigation measures. For social issues and effects, a key factor for determining significance is ongoing feedback from public consultation. These efforts will be used to communicate progress, and involve the public where necessary, on environmental performance as mine development occurs.

The EMS is based on a continual improvement model as defined in the internationally recognized standards ISO 14001:2015, Environmental Management System. The current model is shown in Figure 1.1-1.

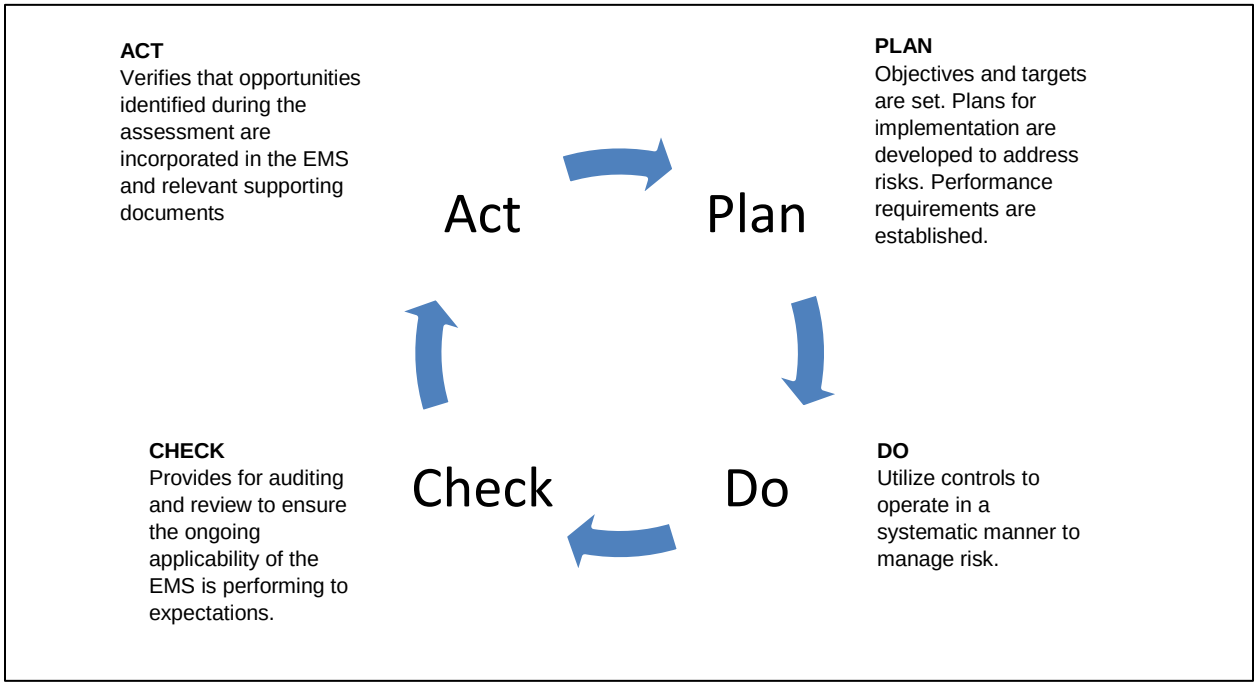

Figure 1.1-1. Continual Improvement Model

Throughout all phases of the cycle, community engagement will be an integral part of decision making and the application of the Precautionary Principle will be a fundamental consideration in any action.

The EMS is structured around 10 core elements (Table 1.1-1). Each of the elements, with associated sub elements, is addressed in detail in Sections 2 to 11. The EMS elements are interrelated and each one is essential for the effective operation of the process as a whole. As well, environment, health and safety are interrelated and in the EMS process each element describes an essential part of the overall management of matters relating to all three components.

Table 1.1-1. Core Elements of Sabina's Environmental Management System

Element	Title
1	Sustainable Development Policy and Leadership
2	Planning
3	Organization and Resources
4	Documents and Records
5	Risk Management
6	Regulatory Requirements
7	Implementation, Monitoring and Measurement
8	Emergency and Crisis Management
9	Monitoring and Audit
10	Adaptive Management Review

Ownership of the EMS resides with Sabina's management team, who will make provision for the resources necessary to assure the successful implementation and sustainability of the process.

1.1.2 Environmental Management Plans

Environmental Management Plans outline the potential impacts, objectives, targets and indicators, key management measures, and the monitoring, reporting, auditing, and review requirements. Each EMP is focused on a specific activity or issue and will be used to provide the overarching direction for environmental and socio-economic management for the Project and form the basis for the ongoing development of further detailed environmental documentation through permitting at the different phases of the Project. Consistent with the direction provided by the NWB following the Prehearing Conference (NIRB 2014), Sabina agrees that consolidated Plans may increase effectiveness and functionality of the Plan. Sabina may implement consolidation of Plans in the future where appropriate to minimize duplication and streamline information. Sabina has classified the various monitoring, mitigation, and management plans into six Programs as follows:

1. Infrastructure and Access Management Program;
2. Water Management Program;
3. Waste Management Program;
4. Emergency Response Program;
5. General and Aquatic Effects Program; and
6. Interim Closure and Reclamation Program.

Environmental management plans associated with each program are listed in Table 1.1-2.

Table 1.1-2. Utilization of Environmental Management Plans to Project Phases

Document	Construction	Operations and Ongoing Maintenance	Temporary Closure / Care and Maintenance	Final Closure	Post-Closure
Infrastructure and Access Management Program					
Road Management Plan (SD-02)	x	x	x	x	
Borrow Pits and Quarry Management Plan (SD-03)	x	x	x	x	
Water Management Program					
Water Management Plan (SD-05)	x	x	x	x	
Waste Management Program					
Ore Storage Management Plan (SD-07)		x	x		
Mine Waste Rock Management Plan (SD-08)	x	x	x	x	
Tailings Management Plan (SD-09)	x	x	x	x	x
Landfill and Waste Management Plan (SD-10)	x	x	x	x	
Incineration Management Plan (SD-11)	x	x	x	x	
Landfarm Management Plan (SD-12)	x	x	x	x	
Hazardous Materials Management Plan (SD-13)	x	x	x	x	
Emergency Response Program					
Risk Management and Emergency Response Plan (SD-15)	x	x	x	x	
Fuel Management Plan (SD-16)	x	x	x	x	
Spill Contingency Plan (SD-17)	x	x	x	x	
Oil Pollution Emergency Plan (SD-18)	x	x	x	x	
General and Aquatic Effects Monitoring Program					
Environmental Management & Protection Plan (SD-20)	x	x	x	x	x
Aquatic Effects Management Plan (SD-21)	x	x	x	x	
Conceptual Fish Offsetting Plan (SD-22)	x	x		x	
Marine Monitoring Plan (SD-23)	x	x	x	x	
Quality Assurance / Quality Control Management Plan (SD-24)					
Interim Closure and Reclamation Program					
Mine Closure and Reclamation Plan (SD-26)		x	x	x	x

The development and implementation of the EMPs are key tools for the environmental protection and management measures necessary to avoid, reduce, or mitigate the potential effects of the Project on the environment. Figure 1.1-2 shows where the EMPs are placed in relation to other EMS documentation.

