**Table 5.1 SPW Closure Cost Summary**

| CAPITAL COSTS | COMPONENT NAME | | COST | LAND LIABILITY | WATER LIABILITY |
|---|---|---|---|---|---|
| OPEN PIT | Umwelt Quarry | | $36,068 | $29,360 | $6,708 |
| | Airport Quarry | | $27,525 | $27,525 | $0 |
| UNDERGROUND MINE | None | | $0 | $0 | $0 |
| TAILINGS FACILITY | None | | $0 | $0 | $0 |
| ROCK PILE | Umwelt Quarry Overburden Stockpile | | $1,913 | $0 | $1,913 |
| BUILDINGS AND EQUIPMENT | Access Road | | $2,132 | $2,132 | $0 |
| | Goose Camp | | $310,063 | $310,063 | $0 |
| CHEMICALS AND CONTAMINATED SOIL MANAGEMENT | Goose Camp | | $235,903 | $235,903 | $0 |
| SURFACE AND GROUNDWATER MANAGEMENT | Goose Camp | | $1,300 | - | $1,300 |
| INTERIM CARE AND MAINTENANCE | Goose Camp | | $10,000 | - | $10,000 |
| | **SUBTOTAL: Capital Costs** | | **$624,904** | **$604,984** | **$19,920** |
| | **PERCENT OF SUBTOTAL** | | | **97%** | **3%** |

| INDIRECT COSTS | | COST | LAND LIABILITY | WATER LIABILITY |
|---|---|---|---|---|
| MOBILIZATION/DEMOBILIZATION | | $1,465,066 | $1,418,364 | $46,702 |
| POST-CLOSURE MONITORING AND MAINTENANCE | | $140,000 | $135,537 | $4,463 |
| ENGINEERING | 5% | $31,245 | $30,249 | $996 |
| PROJECT MANAGEMENT | 5% | $31,245 | $30,249 | $996 |
| HEALTH AND SAFETY PLANS/MONITORING & QA/QC | 0% | $0 | $0 | $0 |
| BONDING/INSURANCE | 0% | $0 | $0 | $0 |
| CONTINGENCY | 10% | $62,490 | $60,498 | $1,992 |
| MARKET PRICE FACTOR ADJUSTMENT | 0% | $0 | $0 | $0 |
| | **SUBTOTAL: Indirect Costs** | **$1,730,046** | **$1,674,898** | **$55,149** |

| **TOTAL COSTS** | **$2,354,950** | **$2,279,881** | **$75,069** |
|---|---|---|---|

# 6. Glossary of Terms, Acronyms, or Abbreviations

## 6.1 GLOSSARY OF TERMS

Abandonment: The permanent dismantlement of a facility so it is permanently incapable of its intended use. This includes the removal of associated equipment and structures.

Active layer: The layer of ground above the permafrost which thaws and freezes annually.

Backfill: Material excavated from a site and reused for filling the surface or underground void created by mining.

Berm: A mound or wall, usually of earth, used to retain substances or to prevent substances from entering an area.

Care and Maintenance: A term to describe the status of a mine when it undergoes a temporary closure.

Closure: When a mine ceases operations without the intent to resume mining activities in the future.

Closure Criteria: Detail to set precise measures of when the objective has been satisfied.

Contaminant: Any physical, chemical, biological or radiological substance in the air, soil or water that has an adverse effect. Any chemical substance with a concentration that exceeds background levels or which is not naturally occurring in the environment.

Contouring: The process of shaping the land surface to fit the form of the surrounding land.

Decommissioning: The process of permanently closing a site; removing equipment, buildings and structures. Rehabilitation and plans for future maintenance of affected land and water are also included.

Disposal: The relocation, containment, treatment or processing of unwanted materials. This may involve the removal of contaminants or their conversion to less harmful forms.

Drainage: The removal of excess surface water or groundwater from land by natural runoff and permeation, or by surface or subsurface drains.

Effluent: Treated or untreated liquid waste material that is discharged into the environment from a structure such as a settling pond or a treatment plant.

Erosion: The wearing away of rock, soil or other surface material by water, rain, waves, wind or ice; the process may be accelerated by human activities.

Groundwater: All subsurface water that occurs beneath the water table in rocks and geologic formations that are fully saturated.

Landfill: An engineered waste management facility at which waste is disposed by placing it on or in land in a manner that minimizes adverse human health and environmental effects.

Leachate: Water or other liquid that has washed (leached) from a solid material, such as a layer of soil or water; leachate may contain contaminants.

Mitigation: The process of rectifying an impact by repairing, rehabilitating or restoring the affected environment, or the process of compensating for the impact by replacing or providing substitute resources or environments.

Monitoring: Observing the change in geophysical, hydrogeological or geochemical measurements over time.

Objectives: Objectives describe what the reclamation activities are aiming to achieve. The goal of mine closure is to achieve the long-term objectives that are selected for the site.

Permafrost: Ground that remains at or below zero degrees Celsius for a minimum of two consecutive years.

Progressive Reclamation: Actions that can be taken during mining operations before permanent closure, to take advantage of cost and operating efficiencies by using the resources available from mine operations to reduce the overall reclamation costs incurred. It enhances environmental protection and shortens the timeframe for achieving the reclamation objectives and goals.

Reclamation: The process of returning a disturbed site to its natural state or one for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety

Rehabilitation: Activities to ensure that the land will be returned to a form and productivity in conformity with a prior land use plan, including a stable ecological state that does not contribute substantially to environmental deterioration and is consistent with surrounding aesthetic values.

Remediation: The removal, reduction, or neutralization of substances, wastes or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety now or in the future.

Restoration: The renewing, repairing, cleaning-up, remediation or other management of soil, groundwater or sediment so that its functions and qualities are comparable to those of its original, unaltered state.

Revegetation: Replacing original ground cover following a disturbance to the land.

Runoff: Water that is not absorbed by soil and drains off the land into bodies of water. Scarification: Seedbed preparation to make a site more amenable to plant growth. Security Deposit: Funds held by the Crown that can be used in the case of abandonment of an undertaking to reclaim the site, or carry out any ongoing measures that may remain to be taken after the abandonment of the undertaking.

Sediment: Solid material, both mineral and organic, that has been moved by air, water, gravity, or ice and has come to rest on the earth’s surface either above or below sea level.

Surface Water: Natural water bodies such as river, streams, brooks, ponds and lakes, as well as artificial watercourses, such as irrigation, industrial and navigational canals, in direct contact with the atmosphere.

Temporary Closure: When a mine ceases operations with the intent to resume mining activities in the future. Temporary closures can last for a period of weeks, or for several years, based on economic, environmental, political, or social factors.

Watershed: A region or area bordered by ridges of higher ground that drains into a particular watercourse or body of water.

Water Table: The level below where the ground is saturated with water.

## 6.2 ACRONYMS AND ABBREVIATIONS

AANDC .....Aboriginal Affairs and Northern Development Canada
ARD.....Acid Rock Drainage
A&R Plan .....Abandonment and Restoration Plan
BIF..... Banded Iron Formation
EEM..... Environmental Effects Monitoring
EIS ..... Environmental Impact Statement
INAC.....Indian and Northern Affairs Canada
IOL .....Inuit Owned Land
KIA..... Kitikmeot Inuit Association
ML .....Metal Leaching
MLA.....Marine Laydown Area
MCRP.....Mine Closure and Reclamation Plan
NLCA ..... Nunavut Land Claims Agreement
NIRB..... Nunavut Impact Review Board
nPAG ..... Non-potentially Acid Generating
NWB.....Nunavut Water Board
PAG ..... Potentially Acid Generation
Sabina .....Sabina Gold & Silver Corp.
the Project/Property ..... Back River Project/Property
uPAG ..... Uncertain Potentially Acid Generating

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# APPENDIX I
## OIL POLLUTION EMERGENCY PLAN


# Back River Project

## Marine Laydown Area
## Oil Handling Facility

## Oil Pollution Emergency Plan
## 2015 Operating Season

October 2014

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## LIST OF ACRYONYMS

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| Arctic Waters Pollution Prevention Act | (AWPPA) |
| Arctic Waters Pollution Prevention Regulations | (AWPPR) |
| Bathurst Inlet Port and Road | (BIPR) |
| Canada Shipping Act | (CSA) |
| Canadian Council of Ministers of the Environment | (CCME) |
| Draft Environmental Impact Statement | (DEIS) |
| Department of Fisheries and Oceans | (DFO) |
| Emergency Response Coordinator | (ERC) |
| Emergency Command Center | (ECC) |
| Environment Canada | (EC) |
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| Marine Laydown Area | (MLA) |
| Material Safety Data Sheet | (MSDS) |
| Northwest Territories | (NWT) |
| Oil Handling Facility | (OHF) |
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| Oil Pollution Prevention Regulations | (OPPR) |
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| Process Hazard Analysis | (PHA) |
| Regional Environmental Emergencies Team | (REET) |
| Shipboard Oil Pollution Emergency Plan | (SOPEP) |
| Transport Canada | (TC) |
| Universal Transverse Mercator | (UTM) |
| Workplace Hazardous Materials Information System | (WHIMIS) |

# OIL HANDLING FACILITY DECLARATION

Pursuant to paragraph 168(1) (b) of the *Canada Shipping Act, 2001*, Sabina Gold & Silver Corp declares that:

(a) to comply with the regulations made under paragraph 182(a) of the Canada Shipping Act, 2001, on the detection of an oil pollution incident that arises out of the loading or unloading of oil to or from a ship, the measures as outlined in the Back River Project, Marine Laydown Area - Oil Handling Facility, Oil Pollution Emergency Plan shall be implemented.

(b) ~~in accordance with paragraph 168(1)(a) of the *Canada Shipping Act, 2001*, I have an arrangement with the certified response organization known as *~~

~~(Name of response organization)~~

~~The arrangement is with respect to _____ tonnes of oil~~
~~(Number of tonnes)~~

~~and in respect of _____~~
~~(Geographic location of the oil handling facility)~~

*** NOTE: In accordance with paragraph 168(2) of the *Canada Shipping Act, 2001*, the requirements under paragraph 168(1)(a) and 168(1)(b)(ii) do not apply.**

(c) ~~the persons listed below are authorized to implement the arrangement described in paragraph (b):**~~

**** NOTE: In accordance with paragraph 168(2) of the *Canada Shipping Act, 2001*, the requirements under paragraph 168(1)(b)(iii) do not apply in respect to the arrangement described in paragraph (b).**

(d) the persons listed below are authorized to implement the oil pollution emergency plan required by paragraph 168(1)(d) of the *Canada Shipping Act, 2001*:

| Title | Name | Telephone No. |
|---|---|---|
| Environmental Superintendent | Cheryl Wray | (778)-588-1999 |
| Environmental Coordinator | Merle Keefe | (778)-588-1999 |
| Operations Superintendent | Rick Peter | (779)-588-5995 |
| Manager, Site Operations | John Laitin | (604) 998-4187 |
| VP Environment & Sustainability | Matthew Pickard | (604) 998-4175 |

Date: October 1, 2014

Sabina Gold & Silver Corp. _____ Wes Carson, Vice President, Project Development

# PREAMBLE

*This Oil Handling Facility, Oil Pollution Emergency Plan (OPEP) for the Back River Project Marine Laydown Area - Oil Handling Facility shall be in effect at the commencement of operations 2015.*

*Formal distribution of the Plan shall be made to:*

***Transport Canada***
*Box 8550,*
*344 Edmonton Street (RMW),*
*Winnipeg, Manitoba, R3C 0P6*

Additional copies and updates of this Plan may be obtained from:

**Sabina Gold & Silver Corp**
Sabina Gold & Silver Corp.
# 202 - 930 West First Street
North Vancouver, BC
V7P 3N4
Tel : 604-998-4186

**Or :**

**Navenco Marine Inc.**
Attn: Todd Mitchell
350 boul. Ford, Suite 130
Chateauguay, QC, J6J 4Z2
Tel : (450) 698-2810
info@navenco.com

# Environmental Policy

Sabina Gold & Silver Corp. takes its responsibility to act as a steward of the environment seriously.

To fulfill this responsibility, Sabina strives to:

- Ensure that we design our activities and operate in compliance with all environmental regulations to minimize our impact on the environment.
- Promote responsibility and accountability of managers, employees, and contractors to protect the environment and make environmental performance an essential part of the management/contractor review process.
- Provide resources, personnel, and training to enable management, employees, and contractors to implement programs and policies to protect the environment.
- Communicate openly with employees, contractors, local stakeholders, and government on our environmental protection and sustainability programs and performance. We will also address any concerns pertaining to potential hazards and impacts.
- Promote the development and implementation of systems and technologies to reduce environmental risks.
- Establish and maintain appropriate emergency response plans for all activities and facilities.
- Maintain a self-monitoring program at each facility to ensure compliance and to proactively address plans to correct potential deficiencies.
- Work cooperatively with government agencies, local communities, and contractors to develop and enhance systems and technologies to improve environmental and sustainability practices.
- Encourage all employees, contractors, and stakeholders to report to management any known or suspected departures from this policy or its related procedures.

# 1. INTRODUCTION AND BACKGROUND

## 1.1. Purpose and Scope

The Back River Project, Marine Laydown Area, Oil Handling Facility (MLA-OHF), Oil Pollution Emergency Plan (OPEP) was developed to specifically assist in implementing measures to protect the marine environment and minimize impacts from potential spill events. The Plan outlines potential spill scenarios, and provides specific procedures for responding to spills while minimizing potential health and safety hazards and environmental damage. The OPEP provides instructions to guide all personnel in emergency spill response situations, defines the roles and responsibilities of management and responders and outlines the measures taken to prevent spills, the related exercise and evaluation programme, and the mechanism for regular updates to the plan.

## 1.2. Legislative Requirement

The *Canada Shipping Act*, 2001*,* stipulates that operators of designated oil handling facilities must have an on-site oil pollution emergency plan.

The MLA-OHF, OPEP takes into account the requirements of the Canada Shipping Act, 2001, part 8, subsections 168. (1), 168. (2) and 168. (3). Although the subsection 168 (2) is applicable, as the MLA-OHF site is located North of 60', therefore the subsections 168. (1) (a), 168. (1) (b) (ii), 168. (1) (b) (iii) do not apply.

The Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations (SOR/95-405) applies.

The Oil Handling Facilities Standards, TP12402 applies.

Pollutant Discharge Reporting Regulations, 1995 - SOR/95-351 applies.

Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69) applies.

## 1.3. Links to Sabina Gold & Silver Corp. Spill Contingency & Emergency Response Plan (SCERP)

Spills of all types, both marine and land based, are addressed in the Sabina Gold & Silver Corp. (Sabina), Back River Project (The Project) "Spill Contingency & Emergency Response Plan" (SCERP) which is a separate document. The SCERP addresses a wider scope of operations and includes storage areas other than the MLA-OHF. The SCERP also addresses other materials including soluble solids such as ammonium nitrate prill, liquids such as glycols and paints, corrosive liquids including sulphuric acid and sodium cyanide, compressed (inert and flammable) gas, and other hazardous substances.

The MLA-OHF OPEP has been designed specifically to compliment the Back River Project SCERP document. The OPEP is not to be construed as to supersede existing emergency response plans, rather it

is conceived to address the specifics of the fuel storage facility, the bulk incoming transfer of fuel, and spill scenarios directly relating to this operation.

# 2. PLANNING STANDARDS

In the preparation of the MLA-OHF OPEP, the standards as outlined in the Oil Handling Facility standards, TP 12402 have been employed.

## 2.1. Facility Category

Based on the ship to shore maximum pumping rate of less than 149 m3/hr, the MLA-OHF is classified as a level 1 facility. Spill scenarios have been developed and are outlined in section 8 of this plan. The minimum size of an oil pollution incident for which a response is described in this OPEP is 1m3.

## 2.2. General Planning Guidelines

Beyond the requirements of the CSA and the Oil Handling Facilities Standards, Sabina recognizes the unique nature of the geographical location and the challenges inherent in mounting a response to a pollution incident.

All spill contingencies for Bathurst Inlet must take into consideration the diverse elements that might define, simplify, or even reduce the possibility of taking action. The harsh climate, the remoteness, transportation difficulties (for personnel and goods), limited availability of manpower in case of oil spills, and the lack of infrastructure in case of a fire are all elements that can limit the response to take in this type of situation. Air transportation is the only transportation on a regular basis, but weather conditions may not be favorable, rendering a quick response difficult.

In the preparation of this plan, existing documents relating to the site specifications (physical, natural, and social conditions) have been utilized. In the preparation of the final plan and related Project SCERP, extensive consultations with local authorities shall be undertaken, with the goal of a cooperative response as an important part of an incident.

To specifically address the CSA and Oil Handling Facilities Standards, spill scenarios have been developed, taking into consideration among various factors the following:

(a) The nature of the oil product in respect of which the scenario is developed;

(b) The types of ships that are unloaded at the facility;

(c) The tides and currents that prevail at the facility;

(d) The meteorological conditions that prevail at the facility;

(e) The surrounding areas of environmental sensitivities that would likely be affected by an oil spill;

(f) The measures that will be implemented to minimize an oil pollution incident; and

(g) The time within which an effective response to an oil pollution incident can be carried out.

Several priorities have also been identified, among which include:

(a) The safety of the facility's personnel;

(b) The safety of the facility;

(c) The safety of the communities living adjacent to the facility;

(d) The prevention of fire and explosion;

(e) The minimization of the oil pollution incident;

(f) The notification and reporting of the oil pollution incident;

(g) The environmental impact of the oil pollution incident; and

(h) The requirements for cleaning up the oil pollution incident.

### 2.2.1 Response Time Standards

The operations and response structure at the MLA-OHF have been designed so that a rapid response to a spill incident can be carried out. All equipment and resources are strategically placed near the beach front, directly at the port operation site. Responders, workboats, and other support equipment are on standby during all facility operations. The deployment of equipment and resources required to contain and control the oil, or where the oil cannot be contained, to control the quantity of oil involved in the incident, up to the minimum spill size of 1 $m^3$ as determined in accordance with section 2 of the Oil Handling Facilities Standards, shall be on site and deployed on scene within 1 hour after the discovery of the oil pollution incident, unless deployment would be unsafe.