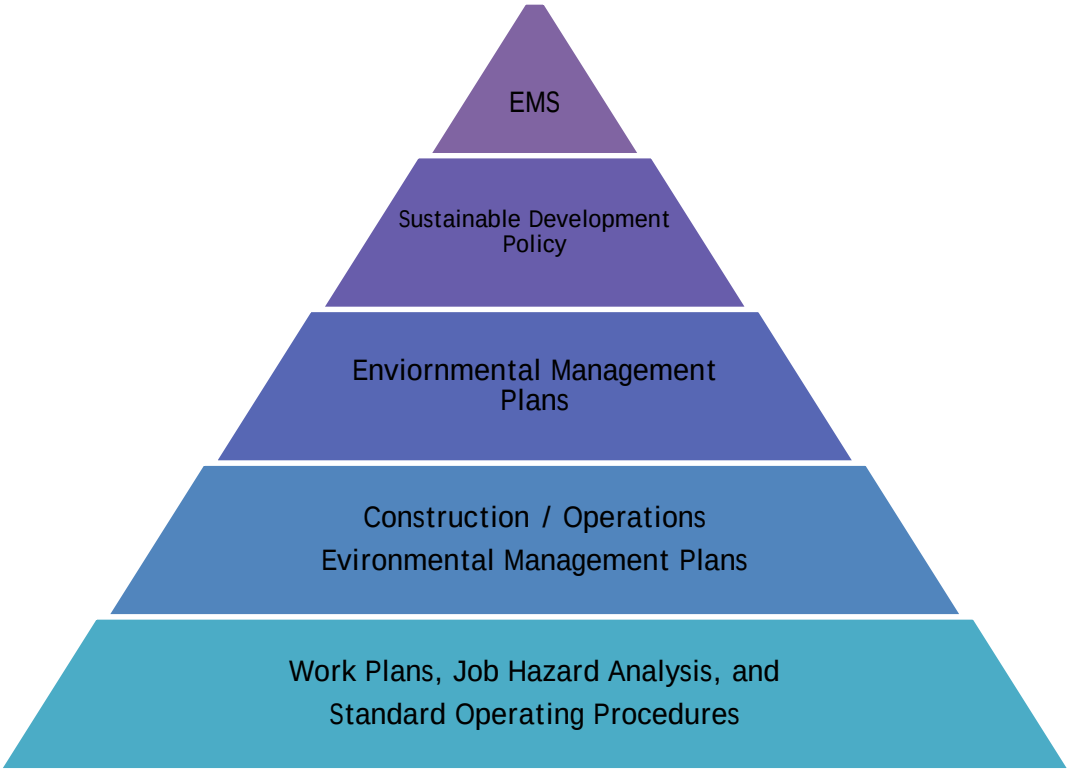

Figure 1.1-2. Hierarchy of Environmental Management System

The strategies and measures outlined in the EMPs have been developed and anchored on an effective adaptive management philosophy. As part of continual improvement, the management plans herein will be revised periodically to accommodate new and amended legislation, evolving industry standards, emerging community concerns, or changes to the project's design or schedule. By taking an adaptive management approach, rigorous plans can be developed early based on the best information available before project detailed engineering and construction. After the Detailed Engineering design phase, these plans can be adjusted, if needed, and monitoring implemented to measure whether the actions in the management plans are working as designed.

Monitoring will be the principal mechanism to provide feedback to continually gauge the effectiveness of environmental performance. Operational control is facilitated through the contractor job-specific standard operating procedures, work instructions, on-the-job instruction, tailgate meetings where required, contract requirements, and service agreements. The effectiveness of physical operational control will be reviewed according to preventative maintenance and review procedures and schedules.

Future refinements to these EMPs will be developed as permitting and water licensing progresses in advance of Construction and Operations, and will include detailed construction and design plans, environmental compliance updates and changes in operations as mine develop progresses. Revisions to EMPs, policies and procedures will be prepared either directly by Sabina's Environmental Department or by specialist consultants and contractors in conjunction with Sabina.

In addition to these plans, work instructions and procedures will be developed to support the EMPs and confirm that they are effectively implemented. A greater level of detail on the technical input and practical application of the management and control measures will become available as the Project moves towards the Construction Phase. These further details will be used in an ongoing program of improvement and

refinement of EMP documentation to verify that the objectives are achieved. These EMPs will serve as a guide and framework for the development of more detailed construction EMPs and, in due course, operations EMPs.

1.1.2.1 Objectives and Targets for Management Plans

For each of the EMPs, Sabina has set out environmental objectives and targets with consideration of the following:

- Sabina's Sustainable Development Policy.
- Environmental aspects and impacts.
- Community input.
- Relevant Nunavut and federal standards.
- Legal and other requirements.
- Measurable objectives.
- Opportunities for continual improvement.

Environmental objectives, targets, and indicators are used to promote consistent application and to confirm that all interested parties interpret them in the same way and each EMP will have appropriate objectives, targets, and indicators. These three terms are defined as follows:

- Objectives: an environmental goal that is consistent with Sabina's Sustainable Development Policy and the commitments made through the environmental assessment.
- Targets: specific values, or narrative statements, that when reached will initiative a management response.
- Indicators: physical, chemical, biological, social or economic variable that can be measured in a defined way for management purposes.

1.2 DOCUMENT STRUCTURE

This document outlines Sabina's strategic environmental management and protection measures in the context of our EMS. The EMPP forms part of Sabina's overall General and Aquatic Effects Monitoring Program for the Project.

Specifically, the EMS is divided into the following components:

- Element 1: Sustainable Development Policy and Leadership (Section 2);
- Element 2: Planning (Section 3);
- Element 3: Organization and Resources (Section 4);
- Element 4: Documents and Records (Section 5);
- Element 5: Risk Management (Section 6);
- Element 6: Regulatory Requirements (Section 7);
- Element 7: Implementation, Monitoring, and Measurement (Section 8);
- Element 8: Emergency and Crisis Management (Section 9);
- Element 9: Monitoring and Audit (Section 10); and
- Element 10: Adaptive Management Review (Section 11).

2. Element 1: Sustainable Development and Leadership

Sabina is committed to environmentally responsible and socially acceptable exploration and mining practices. The Company is dedicated to creating and maintaining a safe environment for both the land it occupies and the people that drive its success. Sabina also subscribes to the principles of sustainable development in mining. While mining cannot occur without an impact on the surrounding natural environment and communities, the company's responsibility is to limit negative environmental and social impacts and to enhance positive impacts. The executive and management team will demonstrate to employees, contractors, government and the community that the company regards excellence in environmental performance a priority.

Sabina is committed to managing environment, health and safety issues to the highest standards and has set out its commitment in the form of a sustainable development policy. The policy, approved by Sabina's Executive Directors, clearly states Sabina's commitments to continuous environmental performance improvement.

Sabina considers leadership accountability and transparency to be key components in the successful implementation of the environmental management process. The commitment of Sabina's executive and management team will demonstrate to employees, contractors, government, and the community that the Company regards excellence in environmental performance a priority.

2.1 SUSTAINABLE DEVELOPMENT POLICY

Sabina regards itself as a responsible explorer and mineral developer. We are committed to fostering sustainable development throughout all stages of our activities. We constantly strive to conduct our operations in a manner that balances the social, economic, cultural and environmental needs of the communities in which we operate. To build on this commitment Sabina will:

- Meet all relevant legislated sustainable development requirements in the regions where we work.
- Ensure appropriate personnel, resources and training are made available to implement our sustainable development objectives.
- Establish clear lines of responsibility and accountability throughout the Company to meet these objectives.
- Implement proven management systems and procedures to facilitate our sustainable development objectives. A priority will be placed on developing and implementing management structures related to the environment, health and safety, emergency response and stakeholder engagement.
- Act as responsible stewards of the environment for both current and future generations. We will make use of appropriate assessment methodologies, technologies and controls to minimize environmental risks throughout all stages of mineral development.
- Work closely with local communities and project stakeholders to identify issues, address concerns, pursue opportunities and provide project-related benefits. Our goal is to earn and maintain a social licence to operate at all our operations while building partnerships.

- Pursue economically feasible projects in order to generate shareholder profitability and support long-term positive socio-economic development in the regions where we work.
- Utilize a precautionary approach as it applies to potential effects from our activities. Work with employees, contractors and stakeholders to promote a culture of open and meaningful dialogue to ensure that any known or suspected departures from established protocols are reported to management in a timely manner.
- Regularly review this policy to ensure it is consistent with Sabina's current activities and the most recent legislation.
- Continually improve our performance and contributions to sustainable development including pollution prevention, waste minimization and resource consumption.
- Implement programs at each of our operations to monitor and report compliance and proactively address potential deficiencies in our policies and procedures.

The objectives of our Sustainable Development Policy cannot be accomplished without the active involvement and commitment of many dedicated individuals. As such, Sabina will regularly communicate this policy and its outcomes to our employees, contractors, and relevant stakeholders. Together, we can foster a culture of sustainable development at Sabina.

3. Element 2: Planning

Planning is an essential part of the EMS as it assists Sabina in fulfilling its Sustainable Development Policy. Sabina will establish, implement and maintain documented objectives and targets consistent with the requirements of each EMP. The objectives and targets will be set alongside business targets during the business planning process to give a clear indication of the importance placed by Sabina on EMS performance. Programs will be developed to verify that these objectives and targets are achieved.

The following subsections detail the key elements to our planning.

3.1 SCOPE

The scope of the EMS applies to all operations and consists of the following issues as they relate to health and safety and environmental management:

- Mining: all aspects of the evaluation of the ore reserve; design of mining approaches and considerations in the management of mine.
- Mill: crushing and processing of the ore, maintenance and deposition of tailings.
- Finance, Procurement, Warehouse, Information Technology, and Administration.
- Site safety and security.
- Human Resources: employee recruitment and training, medical services, catering, and personnel.
- Environment: monitoring, waste management, project site reclamation.
- Worker health: workplace exposures and occupational disease.
- Community health: community exposures and other determinants of health and well-being.

3.2 OBJECTIVES AND TARGETS

Environmental, health, and safety objectives and targets for the Project have been identified in the individual EMPs. Overarching objectives will be to:

- Protect worker health.
- Prevent incidents or workplace accidents and injuries.
- Maintain productivity by directly or indirectly enhancing social conditions to positively affect the well-being of workers.
- Provide a safe and healthy workplace for all employees, contractors and visitors.
- Confirm all people understand that “no task is so important that time cannot be taken to complete work safely.”
- Identify and make provisions to address the needs of all individuals with respect to health and safety; in a manner that one’s ability to perform work is not compromised.
- Recognize that social responsibility and environmental management are among the highest corporate priorities.
- Establish and maintain relationships with internal and external stakeholders.

- Maintain information on legislative requirements and environmental and social aspects associated with the organization's activities.
- Assign clear accountability and responsibility for environmental protection and social responsibility to management and employees.
- Facilitate environmental planning through project life cycle.
- Provide a process for achieving targeted performance levels.
- Provide appropriate and sufficient resources, including training, to achieve targeted performance levels on an ongoing basis.
- Evaluate environmental performance and social responsibility against Sabina's sustainable development and other policies, objectives and targets and seek improvement where appropriate.
- Establish a management process to audit and review the Sabina EMS and to identify opportunities for improvement of the system and resulting environmental performance.

Objectives and targets will be reviewed regularly through the Operations Phase to verify that there is continuous improvement in environmental performance.

3.3 PRECAUTIONARY APPROACH

The Precautionary Principle stipulates that lack of certainty regarding threats of environmental harm should not be used as an excuse for not taking action to avert that threat. It also recognizes that delaying action until there is compelling evidence of harm will often mean that it is then too costly or impossible to avert the threat. The use of the Precautionary Principle promotes action to avert risks of serious or irreversible harm to the environment.

Sabina integrates the application of the Precautionary Principle throughout the design of the Project. This approach forms the basis for project design criteria, the effects assessment volumes of the FEIS, the alternatives assessment, and management practices.

Sabina is fully committed to acting as a socially responsible steward of the environment throughout the lifetime of the project. To this end, the precautionary approach will be integrated into decision making on all aspects of implementation. In the absence of scientific consensus regarding risk to the public or the environment of a specific action, that action will be assumed harmful unless and until further conclusive scientific evidence determines that no harm shall result.

In gathering data to achieve scientific consensus, Sabina has conducted extensive research to establish baseline data, and where data is not yet available, incorporated examples from other similar, established operations. Extensive consultations with Inuit and local stakeholders verify that local and TK will be fully evaluated and incorporated to support the goal of achieving scientific consensus.

Where there is uncertainty or some plausible risk, conservative approaches, together with a dynamic process of adaptive management will be implemented. A flexible approach will be supported by the design of monitoring programs to address all areas of uncertainty, provide a process for mitigation, and to further support the ongoing collection of scientific data.

3.4 TRADITIONAL KNOWLEDGE

Sabina recognizes that TK is an "indispensable element both as baseline information and as an Inuit lens through which impact analyses can be better understood and can also result in a more active and meaningful community engagement" (NIRB 2013). Volume 3, Chapter 4 of the FEIS summarizes the efforts undertaken by Sabina to incorporate TK into the Project development. As detailed in the Community Involvement Management Plan (FEIS Volume 10, Chapter 26, Section 7), Sabina has proposed community engagement methods to confirm integration of TK and public feedback throughout the life of the Project. The Socio-economic Monitoring Program (FEIS Volume 10, Chapter 23) details the approach and methods through which outcomes will be monitored and reported.

3.5 PROJECT DESIGN CONSIDERATIONS

A number of considerations in Project design, operational safeguards, and contingency plans have been incorporated to mitigate potential impacts. Highlights of the mitigation measures incorporated into Project design include:

- Minimize Project footprint, thus minimizing the loss of habitat and reduction of habitat effectiveness.
- Contain the Project mining activities within the Goose watersheds.
- To the extent possible, avoid known archaeological sites and prioritize avoidance of important (unique and/or old) sites.
- Maintain at least a 31-m buffer from streams and waterways.
- Use of winter ice roads for access to the Goose Property and MLA.
- Maintain a buffer zone from important bird nesting areas.
- Maximize sourcing of aggregate and borrow materials from open pits.
- Select water sources in which Project water withdrawals will minimize the potential for drawdown and effects to fish habitat and the aquatic environment.

Construction activities will utilize the existing Project infrastructure and footprint to the greatest extent practical to minimize land disturbance and improve the overall efficiency of construction activities. Where possible, permanent support infrastructure will be built at the onset of construction, to be used during both Construction and Operations phases of the Project. In many instances, temporary infrastructure will be constructed or positioned at Project sites for the duration of the Construction Phase only. This temporary infrastructure will be removed at the completion of the Construction Phase.

3.5.1 Climate Change

Sabina recognizes the importance of climate change and a discussion of climate change and its potential impact on the Project can be found in Volume 9 of the FEIS. The design incorporates measures to cope with potential effects of climate changes. These considerations and adaptive measures were identified in two recent studies commissioned by the Government of Nunavut:

- Golder Associates, Vulnerability Assessment of the Mining Sector to Climate Change – Task 1 Report, March 2012.
- Journeaux Associates, Engineering Challenges for Tailings Management Facilities and associated Infrastructure with Regard to Climate Change in Nunavut, March 2012.

3.5.2 Ecosystem Integrity

Comprehensive baseline studies have been undertaken to characterize the various biophysical components of the Project. A range of mitigation measures have been identified that will enable Sabina to minimize effects on the receiving environment. These mitigation measures are presented in Volume 4 through 8 of the FEIS.

- Volume 4 for the atmospheric environment.
- Volume 5 for the terrestrial environment.
- Volume 6 for the freshwater environment.
- Volume 7 for the marine environment.
- Volume 8 for the human environment.

The EMS and management framework defines the sequence of policy, planning, implementation and operation, checking and corrective actions, and management review processes that must be established to verify that the Project is executed in an environmentally acceptable manner.

3.6 ENVIRONMENTAL MANAGEMENT PLANS

Sabina will review and update environmental management plans as needed for changes in operation and technology, to target specific issues identified, and confirm that responsibilities for individual actions are clearly assigned. Development of these plans is carried out on the basis of a continual-improvement cycle and will define objectives that are clearly measurable and achievable. The development of EMPs will be formalized and will be scheduled to coincide with the budget planning cycle.