The equipment and resources required to recover and clean up the oil involved in the incident, up to the minimum spill size of 1 $m^3$ as determined in accordance with section 2 of the Oil Handling Facilities Standards, shall be deployed on scene as soon as practical and effective, within 6 hours of the oil pollution incident.

### 2.2.2 On-Water Recovery

On water recovery of spilled product shall be initiated immediately upon containment of free floating product. The skimming capacity projected for the MLA-OHF is capable of several times the recovery of the potential spill volume within the time standards after derating formula are applied.

### 2.2.3 Dedicated Facility Spill Response Equipment

The MLA-OHF shall be equipped with appropriate spill response equipment which provides resident capability for the response to spills in accordance with the scenarios which have been developed under this OPEP. Containment and recovery equipment inventories exceed the facility category planning standards and are especially appropriate for the potential spill volumes as outlined in the scenarios contained in the OPEP. A list of the equipment can be found in Annex 4.

# 3. MARINE LAYDOWN AREA – OIL HANDLING FACILITY

## 3.1. General Overview and Site Description

The proposed MLA-OHF is situated on the western shore of southern Bathurst Inlet at approximately 66°38.59' N and 107°42.69' W. A site overview plan showing its location is presented in Annex 1.

## 3.2. Oil Handling Facility and Infrastructure

The bulk fuel storage facility located at the MLA site for 2015 shall consist of six (6) land-based double walled 100,000 litre tanks at the temporary laydown area. A total of 600,000 litres is anticipated to be stored on site for 2015. The tertiary containment for fuel tanks will be Arctic-grade manufactured instaberms or similar product. These will be placed on a stable foundation of interlocking swamp mats that will remain for the duration of the facility.

The capacity of each instaberm will be equal to the volume of the largest tank plus 10% of the volume of the remaining tanks or 110% volume of the largest tank, whichever is greater. In calculating the volume, the footprint of the smaller tanks is subtracted. The above basis is consistent with the document entitled Design Rationale for Fuel Storage and Distribution Facilities published by the Department of Public Works of the Northwest Territories (GNWT 2006; refer to Section 4.6 of these guidelines). The design of these containment products will be based on Arctic installation and industry storage standards. Fuel transfer will incorporate hoses and pumps within tertiary containment.

## 3.3. Bathurst Inlet Physical Environment and Sensitivities

### 3.3.1 Inlet and Approaches

Bathurst Inlet is a deep fjord-type inlet along the northern coast of the Canadian mainland, within the territory of Nunavut. The entrance to the inlet is through Coronation Gulf between Cape Barrow

(68° 01' N, 110° 06' W) and Cape Flinders (68° 17' N, 108° 35' W), and the body extends over 20 km southwest into the mainland southof the Arctic Circle. It has a large network of irregular shores, and is littered with numerous islands, islets and rocks, most of which are described in greater detail by the Canadian Hydrographic Service (1994). Melville Sound extends eastward from northern Bathurst Inlet into Elu Inlet.

The main channel of Bathurst Inlet is relatively narrow (~2 to 15 km) and deep, with depths generally between 100 and 200 m depth, and maximum depth over 300 m in the northern basin near Omingmaktok (Bay Chimo). The most characteristic oceanographic features of the channel are several sills spread along the inlet, which result in rapid shoaling of the bathymetry to depths shallower than

50 m. The largest sill is near Manning Point at the centre of Bathurst Inlet, and the shallow bathymetry is accompanied by a narrowing of the channel width to less than 1.5 km between Quadyuk Island and the Tinney Hills. This sill approximately divides Bathurst Inlet in two major basins: the outer inlet that comprises all regions north of Manning Channel and contains the deeper, more complex bathymetry; and the inner inlet that runs landward from near Kingaok and has few islands and relatively simple structure with shallower depths between 100 and 150 m.

### 3.3.2 MLA-OHF Area

The MLA-OHF is proposed for the western shore of southern Bathurst Inlet. The deeply indented rocky shorelines in the region lead to steep bathymetry with narrow near-shore areas; a consequence of the inlet cutting through the massive granite rocks that characterize the surrounding Bathurst Hills Ecoregion. Hence, the MLA site consists of a long cobble/sand beach with a steep shoreline consisting of limited shallow areas (i.e., < 10 m) and follows a general 120 - 125° WSW heading. The water shelf extends orthogonally from the shore at a steep slope of approximately 20% to depths below 50 m about 240 m offshore. Beyond this distance, the seabed slopes more gently to depths below 150 m in the main inlet channel.

### 3.3.3 Bathymetric and Marine Data

Limited bathymetric and marine data is available for the Bathurst Inlet site. Charts 7791, 7792, and 7793 cover most of the area; however data within the shallow beach areas is limited.

The measured tidal heights for the inlet are small, with a maximum tidal range for spring tides (new and full moon) of around 0.4 m, and between 0.1 and 0.3 m for neap tides (first and third quarter moons).

Bathurst Inlet water circulation during open-water season is influenced by winds rather than by tides, with tidal currents likely significantly weaker than the down-slope density flows originating from freshwater discharge at the inlet surface.

The marine environment at the proposed Bathurst Inlet Bulk Storage Facility is characterized as a sheltered waters environment. As has been noted at the site, the prevailing winds generally provide sea conditions of onshore waves, varying in height from flat calm to less than 0.65 meter in average winds of less than 30 km/hr. Bulk transfer procedures established jointly by the OHF and the charterer preclude the transfer of bulk product when conditions become excessive, i.e. wave heights greater than approximately 0.7 m. This enhances the possibility of deploying pollution gear should an incident occur.

### 3.3.4 Meteorological Data

The Back River Project Atmospheric Environment Study (DEIS Volume 4: Atmospheric Environment) baseline data has been used to help in project design, for assessing potential effects on air quality, and for understanding trends in climate change.

The climate in the project area is characterized by extremes and is primarily subject to cold, dry Arctic air masses and American continental air masses from the south.

Long-term meteorological data is collected at Environment Canada – Meteorological Service of Canada (EC-MSC) meteorological stations. The closest stations which are currently operating are Lupin CS, and Kugluktuk A and CS meteorological stations. Climate normal data (arithmetic averages of climate elements over a prescribed 30-year interval) has been used from these EC-MSC stations. The most

updated climate normals and extremes currently offered by EC are based on Canadian climate stations with at least 15 years of data between 1982 to 2010.

Project-specific meteorological baseline data collection commenced in August 2004 at the George and Goose meteorological stations which are located within the George and Goose properties, respectively.

These stations continue to be operational. Meteorological data are also available from the Bathurst Inlet Port and Road (BIPR) Project meteorological station, which has been located near the MLA in Bathurst Inlet since 2001.

The climate at the MLA consists of a winter period (October to May) of extremely cold mean monthly temperatures ranging from -33.0ºC to -1.3ºC and a cool spring, summer, and fall period (June to September) with mean monthly temperatures ranging from -0.3ºC to 14.5ºC.

Precipitation climate normals in the regional area range from 249.4 to 299.2 mm per year. Project meteorological station precipitation was measured as rainfall during the summer period only (June, July, August, and September), when temperatures were above freezing. During the 2006 to 2011 monitoring period, summer monthly rainfall ranged from 0 mm (September 2006) to 102 mm (August 2008). The summer total rainfall between June and September ranged from 4 mm (2006) to 211 mm (2008).

Wind speed data was collected during the measurement period (2006 to September 2012) specifically at the BIPR meteorological station. For the open shipping season, during the summer season (June to September), winds predominantly came from the north and northwest, 17% and 15% of the time respectively, more than 5 m/s 45% of the time, but less than 9 m/s approximately 86% of the time. On average, wind speeds during the summer were slightly slower than winter wind speeds.

### 3.3.5 Ice Conditions

Historically, consolidated first-year ice covers Bathurst Inlet from October to June. Ice break-up usually occurs in the first few weeks of July, after which open waters prevail until thin new ice forms around mid-October.

Environment Canada data documents the average sea ice freeze-up and break-up dates within the Canadian Arctic for the past 30 years. There has been significant temporal and spatial variation in the timing of break-up and freeze-up in southern Bathurst Inlet, as well as in the amount of ice present year-to-year. Environment Canada data is well documented for the area and includes the areas of Barrow Strait, Franklin Strait, and the area between Queen Maud and Coronation Gulfs. Ice data indicates an open shipping season of more than 60 days in the area of the MLA.

Observational evidence from the last few decades indicates that sea ice in the Arctic has been thinning and retreating earlier than historical reports (Stroeve et al. 2012). Most ice concentration records in the last 8 years have been lower than historical averages. The strongest changes occurred in the summer for the more northern straits, with several ice-free periods recently recorded where ice used to be present year-round. In 2012, Arctic sea ice was at the lowest recorded levels since ice monitoring by satellite began three decades ago (NSIDC 2012).

Ships sailing to Bathurst Inlet will arrive from western Canada thus bulk fuel deliveries at the MLA-OHF shall be limited to the period of open water only, and by ships of appropriate ice class for the marine shipping zone.

### 3.3.6 Sensitivities

As noted in Section 3.3.2. above, the MLA site consists of a long cobble/sand beach with a steep shoreline consisting of limited shallow areas (i.e., < 10 m) and follows a general 120 - 125° WSW heading. The water shelf extends orthogonally from the shore at a steep slope of approximately 20% to depths below 50 m about 240 m offshore. Beyond this distance, the seabed slopes more gently to depths below 150 m in the main inlet channel.

The 2013 Bathurst Inlet Marine Diesel Fuel Spill Modeling Study (Rescan, 2013) was completed to predict the fate of potential diesel fuel spills near the MLA in Bathurst Inlet during the open-water season. The spills were assumed to originate near the MLA site. The fuel spill modeling undertaken also addresses the potential for environmental damage from diesel spills resulting from transportation and storage of fuel near the proposed Project MLA.

In open-water diesel spills, a fraction of the diesel fuel becomes entrained into the upper water column immediately under slicks by direct solution or by entrainment of small oil droplets through current and wave action (Mackay et al. 1980; Kuiper and Van den Brink 1987; ITOPF 2011). Diesel fuel concentrations in this cloud of oil-contaminated water depend on the oil properties and the level of mixing energy (winds/waves). In theory, these concentrations may initially exceed the toxic thresholds of marine species present in the spill area. As the diesel fuel spreads under the influence of water currents, turbulent diffusion, and weathering processes, the hydrocarbon concentrations within it are reduced. In time, these diesel fuel concentrations will fall below the threshold levels that cause toxicity to living organisms and ultimately decline to background levels.

The diesel volume scenarios presented in the study were modeled under hundreds of different wind conditions, from which spill probability distribution figures were derived. Most of the diesel deposits were limited to the southern portion of the modeled inlet, and over two-thirds of the diesel quickly weathered out within the first 10 days of all simulations. In the detailed simulations prepared for the study, the diesel high probability distributions and spread resulting from a 20 kL diesel spill were only recorded directly near the MLA site; diesel very rarely spread in the areas outside of the MLA.

Marine birds are one of the more vulnerable and sensitive marine organisms to all types of oil spills.

However, unlike cruder distillates, diesel spills (particularly small ones ≤ 20,000 L) usually have limited impacts on marine bird wildlife due to the oils high volatility (NOAA 2013). While diesel is highly toxic when in direct contact with marine birds, the number of birds affected is usually small due to the short residence times on surface waters.

Numerous marine bird species have been documented in southern Bathurst Inlet (Rescan 2012b,

2013b). Ordered from commonly (i.e., over >200 individuals counted) to rarely (i.e., less than

30 individuals) observed, these are: Canadian goose; red-breasted merganser; greater scaup; black, white-winged, and surf scoters; herring and glaucous gulls; long-tailed duck; pacific, red-throated, and yellow-billed loons; and the common eider. Amongst these populations, the glaucous gull, long-tailed duck, and common eider are all listed as sensitive species in Nunavut (CESCC 2010).

Aside from the eider, all of these species have been recorded to forage and/or nest within a few kilometers of the MLA and in multiple areas around southern Bathurst Inlet. The observations occurred mainly in the late summer and fall when a number of birds were present in marine habitats for molting and staging purposes.

The approximate locality of each bird population within the study area has been included in the figures presented in Annex 3 of this OPEP. The birds were grouped in a few basic taxa to simplify the color scheme: duck (incl. mergansers, scaups, scoters, and long-tailed duck), goose, gull, and loon.

Any large groups of marine birds that were documented during baseline studies from 2010 to the present during any time of the year were thus mapped (Rescan 2012b, 2013b). Large groups are defined as any observation of a group of more than 10 individuals for any species of duck, loon, or gull, or any observation of a group of more than 25 individuals of a goose species.

In the assessments, the most apparent feature of Figure 5.3-1 contained in annex 3 is the lack of bird populations located near the MLA, which has by far the highest spill probabilities. Only a medium flock of geese and a brief observation of an unidentified fowl have been recorded within 4 km of the on-land MLA infrastructure. Conversely, the highest proportion of bird observations in the inlet is located in the small cove just south the MLA, which is seasonally inhabited by large groups of ducks and geese. Diesel particles appear to reach the cove only in <10% of simulations, and the results of the simulations indicate it would take several hours before a spill would reach the area. It is logical that birds would favor the southern cove relative to the MLA shoreline for nesting grounds, as the cove is relatively sheltered from the main currents driving the circulation in the main Bathurst Inlet channel. The alongshore currents near the MLA will disperse spills northwards.

Two other bird areas could potentially interact with diesel fuel spills: the northern shores directly across the main channel from the MLA, and the shores surrounding the peninsula to the south of the MLA. The former is largely inhabited by duck populations that span over 10 km of the coast. The diesel residual probabilities there still remain relatively low with respect to the MLA coast; some small areas can have probabilities as high as 30%, but on average most of the coast probabilities are <10%. The peninsula to the south, on the contrary, is far enough south to receive little diesel fuel overall, with only a few patches of <5% probabilities present.

The spill modeling summarizes that the wind conditions, current regime, and overall spill volume play a critical role in determining the fate of diesel spills within southern Bathurst Inlet. Regardless of diesel amounts, spills occurring in mild to moderate wind conditions generally did not progress past a few kilometers from the source location.

Preventive measures such as strict criteria for acceptable conditions for discharge are outlined in cargo transfer procedures and in section 9 of this plan. Preventive booming following any spill to protect sensitive areas of significant bird populations should be considered as outlined in the scenarios presented in section 8 of this plan. The hazing techniques and wildlife protection procedures as outlined in section 7.4 of this plan are of utmost importance.

# 4. SITE ACTIVITIES

## 4.1. Bulk Oil Transfer - Ship to Shore

For the 2015 operating season, a single bulk fuel delivery by barge of 600,000 litres of ultra-low sulphur diesel (ULSD) will take place during the open shipping season.

The fuel transfer shall take place by means of a single 4 inch hose between barge and the six 100,000 litre double walled storage tanks at the MLA-OHF. It is anticipated that the bow of the barge will be situated directly at the shoreline so that no floating hose shall be required for this operation.

It is expected that once cargo operations are underway, the ship will discharge at a rate not exceeding 149 $m^3$/hour.

The tides are not a major risk factor at this location. Wind force and direction are the dictating environmental factors during bulk transfer and criteria for acceptable conditions for discharge are outlined in cargo transfer procedures.

The tanks shall take varying times to fill, depending on the final pumping rates obtained. Accurate reconciliation of discharge & fill volumes through regular communication between barge & shore personnel is required to ensure the safe transfer of fuel and prevent any overfilling that could result in a spill.

The bulk transfer procedures are fully detailed in the standard operating procedures of the fuel supplier and are included in Annex 5 of this document.

## 4.2. Other MLA-OHF Operations

Other than the planned bulk fuel and transfers, no other port operations involving fuel are anticipated at the MLA-OHF for the 2015 season.

Dry cargo sealift operations are anticipated to occur at the MLA, however these will be separate from the operations of the bulk fuel storage facility and are not considered in this Oil Pollution Emergency Plan.

# 5. GENERAL RESPONSE TO MARINE SPILL EMERGENCIES

In order to effectively manage emergency response, SABINA has implemented a detailed emergency response structure that is applicable to all emergencies.

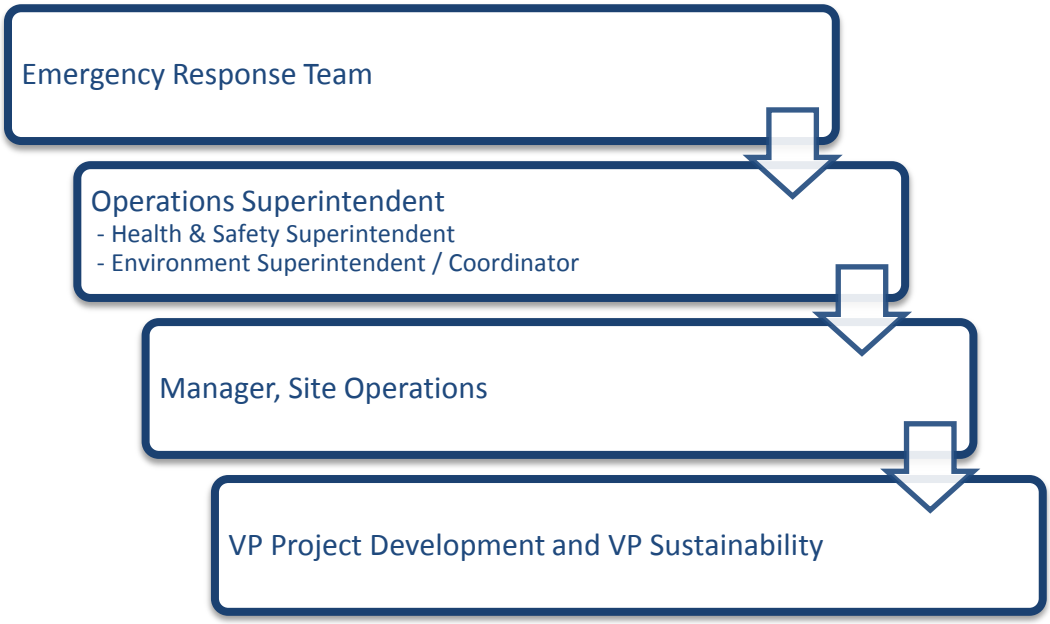


**Figure 5.1: Marine Spill Response Organizational Chart**

## 5.1. Response Management Structure

All spill procedures and response functions are to be implemented through the Emergency Response Team (ERT), which will be managed by the Operations Superintendent. Table 1 1 presents the management team responsible for overseeing emergency spill response operations and their contact information. The Emergency Response Organizational Chart is provided above, as Figure 5-1.