3.7 DAILY TASK CONTROL

Sabina will implement daily task management that benefits from risk identification (e.g., through job hazard analysis and environmental effects assessments), feedback from employees, tailgate meetings, work reviews, and other permitting reviews.

4. Element 3: Organization and Resources

Sabina will identify and provide the resources required to implement, maintain, and improve the EMS and environmental commitments. Similarly, key contractors will be required to demonstrate to Sabina's satisfaction that each has appropriate resources and have an appropriate organizational structure to meet environmental commitments and Project conditions. Responsibilities and accountabilities for the provision of environmental performance are assigned to all personnel throughout the organization by means of management plans, procedures, and position descriptions.

4.1 ROLES AND RESPONSIBILITIES

Environmental management at the Project is the responsibility of all site personnel, including employees and contractors. This philosophy will be communicated to all that go to the Project site.

A Health, Safety, and Environment (HSE) team will be established to lead environmental management at the Project. Community and government relations will also be the responsibility of the HSE team. Corporately, these aspects of the Project will be led by a Vice President of Environment & Sustainability, who reports to the President & Chief Executive Officer and the Board of Directors.

At the Project sites, the General Manager will be responsible for environmental management, supported by an HSE team. An Environmental Superintendent will be responsible for the day-to-day environmental management activities. The conceptual HSE team roles and responsibilities are described in Table 4.1-1. These will evolve with the development of the corporate and Project-specific organization philosophies.

Table 4.1-1. Health, Safety, and Environment Team Roles and Responsibilities

Position	Roles and Responsibilities
Vice President, Environment & Sustainability	• Corporate responsibility for environmental management, as well as community and government relations
Vice President, Project Development	• Project/operations responsibility for environmental management
General Manager	• Overall responsibility for health, safety, and environmental management at the Project sites (mine, winter ice road and MLA) • Reports to the Vice President, Project Development
Environmental Superintendent	• Reports to the General Manager • Oversees environmental inspections, monitoring and record-keeping at site • Coordinates the efforts of Environmental Coordinator / Technicians • Coordinates specialized consultants and studies • Assists with emergency response, as described in the Risk Management and Emergency Response Plan (SD-15). This includes contacting the Emergency Response Coordinator for major incidents and report spills to NWT-NU 24-hour Spill Report Line • Primary contact with lands and waters inspectors • Prepare and submit follow-up documentation required by appropriate regulators.
Environmental Coordinator/Technicians	• Reports to and supports the Environmental Superintendent • Carry out day-to-day environmental inspections, monitoring and record keeping activities

(continued)

Table 4.1-1. Health, Safety, and Environment Team Roles and Responsibilities (completed)

Position	Roles and Responsibilities
Community Affairs Superintendent	• Reports to and supports the General Manager • Responsible for managing and coordinating Community Liaison Officers and community engagement activities. • Primary point of contact for community organizations
Community Liaison Officer(s) / Inuit Training & Employment Coordinators	• Reports to and supports the Community Affairs Superintendent • Carries out day-to-day community engagement activities, including liaising with community organizations and individuals • Provides support to community members seeking training and employment • Coordinates site worker arrivals and departures from site
Health & Safety Superintendent	• Reports to and supports the General Manager • Oversees health and safety inspections, monitoring and record-keeping at site • Coordinates the efforts of Health & Safety Officers • Assists with emergency response, as described in the Risk Management and Emergency Response Plan (SD-15) • Primary contact with mine safety inspectors; prepares and submits any required follow-up documentation required by mines inspector • Oversees documentation of internal health and safety record-keeping • Implements actions in response to health and safety infractions and incidents
Health & Safety Officers	• Reports to and supports the Health & Safety Superintendent • Conducts routine health and safety inspections • Provides health and safety training and information to workers

4.2 TRAINING, AWARENESS, AND COMPETENCE

Sabina and contractor personnel will undertake environmental awareness training to provide an understanding of Sabina's Sustainable Development Policy, the environmental aspects and sensitivities of the proposed activities, and the EMS. All employees will be appropriately trained and qualified to carry out their duties under the scope of the EMS. The three key aspects of training are general environmental, cultural awareness, and job specific training. This will be undertaken through onsite/offsite staff inductions and targeted training programs for specific activities or positions. Environmental training programs will be developed and implemented prior to the commencement of the Construction and Operations phases of the Project. Contracts awarded for the Construction, Commissioning, Operations, or Decommissioning phases of the Project will detail specific requirements for contractors in respect of environmental training needs.

4.3 COMMUNICATION

Effective internal and external communication processes, including responding to public concerns, are an integral part of effective environmental management. The environmental requirements of the EMS will be communicated through site communication meetings, Health, Safety, and Environment committee meetings (executive and employee), toolbox meetings, training, inductions, as well as through the distribution of plans, procedures, and work instructions. Procedures have been implemented in this volume for receiving, documenting, and responding to communications from external sources on environmental matters, including accidents, incidents, and emergency response.

4.4 CONTRACTOR MANAGEMENT

Sabina pre-evaluates candidate contractors and service providers to assess their technical capabilities, their experience, and their commitment to health, safety, environmental protection and quality assurance. The preparation of an EMP will be required for long-term or higher risk third-party contracts. No work will be permitted to commence on site until all appropriate documentation has been approved by Sabina.

A process will be established to confirm that effective communication channels are established between Sabina and its major contractors and service providers. This communication may include regular "toolbox" or other meeting topics, and will be used to discuss any relevant issues, including critical interfaces, permits to work, risk assessments, process changes, and performance monitoring and evaluation.

5. Element 4: Documents and Records

Sabina will maintain documented programs and procedures to address hazards and risks, regulatory requirements, and operating standards identified in the EMS elements.

Detailed environmental documentation, for example plans, procedures and processes, will be developed for the Project to assist in the successful implementation of the EMS.

5.1 DOCUMENT CONTROL

Sabina has implemented a document control system which will be utilized for all Project documents. The information will be maintained in a suitable medium, in both printed and electronic form, to provide direction to related documentation and to describe the core elements of the management system and how these elements interact.

5.2 CONTROL OF ENVIRONMENTAL RECORDS

Sabina will implement protocols so that environmental records will be legible, identifiable, and traceable to the activity, product, or service involved. Environmental records will be stored and maintained in such a way that they are readily retrievable.

6. Element 5: Risk Management

Sabina has developed a risk management process to describe the methods and responsibilities to be used to verify that risk management is planned and executed effectively. The Risk Management Process establishes the systematic assessment and management of risk. The risk assessment methodology applied is described in the FEIS in Volume 9, Chapter 3.

Change in the work environment can pose particular risks and the mining industry clearly recognizes the risks that can arise from temporary and permanent changes to organization, personnel, systems, processes, procedures, equipment, products, materials or substances, laws, and regulations. Work cannot proceed unless a "management of change" process is completed. All proposed changes will therefore be managed by implementing the following steps:

- Identify the change.
- Assess the risk associated with the change.
- Establish responsibility to manage the change.
- Develop a plan of action.

If an alteration is approved by the Sabina management, then the relevant EMPs will be revised or an addendum added to reflect the agreed-upon change.

7. Element 6: Regulatory Requirements

Sabina will implement a compliance framework to manage and monitor its regulatory obligations and confirm that performance expectations are met. In its Sustainable Development Policy, the company has committed to meet or exceed all relevant laws, regulations, and standards for the protection of the environment.

Sabina will verify that it achieves full regulatory compliance by the following means:

- Implement awareness training for its employees and contractors.
- Actively use and maintain a regulatory compliance matrix.
- Conduct regular audits of its systems and activities to monitor compliance.

A full list of applicable acts, regulations, and guidelines that govern the Project are provided in Appendix D-1 of the MAD.

8. Element 7: Implementation, Monitoring, and Measurement

The following details the key elements of the implementation, monitoring, and measurement component of the EMS.

8.1 WORK PROCEDURES

Procedures will be developed to minimize the exposure to actual or potential hazards associated with the work to be performed. The need for procedures will be identified by reviewing processes, activities, tasks and assessing their potential impact on personnel, assets and the environment.