Once a spill event is reported, the Operations Superintendent establishes a specific strategy for containing and controlling the spill and initiates the cleanup activities. Other site personnel may act as technical advisers before and during the intervention. The trained Emergency Response Team will conduct all emergency spill response operations under the direction of the Operations Superintendent. During the cleanup phase of the intervention, other site personnel (e.g., heavy equipment operators, laborers) could be involved in the intervention.

## 5.2. Emergency Response Team

The Emergency Response Team will be structured from a worker volunteer base at site; this team will be overseen by the Operations Superintendent, or proxy, during an emergency response event. Acknowledging rotational work schedules, Sabina will maintain a sufficient numbers of responders at site at all times during MLA fuel off-loading operations.

## 5.3. Equipment and Personal Protection

In order to provide adequate response in case of spill events, Sabina maintains the appropriate type and quantity of response equipment and materials onsite.

Spill kits are strategically placed primarily in areas of fuel handling to facilitate immediate first response in the event of a hydrocarbon release to land. A complete list of spill response equipment is found in Annex 4 of this plan.

In addition to the spill response material, a variety of mobile heavy equipment, including excavators, front end loaders, bull-dozers, haul trucks, small workboat for in-land water use, and marine support boats, are available to aid in spill response and recovery efforts.

## 5.4. Communication

Effective communication systems are critical to the success of emergency responses. Personnel involved, from first person on scene to the Operations Superintendent, rely on the ability to quickly relay accurate information.

Communications available at the Project site during an emergency are listed below:

- Hand-held radio communication,
- Telephone,
- Satellite Phone, and
- Internet.

### 5.4.1 Hand-Held Radio Communication

During an emergency, the primary communications link between all emergency response personnel is through radio communication. Additionally, other individuals involved in emergency response will also carry hand-held radios as part of their regular work requirement.

During any emergency at site, radio communications are kept to a minimum. If radio silence is required, a designated member of the ERT will announce this. This ensures open and free communications among personnel involved in the direct response.

### 5.4.2 Telephone Communication

During an emergency, telephone communications will be used to:

- Notify internal personnel and resources.
- Notify external personnel and resources.

To supplement radio communications, the site telephone system may be used to alert site personnel during an emergency response.

Communications links with Corporate Sabina office may also be required during some emergency situations. Constant communications links will be established by telephone where offsite assistance is required (from Sabina, or external resources such as medical practitioners or SAR/Coast Guards).

### 5.5. Communication with the Public

Only authorized Sabina Senior Management shall provide external communication to the public during emergencies.

Local residents, community leaders, other stakeholders, and non governmental agencies will be contacted as appropriate. The designated officer(s) will coordinate dissemination of information to the media whenever necessary.

## 6. ROLES AND RESPONSIBILITIES

The initial stage of any spill or emergency incident and resultant response is critical. An effective and timely response is essential to minimize environmental impacts and prevent an emergency situation from escalating to a higher level. Therefore, all relevant personnel must be fully aware of their individual duties and responsibilities as presented in this OPEP.

### 6.1. All Employees (First Responders)

- Immediately warn other personnel working in the area;
- Evacuate the area if the health and safety of personnel is threatened;
- Notify direct supervisor or site superintendent, who will initiate the response operations;
- In the absence of danger, take any safe and reasonable measure to stop, contain, and identify the nature of the spill or emergency situation;
- • Participate in response as directed by the Operations Superintendent.

### 6.2. Emergency Response Team (ERT)

- Members determined by Operations Superintendent based on response needs;
- Members report to the scene of the incident;
- Work closely with the Operations Superintendent to determine appropriate response strategy;
- Contact departmental resources via radio as required during the emergency response;

- Direct ERT members in their respective tasks as required; and
- Participate in a post-emergency debriefing session.

### 6.3. Operations Superintendent

- Evaluate the initial situation and assess the magnitude of the emergency;
- Assemble and manage the ERT, as required;
- Develop an overall plan of action;
- Notify Manager, Site Operations, Health & Safety Superintendent, and Environmental Superintendent/Coordinator of incident.
- Report the spill to the Canadian Coast Guard (Central and Arctic region) 1-800-265-0237 (24-hour). The fax number for transmission of the written report is (519) 337-2498. Reporting of marine spills shall be in accordance with Transport Canada Guideline TP- 9834E, "Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and /or Marine Pollutants". Detailed harmful substances report requirements are outlined in Appendix A-2 of the guideline.
- Report the spill to NWT-NU 24-hour Spill Report Line at 867-920-8130, and ensure cleanup is completed to Sabina standards in line with direction from the Manager, Site Operations, Health & Safety Superintendent, Environmental Superintendent and Environmental Coordinator;
- Provide liaison with management to keep them informed of response activities;
- Act as the spokesperson with government agencies as appropriate;
- Document all actions and decisions;
- Collect photographic records of the event and response efforts;
- Participate in post-emergency debriefing;
- Assist in the accident/incident investigation process;
- Complete Government Agency notification processes;
- Document the cause of the emergency and effectiveness of the response effort, and recommend the appropriate measures to prevent a recurrence;
- Ensure that all involved departments complete reporting process; and
- Prepare and submit follow-up documentation required by appropriate regulators.

For marine spills at the MLA-OHF, the SABINA Environment Superintendent will be accessible to the Canadian Coast Guard during the entire incident.

### 6.4. Manager, Site Operations

- Provides advice and ensures response is completed to Sabina standards in line with direction from the Operations Superintendent and VP Sustainability;
- Ensures Emergency Response Team is adequately trained;
- Ensures emergency response and/or monitoring equipment and supplies are regularly inspected and maintained;
- Organize with Operations Superintendent emergency response training and exercises; and
- Lead investigation and identify measure and/or training to prevent similar incidents occurring.

### 6.5. Environmental Superintendent and Coordinator

- Provides advice and ensures incident is documented appropriately as per this plan and regulatory requirements;
- For spills: record date, location (GPS), material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken; confirm these details with Operations Superintendent.
- For spills: obtain photographs of spill site before clean up starts, if possible, and after the cleanup has been completed. Take pictures of undisturbed area beside the spill area for a comparison. If spill occurs on snow, stake or otherwise identify the affected area so that it can be evaluated once the snow melts.
- As directed by the VP Sustainability and Site Superintendent, liaise with NWT/NU applicable agencies regarding on-going cleanup activities, inspections and incident closure;
- Assist in initial and ongoing response efforts;
- Provide advice to assist with cleanup;
- Co-ordinate inspections by applicable agencies; and
- Assist with investigation and identify measure and/or training to prevent similar incidents occurring.

### 6.6. Health & Safety Superintendent

- Assist in initial and ongoing response efforts;
- Provide advice to assist with response/cleanup; and
- Assist with investigation and identify measure and/or training to prevent incidents occurring.

### 6.7. VP Project Development and VP Sustainability

- Engage Legal Counsel and Sabina Senior Management and Board of Directors as required; and
- Notify and update Senior Management and Board members as required.

## 7. GENERAL SPILL PROCEDURES

The response to spills begins immediately when the spill has been detected. In all cases immediately upon detection of a spill, all transfer operations are to be shut down and not restarted in any manner that would interfere with the immediate, effective, and sustained response to the oil pollution incident.

This plan clearly outlines the notification procedure and the roles and responsibilities of Sabina's emergency response personnel ERT. All emergency telephone numbers are clearly listed and the persons are contacted as needed and according to the priority of the incident. The contact list is included in Table-1-1.

The ERT, following a spill, must ensure that personnel safety is their first priority. First and foremost, evaluate the risks as quickly as possible to guarantee that appropriate measures are taken to prevent or reduce the risk of injury to personnel, to avoid fire or explosion, to protect property and to minimize the damage to the environment. It is important to contain the spill and to start cleaning up as quickly as possible to stop the spill from contaminating a greater area.

Full details of the properties and hazards associated with potential spills of all products are found on the Material Safety Data Sheets (MSDS) in Annex 8 of this plan.

When responding to spills, all procedures and safety methods in handling the products must be observed. The following specific measures must be followed with spills on water or on land:

Take personal protective safety measures. Personal protective equipment must be worn at all times during response operations.

Close all electrical sources.

Take all appropriate measures to ensure personnel safety and the safety of the facility.

Request help to control personnel and vehicle access, and close the area. Never enter inside and/or within the radius of the contaminated area. Have a fire extinguisher close by. If a fire starts, extinguish

the fire only if it is safe for you and that you were trained to do so without exposing yourself to unnecessary risks.

Through the spill training initiative, all spill response personnel will be fully briefed on the procedures to be followed to report a spill and initiate spill response. The first person to notice a spill will take the following steps:

1 Immediately warn other personnel working near the spill area;

2 Evacuate the area if the health and safety of personnel is threatened;

3 Notify an appropriate supervisor, who will initiate the spill response operations;

4 In the absence of danger, and before the spill response team arrives at the scene, take any safe and reasonable measure to stop, contain, and identify the nature of the spill.