8.2 REGULATORY COMPLIANCE MATRIX

As future permits are received, Sabina will review the terms and conditions. A Regulatory Compliance Matrix will then be populated and maintained to capture the permit conditions and compliance requirements from the permits received. The spreadsheet will be reviewed as required to update status, incorporate new conditions and edit or remove conditions that have changed or no longer apply.

The matrix can be used to display conditions that are specific to timing, type of condition, or responsible party. These can be applied by Project phase to further develop environmental performance check sheets used in daily monitoring activities. A template of the matrix is provided below (Table 8.2-1) and will be populated prior to Construction.

Table 8.2-1. Regulatory Compliance Matrix Template

Administering Agency	Legislation	Permit Type and No.	Commitment	Status	Responsibility

8.3 MONITORING

Proactive and reactive key performance indicators will be developed by Sabina to monitor performance against EMS objectives and to promote continual improvement. The key performance indicators will be tracked and monitored by using environmental checklists. These will be developed for the Project as a whole to confirm that there is alignment and consistency in achieving performance goals. Performance statistics based on the checklists will be compiled and distributed to internal and external stakeholders as appropriate. Environmental indicators and monitoring programs associated with the aspects or activities of the Project will be refined as the Project develops.

If the mine enters temporary Closure, Sabina will notify the NWB, NIRB, Kitikmeot Inuit Association, Indigenous and Northern Affairs Canada, Government of Nunavut, and other relevant parties. Upon notification, Sabina will confirm that regulated and general monitoring requirements are maintained. Reporting requirements will be maintained. In conjunction with the change of Operations, Sabina will review and update, if needed, all management plans to reflect change in Operations.

8.3.1 Design Support Monitoring

In advance of Construction, site-specific field monitoring will be required to support detailed engineering design and confirm modelling assumptions. This monitoring (e.g., geotechnical characterization, thermal modelling, additional lake and stream baseline water quality data, etc.) will be undertaken in response to commitments previously made, and will progress during the Water Licence process and throughout detailed engineering. See the Tailings Management Plan (Supporting Document [SD]-09) for details on infill geotechnical programs and thermal modelling.

8.3.2 Performance Measurement and Monitoring

The requirements for monitoring the effects on the biophysical environment will be an integral part of the Project Certificate terms and conditions, the Type A Water Licence, land leases, and other authorizations, permits, or licenses.

The EMPs each contain a monitoring program, where appropriate. The objectives of the monitoring program are to:

- Track performance of mitigation measures implemented.
- Identify environmental changes in the receiving environment.
- Validate environmental effects predictions.

Appropriately, qualified personnel and resources will be allocated to conduct monitoring in a systematic and scientifically defensible manner. Monitoring initiatives will be periodically reviewed and modified to confirm continued suitability and value. Reviews will consider the:

Effectiveness of monitoring design to assess environmental performance requirements;

- Timing, frequency, and relevance of the monitoring strategy; and
- Closing date for individual programs.

Reporting will be conducted promptly in accordance with frequency requirements defined in permits and authorizations. Deviations from an expected outcome will be investigated and corrective actions will be implemented.

8.3.3 Environmental Monitoring

Environmental monitoring consists of three forms, these being:

- **Regulated discharge monitoring** occurs at monitoring points specified in licenses or regulations. It includes discharge limits that must be achieved to maintain compliance with an authorization (i.e., Type A Water Licence or Site-specific Water Quality Objectives) or regulation (i.e., Metal Mining Effluent Regulations or Canadian Council of Ministers of the Environment). Enforcement action may be taken if discharge limits are exceeded for a parameter. Refer to the Water Management Plan (SD-05) for details on specific discharge criteria.
- **Verification monitoring** is carried out for operational and management purposes by Sabina. This type of monitoring provides data for decision making and builds confidence in the success of processes being used. There is no obligation to report verification monitoring results, although some monitoring locations and these results can be mentioned in environmental management plans (i.e., sampling to verify soil remediation in the landfarm, pit sump water quality testing).

- **General monitoring** is commonly included in a Water Licence specifying what is to be monitored according to a schedule[1]. It covers all types of monitoring (i.e., geotechnical, lake levels, etc.). This monitoring is subject to compliance assessment to confirm sampling was carried out using established protocols, included quality assurance/quality control provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

All three forms of monitoring will be used at the Project. The sum of these will provide sufficiently robust data to support decisions in mine management. For example, when monitoring data indicates that action levels have been reached, Sabina will respond by implementing appropriate mitigation measures.

In addition, Sabina will develop site-specific guidelines for parameters of concerns as needed (i.e., Site-specific Water Quality Objectives; Appendix E-1 of the MAD).

Refer to Appendix B of the Water Management Plan (SD-05) for summary of water quality monitoring plan for the Project.

8.4 INSPECTIONS

Sabina has responsibility for inspection and maintenance of all mine components, and the inspection and monitoring of mine activities. This includes, but is not limited to, mine components such as, open pits, quarries, borrow pits, roads, storage pads, waste rock storage facilities, diversion channels, dikes, sumps, berms, tailings storage facility, landfill, incinerator, landfarm, explosives plant, and pipelines. It includes such activities as the pumping of water and waste, discharge of waste to the receiving environment, spill clean-up, and material transport on Sabina's roads.

A good inspection program will lead to the early identification of areas where improvements are needed. The early resolution of any deficiencies will result in less ongoing maintenance and repair of mine components, and a reduction in the risk of adverse environmental effects.

If the mine enters temporary closure, Sabina will notify the NWB, NIRB, Kitikmeot Inuit Association, Indigenous and Northern Affairs Canada, Government of Nunavut, and other relevant parties. Upon notification, Sabina will confirm that internal inspections are maintained. Reporting requirements will be maintained. In conjunction with the change of operations, Sabina will review and update, if needed, all management plans to reflect change in Operations.

8.4.1 Scope of the Inspection Plan

The Internal Inspection Plan is relevant to all phases of the mine life, including Construction, Operations, Closure, and any periods of care and maintenance. The geographical area the Internal Inspection Plan encompasses is the entire proposed mine site, Sabina's MLA in Bathurst Inlet, and all Sabina's mine components in between, such as roads, quarries, and borrow pits.

Sabina will inspect activities and mine components that could adversely affect the use of water or the discharge of waste to water[2]. The objective of inspections is to confirm that the Project remains safe, stable, and fully compliant with all authorizations throughout its mine life. Inspections will confirm that Project mine components are constructed, operated, maintained, managed, and closed in an

[1] Referred to in NWT and old NWB licenses as the Surveillance Network Program.
[2] The Inspection Plan includes inspections that Sabina may carry out on mine components and activities that do not pose a risk to the use of water or the discharge of waste to water.

environmentally sound, safe, and efficient manner. Further, inspections will assist in obtaining better environmental outcomes for all activities and more timely maintenance of mine components throughout the mine life.

Realizing that inspection precedes maintenance, inspections will monitor the condition of mine components and, if required, initiate maintenance. Additionally, inspections will verify that Sabina's activities demonstrate sound environmental practices that have no significant adverse impacts on the environment and are in keeping with Sabina's Sustainable Development Policy (Section 2.1).

The Project will also be subject to external inspections as directed under various authorizations or committed to within the relevant management plans.

Sabina will complete internal inspections to support operational and management purposes (Table 8.4-1). This type of inspection will be completed by Sabina and provides data for decision making and builds confidence in the success of processes being used. There is no obligation to report this internal inspection data, however if requested during external inspections, Sabina will present this data. These internal inspection frequencies may be updated over the life of mine to reflect performance and necessity. Inspection frequencies are subject to health and safety considerations (e.g., whiteout conditions).

Table 8.4-1. Internal Inspection Plan

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsibility	Internal Inspection Frequency
Open Pits	Seep Survey (Visual inspection for seepage and collection of samples, if it safe to do so and where appropriate).	Low. Water seeping into open pits will be directed to event ponds, and then on to the active tailings facility, or Saline Water Pond (if appropriate)	Operations	Seep survey annually each spring.
Waste Rock Storage Areas	Seep Survey (Visual inspection for seepage and collection of samples, if it safe to do so and where appropriate). Visual inspection for movement, subsidence or cracks. Ground Temperature Cable (GTC) Installation.	Low. Diversion Berms will intercept any seepage from waste rock and direct the water to event ponds and then on to active tailings facility. GTCs monitor the rate of freeze back and permafrost development progress.	Operations	Seep survey annually each spring. GTCs data loggers will capture daily readings, which will be recorded monthly.
Ore Stockpiles	Seep Survey (Visual inspection for seepage and collection of samples, if it safe to do so and where appropriate).	Low. Diversion Berms will intercept any seepage from ore stockpiles and direct the water to event ponds and then on to the active tailings facility.	Operations	Seep survey annually each spring.
Tailings Storage Facility	Visual inspection for erosion of, seepage through, or under the structure. This includes movement of crests and slopes. Ground temperature cable (GTC) installation.	Low. Thermistor cables will be installed in the TSF to monitor the permafrost development progress within the facility during Operations.	Operations	Daily when actively containing water. Records of inspection will be made if change is observed. GTCs data loggers will capture daily readings, which will be recorded monthly.
Culverts	Visual inspection for snow, flooding, and ice or debris blockage; this will confirm no barriers to fish passage. Visual inspection will confirm correct culvert installation locations and capacities. Visual inspection of infrastructure to identify defects, cracks or other risks to structural integrity, sediment accumulation, or bed erosion.	Medium. Snow can be removed from the front and back of the culverts before freshet. Maintenance will proactivity address any detected problems and repair damage.	Environment	(1) Prior to and at freshet; (2) Immediately after a major rain event; and (3) Monthly for the remainder of the ice-free season. Records of inspection will be made if change is observed.

(continued)

Table 8.4-1. Internal Inspection Plan (continued)

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsibility	Internal Inspection Frequency
Roads/Ramps/ Pads	Visual inspection for evidence of seasonal freeze and thaw settlement adjacent to the toe of embankments. Visual inspections for water ponding against embankments.	Low. Affected area will be repaired using granular material and/or crushed rock. Low. Ponding can be addressed by pumping the water or by installing a culvert (roads) where water is ponding.	Operations	Weekly during ice-free season. Ponded water inspections will follow major rain fall events. Records of inspection will be made if change is observed.
Snow removal from roads	Visual inspection to ensure skidoo trails are not being blocked by snow removed from the roads.	Low. Pushing snow onto skidoos trails that cross Sabina's roads will make it difficult for trail users to cross the roads.	Operations	Following each major winter storm and clearing of snow off the roads.
Road dust	Visual inspection of the road for excessive dust generation.	Medium. Dust can create environmental effects near roads, and be a safety risk due to limited visibility.	Environment	Weekly when roads are very dry. Inspections will be suspended during rainy days and over the winter. Records of inspection will be made if change is observed.
Sumps	Visual inspection of sumps and the measurement of freeboard.	Medium. Sumps need to be pumped down prior to freeze-up to accommodate the coming year's freshet.	Operations	(1) Prior to and at freshet; (2) Immediately after a major rain event; (3) Weekly for the remainder of the ice-free season while actively pumping; and (4) One inspection before freeze-up to ensure the water level in the sumps is low to allow for inflow during freshet. Records of inspection will be made if change is observed.

(continued)

Table 8.4-1. Internal Inspection Plan (continued)

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsibility	Internal Inspection Frequency
Collection Ponds	Visual inspection and measurement of freeboard in contact water ponds.	Medium. The storage capacity of the ponds need to be maximized before freeze-up to accommodate next year's freshet.	Operations	(1) Prior to and at freshet; (2) Immediately after a major rain event; (3) Weekly for the remainder of the ice-free season while actively pumping; and (4) One inspection before freeze-up to ensure the water level in the ponds is low to allow for inflow during freshet. Records of inspection will be made if change is observed.
Containment Dams	Visual inspection for erosion of, seepage through, or under the structures. This includes movement of crests and slopes. Seepage samples will be collected if appropriate.	Medium. Instability and/or seepage of a dam could have small localized adverse effects on the downstream environment.	Operations	(1) Prior to and at freshet; (2) Immediately after a major rain event; and (3) Weekly for the remainder of the ice-free season. Records of inspection will be made if change is observed.
Diversion Berms	Visual inspection for permafrost degradation, instability, subsidence, cracks, and excess snow and ice accumulation leading to potential blockages.	Medium. Permafrost degradation may result in bank slumping and channel instability. Diversion berms need to be clear of snow prior to freshet to allow for water flow.	Operations	(1) Prior to and at freshet; (2) Immediately after a major rain event; and (3) Weekly for the remainder of the ice-free season. Records of inspection will be made if change is observed.
Potable Water Treatment Plant	Visual inspection for cleanliness and collection of water samples for testing.	High. Plant provides potable water to the camp and its proper operation is necessary for human health.	Operations	Ongoing as prescribed by the Dep't of Health or Public Health Authorities. Daily inspections are expected.

(continued)

Table 8.4-1. Internal Inspection Plan (continued)

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsibility	Internal Inspection Frequency
Sewage Treatment Plant (STP)	Visual inspection for cleanliness and collection of samples for testing.	Low. The STP treated effluent discharges to tundra during Construction and active tailings facility supernatant during Operations. This supernatant is reclaimed for use in the Process Plant.	Operations	Weekly.
Goose and MLA Fuel Storage Areas	Visual inspection of sumps and water level within the secondary containment structure, and evidence of any spills or leaks.	Low. Due to snow accumulation, melting and precipitation, contact water will unavoidably collect inside the secondary containment area. This water will be sampled and tested before discharged. Spills and leaks will be cleaned up.	Operations	Weekly visual inspections. Manual or electronic dip tests for fuel tank inventory reconciliation on an as needed basis.
Diesel Power Generating Plant	Visual inspection of facility and evidence of any spills or leaks.	Low. All spills in Generating Plant will be held within the building.	Operations	Weekly.
Other Fuelling Stations	Visual Inspection for spills or leaks.	Low. Fuelling stations will have an impermeable liner to capture spills or leaks.	Operations	Weekly.
Hazardous material storage areas	Visual inspection for proper storage of hazardous materials.	Low. Hazardous materials will be stored in containment areas (e.g., berms or seacans)	Environment	Weekly.
Waste Shipments	Visual inspection to confirm waste packaged correctly. Inspect shipping forms to verify they meet regulatory requirements.	Low. Employees or contractor preparing waste for transport will be trained in the transportation of dangerous goods.	Operations	Monthly.
Landfarm	Visual inspection for water ponding outside the perimeter berm and water accumulating within the landfarm.	Low. The landfarm will have an impermeable liner and an oil-water separator will be used to remove excess water from the landfarm.	Environment	(1) Prior to and at freshet; (2) Immediately after a major rain event; and (3) Weekly for the remainder of the ice-free season. Records of inspection will be made if change is observed.