All spill response actions carried out by the ERT will follow these general procedures:

Cease Transfer Operations - In all cases immediately upon detection of a spill, all transfer operations are to be shut down and not restarted in any manner that would interfere with the immediate, effective and sustained response to the oil pollution incident.

Source Control - Reduce or stop the flow of product without endangering anyone. This may involve very simple actions such as closing shore valves, sealing a puncture hole with almost anything handy (e.g., a rag, a piece of wood, tape, etc.), raising a leaky or discharging hose at a level higher than the product level inside the tank.

Control of Free Product - Prevent or limit the spread of the spilled material. Accumulate/concentrate spilled product in an area to facilitate recovery. Barriers positioned down-gradient of the spill will slow or stop the progression of the spill. Barriers can consist of absorbent booms, dykes, berms, or trenches (dug in the ground). Deployment of floating booms to contain a marine spill should be carried out by the spill response team as soon as safe and practical.

Protection - Evaluate the potential dangers of the spill in order to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive areas where possible.

Clean up the Spill – Recover and containerize as much free product as possible. Recover contaminated soil, and water. Pressure-wash contaminated bedrock surfaces, shorelines, ice and recover as much as possible oily water for containerization and/or treatment.

Report the Spill - Provide basic information such as date and time of the spill, type and amount of product discharged, location and approximate size of the spill, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or the environment. Reporting requirements are presented in section 7.3 of this plan.

## 7.1. Health and Safety

Sabina and its senior management are committed to ensuring the health, safety and welfare of its employees, contractors, and visitors. As a consequence of this, Sabina requires all personnel to regard accident prevention and working safely as a collective individual responsibility.

Sabina conducts all site activities in accordance with all applicable Federal and Territorial health and safety regulations. The following applicable health and safety regulations apply to the activities described in this Oil Pollution Emergency Plan:

Northwest Territories, Nunavut Worker's Compensation Act - Provides the territorial legislation covering the health and safety of workers in Nunavut

Mine Health and Safety Act and Regulations (Nunavut) - Provides specific health and safety guidelines for mines operating in Nunavut .. Section 2(1) Duties and Responsibilities ( the Owner)

Canada Labour Code Part II – Provides Federal regulations for the health and safety of workers involved in shipping and marine port operations

Sabina requires and provides WHMIS training for all employees and contractors throughout the Back River Project. Mines Health & Safety Act & Regulations : Part VI Regs. Training 6.03

It is also a requirement for supervisory personnel to hold a St John's Abulance Advanced First Aid (or equivalent) level 1 or level 2 certification as required by the Mine Health and Safety Act. Mines Health & safety Act & Regulations : Part V Regs. Supervision

Comprehensive general training is provided to spill responders throughout the Project in relation to on land spills. In addition, specific training with relation to safety during response to marine spills is provided to all responders through Sabina's marine spill training program. All responders who are involved in marine operations shall participate in the training as outlined in Section 9 of this Oil Pollution Emergency Plan.

### 7.1.1 Personal Protective Equipment (PPE) – Requirements

For all responders, personal protective equipment requirements shall be as follows:

MLA Site Services: (non-water operations, no contact with spilled product)

- Hard Hat
- CSA approved work boots
- Safety glasses
- Leather work gloves

- Orange/yellow retro reflective vests

MLA Site Services: (non-water operations, possible contact with spilled product)

- Hard Hat
- CSA approved work boots
- Safety glasses
- Orange/yellow retro reflective vests (if not wearing rain wear)
- PVC rain suit
- Nitrile work gloves

Workboat and shoreline responders: (beach or on-water operations, possible contact with spilled product)

- Hard Hat
- CSA approved work boots
- Safety glasses
- PVC rain suit
- Nitrile work gloves
- Approved personal flotation device

## 7.2. Coordination with Canadian Coast Guard and other Governmental agencies

### 7.2.1 Canadian Coast Guard

The response to spills at the MLA-OHF shall be managed in coordination with the Canadian Coast Guard who are the lead response agency north of 60°.

The Central & Arctic Regional Response Plan (2008) and the Kitikmeot Region, Nunavut Area Plan outline the Canadian Coast Guard's response capability for the region. This plan is a component of the Canadian Coast Guard National Response Plan which is the responsibility of the Director of Safety and Environmental Response Systems, Ottawa. It establishes the framework and the procedures by which Central & Arctic Region will prepare for, assess, respond to, and document actions taken in response to pollution incidents in this Region. This capability and the information contained in the Coast Guard plans are considered a valuable resource in the planning and response to spills at the MLA-OHF.

### 7.2.2 Environment Canada – National Environmental Emergencies Centre

The Canadian Coast Guard (lead agency) with primary jurisdiction for the spill, oversees and monitors response and recovery efforts by the responsible party and further, may request that Environment Canada provide scientific and technical advice to inform response actions that will reduce the environmental impact of the spill. Additionally, Environment Canada has legislative responsibility to address pollution incidents that impact federally managed resources such as fish and wildlife under the Fisheries Act and the Migratory Birds Convention Act, as well as hazardous substances regulated by the Environmental Emergency Regulations. Environment Canada may issue directions under its legislative mandate, if the environment is not being adequately protected and, when warranted take over the lead agency role.

In the event of a polluting incident that requires Environment Canada's involvement, the National Environmental Emergencies Centre (NEEC) is Environment Canada's focal point for the provision of scientific advice, such as weather forecasts, contaminant dispersion and trajectory modeling, fate and behavior of hazardous substances, the establishment of clean-up priorities and techniques, as well as the protection of sensitive ecosystems and wildlife such as migratory birds and fish. Environment Canada's Emergency officers have Hazardous Materials (HAZMAT) expertise which enables response in the event of spills involving hazardous materials.

### 7.2.3 Other Governmental Agencies

At all times, the response to spill incidents shall be coordinated with the various agencies as listed above.

## 7.3. Reporting Requirements

Three individual reporting requirements are applicable in the case of all marine spills. Procedures for each are outlined herewith:

### 7.3.1 Canadian Coast Guard Reporting Requirements

All spills of a marine nature will be reported to the Canadian Coast Guard (Central and Arctic region) 1-800-265-0237 (24-hour). The fax number for transmission of the written report is (519) 337-2498.

Reporting of marine spills shall be in accordance with Transport Canada Guideline TP- 9834E,

"Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and /or Marine Pollutants". Detailed harmful substances report requirements are outlined in Appendix A-2 of the guideline, a copy of which is included in Annex 9 of this plan.

### 7.3.2 Reporting to Transport Canada

The Vessel Pollution and Dangerous Chemical Regulations (SOR 2012-69) require that any spills be reported to the nearest office of Transport Canada as follows:

**Jaideep Johar**
Manager, Technical Services
Transport Canada, Marine Safety.
Prairie and Northern Region
Marine Safety Tel: 204 984 8618
Cell: 204 880 0754,Email:joharj@tc.gc.ca

**Craig D. Miller**
Manager, Marine Safety (PNR)
Transport Canada
Box 8550, 344 Edmonton Street, Winnipeg, MB, R3C 0P6
Email: craig.miller@tc.gc.ca
Telephone (204) 984-0397 / Facsimile, (204) 984-8417

Reporting of marine spills shall be in accordance with Transport Canada Guideline TP- 9834E,

"Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and /or Marine Pollutants". Detailed harmful substances report requirements are outlined in Appendix A-2 of the guideline, a copy of which is included in Annex 9 of this plan.

### 7.3.3 Government of Nunavut Reporting Requirements

Quantities of hazardous substances spilled that require reporting are listed in Schedule B of the Nunavut Spill Contingency and Reporting Regulation.

After the initial field emergency response to the spill event, spills are reported to the 24-hour Spill Report Line:

24-Hour Spill Report Line
spills@gov.nt.ca
Tel. (867) 920-8130 or
Fax (867) 873-6924

Failure to report a spill can lead to fines. The Kitikmeot Inuit Association (KIA) Lands Administrator will also be promptly notified at (867) 983-2458 or via e-mail. Similarly, the AANDC Water Resources Officer will be promptly notified of the spill event at (867) 982-4308 or via e-mail.

It is the responsibility of the Operations Superintendent to prepare the proper reports and transmit them to regulatory authorities.

The spill event is reported in writing using the standard NWT-NU Spill Report Form.

In the event of a spill involving the marine carrier delivering bulk fuel, Sabina will ensure that the subcontractor reports any spill event under its responsibility.

## 7.4. Wildlife Protection Procedures

In response to a spill event, techniques used to prevent wildlife from becoming oiled or contaminated, by preventing animals from entering the contaminated area, will consist of hazing and other deterrents. This will be accomplished using a combination of both audible and visual devices, including but not limited to:

- Pyrotechnics, i.e. shell crackers, screamers, propane cannons for shore based spills.
- Visual scare tactics, i.e.: helicopters, emergency response vessels or other water vessels.
- Broadcast sounds, i.e. Breco Bird Scarer designed to float with an oil spill.
- Exclusion, i.e. netting applied in smaller contaminated areas

These techniques need to be set in place immediately after a spill occurrence so as to minimize environmental impact.