(continued)

Table 8.4-1. Internal Inspection Plan (completed)

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsibility	Internal Inspection Frequency
Landfill	Visual inspection for orderly use of the landfill, absence of blowing debris, and leachate at the base of the landfill.	Low. The landfill is shielded with waste rock to reduce blowing debris. Landfill leachate will be managed with WRSA water management infrastructure.	Environment	Monthly.
Incinerator	Visual inspection for cleanliness and the proper management of all waste delivered to the facility.	Low. All waste delivered to the facility will either be incinerated or managed for future off-site recycling or disposal.	Environment	Monthly.
Waste Management	Visual inspection to ensure waste handling procedures are being followed.	Low.	Environment	Monthly.
Ammonium nitrate/fuel oil (ANFO) Facility	Visual inspection for spillage of ammonium nitrate outside the explosives factory and at storage locations. All explosives components inspected as per regulations.	High. If ammonium nitrate enters the fish bearing waterbodies, it can negatively affect fish.	Operations	Weekly, or at a frequency required by regulation.
Quarries / Borrow Pits	Seep Survey (Visual inspection for seepage and collection of samples, if it safe to do so and where appropriate).	Low. Loose rock will be pulled down from the quarry face.	Environment	Seep survey annually each spring.
MLA Lightering Terminal Barge	Visual inspection for erosion and settlement of the terminal barge.	Low. If there is settlement of the terminal barge, additional clean waste rock will be added.	Operations	Annually following Bathurst Inlet becoming ice free.
Pipelines	Visual inspection for leakage or damage to pipelines. Visual inspection for erosion around intakes/discharges or pipeline movement.	Low. If leakage or pipeline damage occurs, pumps can be turned off and remediation addressed.	Operations	Weekly.
Spills	Document the recovery of spilled material and clean-up of any remaining residuals.	This could range from low to high risk depending on the substance, location, and volume of the spill.	All departments; Environment to follow-up	Inspections begin when a spill is reported and continues on a regular basis until the spill is cleaned up.
Spill Kits	Inventory of spills response equipment and materials in each spill kit	Low. Spills kits will be restocked after use.	Environment	Monthly, and after large spill event.
Archaeological Sites	Inspect archaeological sites.	Low.	Environment	Annually report the location of archaeological sites identified.

8.4.2 Routine and Non-Routine Inspections

Routine inspections are planned and scheduled on a repetitive basis and cover the following:

- inspections required under authorizations;
- inspections of mine components where the management of water and waste takes place; and
- activities that could affect water and waste management.

Non-routine, event, or unplanned inspections cover the following:

- environmental complaints or concerns raised by the public;
- accidents, malfunctions and spills;
- after major rain events;
- instances when the quality or quantity of water on the mine site is not meeting expectations; and
- instances where discharge criteria to the receiving environment approach, but do not exceed, Water Licence limits or the Metal Mining Effluent Regulations.

Inspection priorities are based on analyzing all mine components / activities and their respective risks. Installations and activities are qualitatively ranked as "high risk", "medium risk" and "low risk" with those posing a "high risk" receiving more frequent inspections[3]. The outcomes of previous inspections will also feed back into their frequency. If needed, the inspection schedule will be adjusted to accommodate an increased inspection frequency of mine components and/or activities requiring more attention.

The criteria used in determining risk arising from the use of water or discharging waste to water include the following:

- potential effect on the environment (e.g., due to the location of mine components and sensitivity of the nearby receiving environment);
- potential effect on public health (e.g., potable water treatment or sewage treatment);
- safety risks (e.g., the integrity of roads throughout freshet or following a major rain event);
- potential social impacts (e.g., dust from Sabina's roads); and
- potential financial or economic impact resulting from an accident, malfunction, or spill (e.g., tanker truck leaving the all–weather service road, spilling fuel, and requiring significant resources for the cleanup).

Inspections will have a strong seasonal component with some inspections being suspended over the winter and others reduced. Sabina foresees a high frequency of inspections of engineered structures occurring just before and during freshet, followed by less frequent inspections over the remainder of the open water season. For example, inspections of culverts, and sumps will be suspended over the winter, and will resume before freshet and continue over the summer until freeze-up. Further, within the open

[3] Sabina has the capacity to carry out inspection plans. All activities and mine components identified in this inspection plan affecting the use of water or the discharge of waste to water will be inspected, irrespective of the level of risk.

water season, the greatest risk is at freshet, which would necessitate a higher frequency of inspections at that time to confirm mitigation measures employed to manage the higher spring flows prove effective, and that the integrity of culverts are not compromised.

Year-round inspections at a set frequency will occur for mine components such as the potable water treatment plant, the sewage treatment plant and the landfill. These are not directly influenced by the changing weather experienced at the mine site over the year.

Mine personnel having knowledge and experience with the mine components and activities will carry out the inspections. Training will be provided by Sabina to effectively and efficiently complete inspections. Inspections will result in month-end summary reports that will be distributed to mine management. This will allow action to be taken to address any deficiencies in components or activities. Inspection reports will be retained on site by the respective inspecting departments.

The General Manager is ultimately responsible for the success of the plan and approves all relevant policies and documents, auditing, action planning, and the verification process.

Table 8.4-1 provides a summary of internal inspections of mine components and mine activities for internal purposes; this includes some unrelated to the use or water or the discharge of waste to water. This includes inspection methods or procedures, and frequency. The mine department responsible for the inspections is tentatively provided.

8.4.3 Communication of Inspection Outcomes

A systematic approach will be used in communicating inspections results, likely on an annual basis. This will allow Sabina to inform government, Inuit associations, and the public of inspection outcomes.

8.4.4 Periodic Revisions of the Inspection Plan

The effectiveness of the Internal Inspection Plan will be evaluated annually to determine the extent to which it achieved the desired environmental and maintenance outcomes. Updates to the Internal Inspection Plan may be prompted by changes in policies or legislation, changes in operations and/or technology at the mine, or as part of corrective action.

8.5 INCIDENT NOTIFICATION, REPORTING, AND INVESTIGATION

Sabina has developed and implemented an incident management and investigation procedure. The intention of this procedure is to confirm that all incidents, including “near misses,” no matter how minor, are recorded, investigated and reported, where applicable. This will achieve the following objectives:

- At risk behaviours will be identified.
- Deficiencies in workplace conditions will be identified.
- Improvements to methods and equipment will be identified.
- Failures in management systems and controls will be identified.
- Lessons will be learned.
- Regulatory-authority and industry reporting obligations will be fulfilled.
- Management systems will be regularly improved.

This procedure follows clear and documented guidelines to verify that all incidents are uniformly, methodically, and effectively investigated to a degree commensurate with their potential severity. The objective is to establish the facts, determine the root cause(s), and to take the appropriate action to prevent a recurrence of the event.

All incidents, investigations, and corrective and preventive actions will be inputted to an incident reporting database and tracked until Closure. Refer to Section 9 for emergency and crisis management procedures.

8.6 ASSET INTEGRITY

Sabina will emphasize the importance of ongoing asset integrity in contributing to a safe and environmentally sound operation. Asset integrity is a key component in the prevention of major accident events. Systems will be established to verify the ongoing integrity of plant and equipment. These systems will include maintenance, inspection, testing, calibration, and certification of equipment at frequencies appropriate for the level of risk associated with the equipment and/or as determined by manufacturers' requirements.

9. Element 8: Emergency and Crisis Management

Plans and procedures for all foreseeable emergency threats associated with Sabina's operations are detailed in the Emergency Response Program. The Emergency Response Program includes the following plans:

- Risk Management and Emergency Response Plan (SD-15);
- Fuel Management Plan (SD-16);
- Spill Contingency Plan (SD-17); and
- Oil Pollution Emergency Plan (SD-18).

A rapid and effective response to emergency situations can significantly reduce any impact on personnel safety, the environment and nearby communities. This response is achieved by implementing prevention, preparation, response, and recovery strategies.

Potential for accidents and emergencies have been identified utilizing the hazard identification and risk assessment tools discussed in the Risk Management and Emergency Response Plan (SD-15). Operating procedures will be further developed to keep control of such situations and to reduce the risk of environmental impact. Procedures that are directly related to spills and environmental incident response are presented in relevant EMPs (e.g., the Spill Contingency Plan [SD-17] and the Hazardous Materials Management Plan [SD-13]).

Emergency management strategies include identification of resources (personnel and equipment), key roles and responsibilities, and the procedures to be followed when these plans are activated. Relevant personnel will receive sufficient training to verify that they have the skills and competence to respond to an emergency.

In addition to emergency management plans, a Project Oil Pollution Emergency Plan (SD-18) has been prepared so that Sabina can respond rapidly and effectively to an oil spill at the MLA.