The size of the spill and location in relation to sensitive wildlife areas must be assessed at the time of the event as to correctly apply the appropriate level of deterrence. Only workers trained in the safe and proper use of certain hazing equipment will be permitted to haze wildlife. Personal Protective Equipment will be worn by all personnel using equipment, as per manufactures instructions; at a minimum this will include the use of eye and ear protection. Other workers in the vicinity of such devices should also use ear protection or remain a safe distance away. Hazing through the use of pyrotechnics should not be used too close to dry vegetation or flammable spill materials due to fire hazard.

Hazing should be consistent and continuous in all contaminated areas to prevent wildlife from being hazed into an area where they may be in danger; in addition, these measures should be applied as soon as possible to prevent any initial contact on the surface waters (if applicable). It is also important to ensure that hazing efforts do not cause already contaminated animals to scatter.

All emergency response vessels shall be equipped with deterrent devices to ensure timely response in case of a spill occurrence off-shore. To prevent habituation, variation of hazing techniques will be used such as changing the location, appearance, and types of hazing or using a combination of hazing techniques.

Efforts shall be made to collect alive or dead oiled wildlife. In the event of a spill occurring in or around a water body, shorelines and beaches shall be inspected for contaminated wildlife to be collected. Emergency Response vessels shall be equipped with dip-nets, large plastic collecting bags for dead wildlife, and cardboard boxes or cloth bags for live oiled wildlife. To ensure alive, oiled wildlife be dealt with humanely, capture and handling of wildlife shall only be done by trained and permitted individuals. Gloves shall be worn when handling contaminated wildlife (leather gloves for raptors and mammals, latex/rubber gloves for ducks and small shorebirds). Wildlife will be kept individually within cloth bags or ventilated cardboard boxes and labelled with the date and time animal was found, the name of finder, location, and name of species, if known. Wildlife treatment facilities will then be contacted for advisement on treatment. All contaminated wildlife will be held in a warm quiet place until treatment. The Canadian Wildlife Services (CWS) will be consulted to determine the most humane treatment strategy to be implemented for live oiled wildlife, whether rehabilitation or euthanization.

For wildlife mortalities, each carcass shall be bagged and labeled individually. The date and time animal was found, name of finder, location, and name of species, if known, shall be documented. CWS shall be consulted and approval obtained prior to disposing of any dead wildlife. Contact information for experts in bird hazing and bird exclusion, oiled bird rehabilitation, and, permits needed to haze, salvage, hold and clean, or euthanize birds, are shown in Table 7-1.

**Table 7 1: Emergency Contacts in Case of Spills Affecting Wildlife**

| Name | Location | Phone Number | Purpose |
|---|---|---|---|
| Canadian Wildlife Services (CWS) | TBA | TBA | Knowing and providing information on the migratory bird resource and species at risk (under CWS jurisdiction) in the area of a spill (this includes damage assessment and restoration planning after the event)<br>Minimizing the damage to birds by deterring unoiled birds from becoming oiled<br>Ensuring the humane treatment of captured migratory birds and species at risk by determining the appropriate response and treatment strategies which may include euthanization or cleaning and rehabilitation. |
| Cobequid Wildlife Rehabilitation Centre | Brookfield, NS | 1-902-893-0253 | Provide veterinary care and rehabilitation for wildlife |
| Nunavut Emergency Management | P.O. Box 1000, Station 700 Iqaluit, NU X0A 0H0 | 1-800-693-1666 | Nunavut Emergency Management is responsible for developing the territorial emergency response plans, coordinating general emergency operations at the territorial and regional levels, and supporting community emergency response operations. |
| International Bird Rescue | International | 1-888-447-7143 | Wildlife rehabilitation specialists, can manage all aspects of wildlife response |

### 7.5. Treatment and Disposal

Plastic sacks, steel drums, or other appropriate containers as approved by the Environmental Superintendent, are used to contain and transport contaminated soil for treatment. Depending on the nature of the spilled contaminant, the soil may be treated for remediation onsite, or shipped to a licensed facility for treatment and disposal. Contaminated soil resulting from the spill of hazardous chemicals will be treated as a hazardous waste and shipped to a licensed facility for treatment and disposal. Temporary storage of contaminated materials is within lined berms.

## 8. SPILL SCENARIOS AND RESPONSE STRATEGIES

Sabina is committed to planning for spills at the MLA-OHF using an analysis of possible spill scenarios. The potential incident analysis is based on real projected operations, and potential quantities spilled are based on pumping rates and estimated times to halt pumping operations.

In the development of the scenarios the following constant factors have been applied:

- The type of barge that is employed for the bulk fuel delivery is a conventional appropriately classed, double hulled, multi-compartment petroleum barge, generally less than 75 meters in length. It is anticipated that the bow of the barge will be situated directly at the shoreline so that no floating hose shall be required for this operation.
- As outlined in Section 3.2 of this plan, only one product (ULTRA LOW SULPHUR DIESEL (ULSD)) is anticipated to be received at the facility in 2015. ULSD is classified as a non-persistent combustible hydrocarbon. Full details of the properties and hazards associated with this product are found on the Material Safety Data Sheets (MSDS) in annex 8 at the end of this plan.
- The product is of relative low viscosity, is clear to yellow in color and will float readily when spilled. It should be anticipated that any spillage will rapidly spread when spilled and a high rate of evaporation will occur. Wind will be the most important factor in promoting the spread of the product on the water surface.
- Where environmental sensitivities are mentioned in the scenarios, these relate to the area sensitivities as outlined in Annex 3 of this plan.
- Local topography plays an important part in wind direction and force, but it is generally noted at the MLA site that the most common wind direction is from the north and northwest, 17% and 15% of the time respectively, more than 5 m/s 45% of the time but less than 9 m/s approximately 86% of the time. On average, wind speeds during the summer were slightly slower than winter wind speeds.
- As is indicated in the plan, upon discovery of spillage of any sort, pumping operations are ceased.

General response time limits should be observed for each action as follows:

- *Deployment of containment boom*: 0-1 hr following the spillage event.
- *Deployment of skimming equipment*: 0-6 hours following the spillage event.

During ship to shore discharge of the product, the discharge conduit (hose) is inspected on a regular basis. Stoppers and absorbents are available in case they are needed. The barge has a Shipboard Oil Pollution Emergency Plan (SOPEP), appropriate response gear on board, and the crew is fully trained in its use.

There is a person on watch at the shore tanks at all times during discharge and in direct radio communication with the barge. In addition, regular discharge pressure monitoring is carried out by the discharge watchman. The discharge conduit is inspected visually and regularly by walking alongside of it. All discharge hoses are hydrostatically tested annually, clearly marked, and identified; certificates are submitted to Sabina prior to discharge.

All spills within the bulk fuel storage facility zone would be retained within the bermed area. During the filling of the tanks (unloading of the barge), continuous monitoring will take place. At all times there is a person on watch during discharge and in contact with the vessel.

In the presentation of the spill scenarios in this section, it is implied that the initial spill response actions outlined in Section 7 above have first and foremost been addressed. The scenarios are designed moreover for the purpose of identifying the appropriate specific actions and therefore the related resources required for a given incident.

Detailed scenarios are as follows:

## 8.1. During Barge to Shore Tank Transfer

| Source of discharge | Potential loss* | Appropriate actions | Resources Required |
|---|---|---|---|
| Coupling or hose break / malfunction at the barge manifold | 20 – 600 liters | 1. Deploy containment boom as required to control migration of spill. Consideration of protection booming of beach front, or sensitive areas as defined in Annex 3 of the OPEP depending on wind direction, tides, and marine conditions present. Typical deployment lengths of 50 meters are anticipated for this task. (Multiple lengths should be used | Boat – Sabina near shore workboat - 2-3 responders<br>Boom – 100 meters and accessories, additional booms if necessary to provide shoreline protection<br>Shore crew to deploy from containers – 3 responders |

| | | | |
|---|---|---|---|
| | | when required)<br>2. Deploy skimmer and recover spill<br>3. Final recovery of spill using sorbents if necessary<br>4. Monitor any free floating oil that is unable to be contained<br>5. Notifications of local authorities | |

## 8.2. Along Shore-based hose length

| Source of discharge | Potential loss* | Appropriate actions | Resources required |
|---|---|---|---|
| Failure of flange or coupling<br><br>Accident involving shore based hose length | 20-1000 liters | Land spill only:<br><br>1: Immediately install portable berms under leaking or damaged line where possible.<br><br>2: If portable berms are not feasible, contain and recover oil spill using dykes or trenches<br>3: Prevent the oil from reaching natural drainage paths leading to the ocean.<br>4: Collect free-product for temporary storage. Excavate contaminated soil, store and manage appropriately.<br><br>Marine response, if necessary:<br><br>1: Deploy containment boom to control migration of spill. Consideration of protection booming of beach front, or sensitive areas as defined in Annex 3 of the OPEP depending on wind direction, tides and marine conditions present. Typical deployment lengths of 50 meters are anticipated for this task. (Multiple lengths should be | Land spill only:<br><br>Response by MLA site services<br><br>Recover free products with sorbents, pumps within temporary berms<br><br>Earth moving equipment available for berming, etc.<br><br>Marine response, if necessary:<br><br>Boat – Sabina near shore workboat - 3 responders<br><br>Boom – 100 meters and accessories, additional booms if necessary to provide shoreline protection<br><br>Shore crew to deploy from container – 3 responders |

| | | | |
|---|---|---|---|
| | | used when required)<br><br>2: Deploy skimmer and recover spill<br><br>3: Final recovery of spill using sorbents if necessary<br><br>4: Monitor any free floating oil that is unable to be contained<br><br>5: Notifications of local authorities | MLA site services |

## 8.3. Within bulk fuel storage facility

The bulk fuel storage facility located at the MLA site shall consist of six (6) land-based double walled 100,000 liter tanks at the temporary laydown area. A total of 600,000 liters is anticipated to be stored on site for 2015. The tertiary containment for fuel tanks will be Arctic-grade manufactured instaberms or similar product. These will be placed on a stable foundation of interlocking swamp mats that will remain for the duration of the facility.