Third parties such as Sabina's contractors will also advance external plans. For example, Section 27 of the *Vessel Pollution and Dangerous Chemicals Regulations* requires the owner of every Canadian oil tanker of 150 tonnes gross tonnage or more and other Canadian vessels of 400 tonnes gross tonnage or more transporting oil as fuel or cargo to submit four copies of the vessel's Shipboard Oil Pollution Emergency Plan to Transport Canada. All Shipboard Oil Pollution Emergency Plans must be vessel-specific. Transport Canada pollution prevention officers, who have also been appointed as marine vessel safety inspectors, will examine the Shipboard Oil Pollution Emergency Plans for Canadian vessels. Each Shipboard Oil Pollution Emergency Plan must also provide guidance to help the ship's master meet the demands of a catastrophic discharge, should one occur.

10. Element 9: Monitoring and Audit

Review audits, both internal and external, will be conducted to verify:

- That there is compliance with regulatory requirements, Project approval conditions, and licence conditions; and
- That the identified objectives of the Project are being achieved.

A formalized audit schedule will be developed in future iterations of the EMS to further define the scope and frequency of audits.

11. Element 10: Adaptive Management Review

To maintain continual improvement, formal reviews of the suitability and effectiveness of the management process and its associated implementation documents will be scheduled periodically.

Management reviews will be based with the following considerations:

- Audit and incident investigation outcomes;
- Changes in organization and/or operational practices;
- Changes in statutory environmental requirements;
- Verifying that assessments of targets and performance standards have been met; and
- Analysis of the continuing adequacy of the EMS.

Implementation documents (e.g., management plans, procedures, and monitoring programs) will be reviewed periodically to assess their effectiveness and to verify that they remain applicable to current operations.

Management review outcomes, including observations, conclusions, and recommendations, will be documented and tracked through to completion.

Best management practices and environmental design criteria are expected to prevent or minimize adverse effects on the receiving environment. Ongoing monitoring will inform Sabina of the effectiveness of these strategies. If any unforeseen adverse effects are identified during the life of the Project, mitigation measures will be taken to correct them and prevent them from occurring in the future. Adaptive management (Figure 11-1) is an iterative approach based on a learning process gained from monitoring, and it improves long-term management outcomes. As part of the adaptive management framework, monitoring provisions may include:

- Measuring the condition of the system with selected indicators (e.g., numbers, size and health of fish populations, and water quality in external receiving bodies);
- Identification of goals and setting performance criteria and standards (e.g., water quality at or below predetermined thresholds); and
- Measures for evaluating root causes and the extent of deficiencies to make a decision on what actions to take (e.g., do nothing, implement corrective actions, or change the goal).

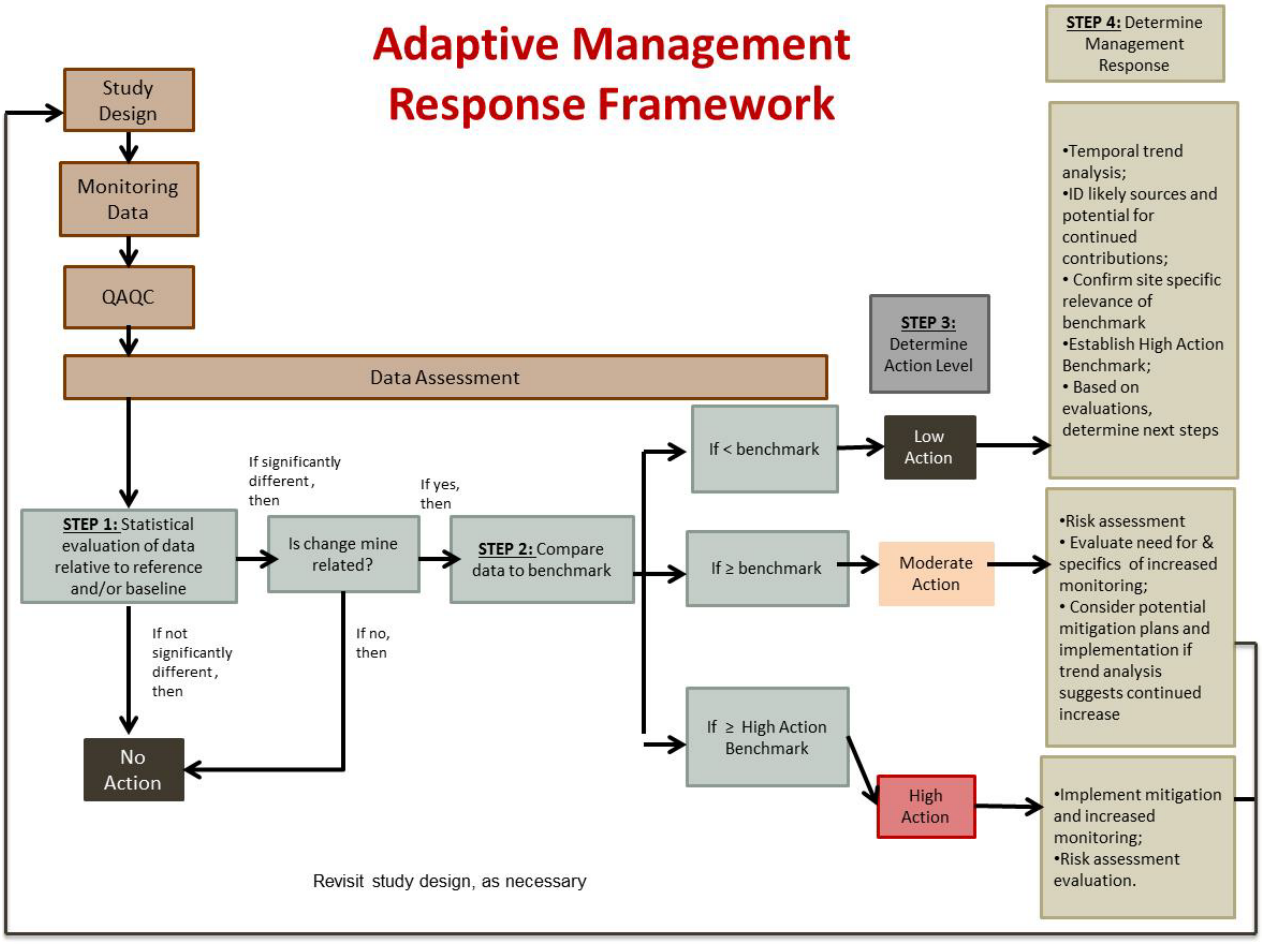

Figure 11-1. Adaptive Management Response Framework

For each Valued Ecosystem Component being monitored, if the indicator (i.e., monitored parameter) approaches a predefined threshold, then adaptive management would trigger a response. This may include increased monitoring frequency, studies to identify root causes, and/or specific action or mitigation measures to address these concerns.

Figure 11-1 provides an example of an adaptive management framework that can be applied to a number of situations or activities, along with triggers for various actions, and management responses (FEIS Volume 10, Chapter 1). The concept of alert and action levels shall be applied to a wide range of environmental concerns, including this example targeting fish and fish habitat:

- Predicted water quality in external receiving waterbodies and tributaries;
- Survival, growth, and health of fish in monitoring sites; and
- Trophic status and capability of target lakes to support and sustain populations.

The adaptive management approach includes "feedback loops" based on the data results so that changes to the study design can be made if there is a need to modify monitoring. This approach is methodical and includes prescribed actions to assist in minimizing impacts to the environment.

The EMS fully supports changes and updates as part of an adaptive management process by providing regular review of the adequacy of the Sustainable Development Policy (Section 2.1), management programs, and operational controls in light of concerns or other outcomes. EMS elements can then be updated, as needed, based on results and associated training programs, and then enhanced to improve the level of environmental protection. In this way, continual improvement of the Project EMS and mitigation programs will be assured.

Details of the proposed monitoring plans will be refined through discussions with regulatory authorities, communities, and other stakeholders as regulatory review of the Project proceeds.

12. References

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