The capacity of each instaberm will be equal to the volume of the largest tank plus 10% of the volume of the remaining tanks or 110% volume of the largest tank, whichever is greater. In calculating the volume, the footprint of the smaller tanks is subtracted. The above basis is consistent with the document entitled Design Rationale for Fuel Storage and Distribution Facilities published by the Department of Public Works of the Northwest Territories (GNWT 2006; refer to Section 4.6 of these guidelines). The design of these containment products will be based on Arctic installation and industry storage standards. Fuel transfer will incorporate hoses and pumps within tertiary containment.

| Source of discharge | Potential loss* | Appropriate actions | Resources required |
|---|---|---|---|
| Leaking Tank or piping/valves | 20-500 liters | Isolate and patch accordingly, berm or portable berms | Patch kits/ portable berms<br><br>Response by MLA site services<br><br>Recover free products with sorbents |

*** Potential loss estimated based on pumping rate and anticipated response time to shut down pumping operations**

### 8.4. Response Strategies – Large Spills

For the purposes of this plan, spills less than 1 m³ are to be handled by MLA-OHF response operations. MLA personnel shall deploy the resident on-site equipment as outlined in the plan.

If the spill is larger than 1 m³ and depending on the specific circumstances, the Operations Superintendent shall determine if it is necessary to increase the response capability by requesting 3rd party assistance.

Where this support is deemed necessary, the Operations Superintendent shall immediately request this assistance while ensuring ongoing mitigation of spill impact to the extent possible while awaiting additional resources and assistance from the 3rd party responder.

The choice of 3rd party responder and any contractual arrangements (if required) is a commercial element of the project and shall be determined at a future date prior to commencement of operations. The choice of a 3rd party responder shall be commensurate with the required capabilities under the regulations.

## 9. PREVENTIVE MEASURES

It is Sabina policy to prevent any accidental spillage and all efforts shall be made in advance to minimize the risk of incidents and impact to the environment. Sabina shall ensure the facility is up to date, shall have adequate safety equipment at the site, and provide comprehensive training to its employees, contractors and visitors with the goal of avoiding spills and to minimize their impact if they should occur.

For the 2015 bulk fuel transfer, Sabina shall contract the entire fuel delivery and transfer operation to the barge operator. The barge operator has established bulk fuel transfer procedures meeting all of the required regulations for Arctic bulk fuel transfers. All barge personnel involved in the transfer shall possess appropriate SOTO certifications. The barges maintain pollution response equipment onboard and are trained in its use.

### 9.1. Training - General

Sabina ensures that personnel involved during a response receive training for their own safety, the safety of the public, and that they have the required skills to minimize the impact of a spill on the environment.

The personnel directly linked to spill response operations will receive training to familiarize themselves with the environmental emergency plan. These personnel will also reexamine the manual of the OPEP on a yearly basis according to their duties and responsibilities. All training is recorded in the training register and kept up to date in the OPEP binder.

The personnel directly linked to spill response operations, contract employees, and the other responders identified in the environmental emergency plan should take part in the yearly training program. Sabina confirms that training is carried out to ensure adequate numbers of responders at all levels are available at all times.

All workboat operators and crews shall possess a Pleasure Craft Operator Competency Card.

### 9.1.1 Training Content

Spill training shall be provided on site prior to transfer operations for all personnel to be involved in the management and response to possible spills.

Sabina emergency personnel shall possess spill management training to a level commensurate to the duties required of the position.

Responder training is to be of a combined theoretical presentation (classroom) and also of hands on nature (equipment deployment exercise).

The major components of this training program shall include:

Classroom Training:

- Introduction and overview of marine spill response;
- Review of Sabina general spill response plan and integration of same to marine response;
- Review of Marine Oil Pollution Emergency Plan elements;
- Short review of oil spill behavior and operational parameters / limitations for marine spill response operations;
- Spill assessment;
- Basic safety for spill responders to marine oil spills, presentation of video – small craft safety practices;
- Basic oil boom deployment, presentation of video and booming techniques / guidelines; and
- Marine and shoreline recovery operations.

Hands on Training and Deployments:

- Hands on review with participants of Sabina inventory of spill equipment;
- Hands on instruction - boom connections, tow bridles, rope handling, basic knots and attachment of deployment accessories;

- Simulated deployment of booms and related gear on water using appropriate vessels; and
- Debriefing and lessons learned.

### 9.1.2 Short Notice Training

In the event of a large spill, the personnel requirements may exceed those that have received the specific responder training as outlined in Section 9.1.1 above. Due to the remoteness of the site, volunteers are not anticipated. MLA personnel and barge operators shall be employed as additional responders. If necessary, additional staff may be sourced from either George or Goose Camp.

Although these personnel possess WHMIS training, additional short notice training shall be carried out for these new responders on an as-needed basis. Certain modules of the responder training shall be delivered on site to these personnel selected specifically from the training outlined in Section 9.1.1 above. The Operations Superintendent shall determine which modules are pertinent to each group of additional responders and shall be responsible for assuring adequate training for each group.

## 9.2. Exercises

Following the annual delivery of the spill training as outlined in section 9.1 a comprehensive spill exercise shall be undertaken. The exercise is structured to test the readiness of management, responders and to practice and validate the logistics of the deployment of spill gear. The exercise content shall be different from year to year so that it can validate the various elements of the plan and the response over a three year period. Some of the factors that shall be evaluated include but are not limited to:

- Activation of the emergency plan;
- Management response;
- Internal and external notifications;
- Site safety;
- Communications;
- Equipment deployment to a specific scenario;
- Reporting and co-ordination with outside agencies;
- Exercise coordination with Canadian Coast Guard; and
- Exercise coordination with barge.

## 9.3. Spill Prevention Measures

### 9.3.1 Bulk Fuel Storage Facility:

Normal operation procedures of Sabina include many inspections which are performed regularly and kept on record. Any discrepancies noted are documented and investigated. Corrective measures are then applied.

### 9.3.2 Bulk Fuel Transfer:

Several preventive measures are in place to minimize risk of spills during bulk fuel transfer including:

- The bulk fuel storage facility and all related equipment and infrastructures are inspected prior to the bulk cargo transfer and the inspection methods are documented as a standard operating procedure
- The fuel supplier has established complete bulk cargo transfer procedures, a copy of which is found in Annex 5 of this OPEP
- As required by the applicable legislation the barge has a comprehensive Shipboard Oil Pollution Emergency Plan (SOPEP) and a copy of this plan shall be reviewed by Sabina prior to bulk fuel transfer
- The barge carries a compliment of spill response equipment as listed in Annex 6 of the OPEP and this equipment is ready on the barge at all times for deployment during cargo operations
- Sabina oil spill response equipment is on the beach, ready for immediate deployment at all times during cargo operations
- The workboat and trained responders are available at all times during cargo operations for spill equipment deployment
- Standard transfer procedures include regular inspections of the transfer hose for leaks or defects
- During transfer operations the barge and shore facility are manned at all times
- Regular monitoring of transfer rates and discharge pressure is carried out at all times
- The bulk fuel storage facility is monitored at all times by Sabina personnel during the transfer
- The transfer hose is inspected regularly on foot during the transfer operation

## 9.4 Response Equipment Auditing

As part of the annual exercise program, a scenario based deployment of spill gear is carried out. Prior to the exercise all gear is inspected, its condition is evaluated and any defects or missing equipment is replaced. The equipment audit is documented in the training register in Annex 7.

## 9.5 Oil Pollution Response Plan Updates

The Oil Pollution Emergency Plan (OPEP) will be scrutinized at least once a year to take into consideration any amendments of the legislation, new characteristics of the site, the equipment on site, new policies of the company, environmental issues and also new staff and particulars of team members. Furthermore following an exercise or an incident, the OPEP will be evaluated and modified accordingly.

Even if there is no change to be brought to the OPEP, it will be updated at least once a year. The corrected version of the plan will then be sent to the responsible person onsite to ensure that the team at the site always has an updated version of the plan in case their intervention is needed.

### 9.5.1 Update Registry

The Oil Pollution Emergency Plan (OPEP) shall be updated, reprinted and redistributed when changes are made as noted above. The plan carries the latest version identified by date as indicated in the footer of each page of the plan. If plan amendments result in a reprinting, all old versions of the plan shall be recalled and destroyed accordingly.

## ANNEX 1: Site Overview Plan