APPENDIX 3.VI

Emergency Response and Spill Contingency Plan

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3.VI.1 INTRODUCTION

This Emergency Response and Spill Contingency Plan has been developed for the purposes of the environmental assessment of the NICO Project and is intended to provide general guidance for emergency response and spill contingency planning at the NICO Project site during both the construction and operational phases of the NICO Project. This plan will be reviewed and updated to incorporate commitments made during the environmental assessment processes and conditions contained within the water license, and as the NICO Project moves into the construction and operations phases, and ultimately to closure and reclamation.

3.VI.2 RESPONSE ORGANIZATION AND REPORTING PROCEDURES

The responsibility for the administration of the Emergency Response and Spill Contingency Plan will rest with the mine manager, supported by the environmental and safety coordinators.

3.VI.2.1 Purpose

This document will act as a general resource for the mine management team and employees to prepare for emergencies and how to best respond if there is an occurrence at the NICO site. Prompt, effective, and organized emergency response by the company will enhance safety for employees, avoid and minimize the effects of spills and other emergencies on the environment, and establish effective communication within the organization and with appropriate regulatory agencies.

The focus of this plan is to provide:

- a chain of command, contacts, and reporting procedures to respond to emergencies and spills;
- defined responsibilities in advance of and in preparation for emergency/spill events;
- requirements for resources that should be available;
- identification of potential hazards that may be encountered during spill and emergency responses; and
- reporting and record keeping requirements for spill and emergency responses.

3.VI.2.2 Prevention

Fortune is committed to preventative maintenance, inventory control, staff training, and vigilance. This makes health, environmental, and business sense. The following will be standard practice at the NICO site:

Inventory Control:

Potentially hazardous materials will be subject to strict inventory control from the time they enter the site. Logs will be kept, as required, for inspection by the regulatory agencies.

Storage:

Potentially hazardous materials will be stored in a manner consistent with the requirements set out in the Material Safety Data Sheets (MSDSs).

Daily Inventory Balance:

Liquid substances (in particular fuels) will be checked as required by current petroleum storage regulations and a balance sheet of inflow and outflow maintained.

Disposal:

Potentially hazardous wastes will disposed in compliance with applicable regulations, as detailed in the Waste Management Plan (Appendix 3.IV) and the Hazardous Substances Management Plan (Appendix 3.V).

Staff Reminders:

Pre-job and safety meetings will include reminders to employees to be diligent and to encourage suggestions for improvements.

3.VI.2.3 Distribution

This document will be available at strategic locations on the property for employee reference. The safety coordinator will be responsible for distributing updates as required. Current copies will be provided to the Wek'èezhìı Land and Water Board and other agencies as required.

3.VI.2.4 Organization and Responsibility

In the event of an emergency or spill incident, the mine manager will have overall control on the response plan, but will be assisted by the environmental and safety coordinators as well as appropriate management personnel, depending on the type of incident and location (e.g., underground or Mineral Process Plant [Plant] supervision). The environmental and safety coordinators will keep current with regulations and provide advice during incidents, as well as liaising with regulatory agencies.

3.VI.2.5 Communication

The site will be equipped with a satellite receiver and phone system as well as portable radios and a base station at the mine office. Front line supervisors will carry portable radios while working on-site.

Site staff will communicate incidents through their supervisors to the management team. The mine manager will be responsible for keeping the corporate offices informed. All external communication, to the public or regulatory officials, will be coordinated through the mine manager or through corporate communications.

No site staff should communicate outside the mine site organization without the approval of the mine manager. This is to prevent inaccurate information being spread during an emergency that could lead to inappropriate responses, cause undue stress to family members awaiting word, or cause undue concern for the public or regulatory agencies.

3.VI.2.6 Training

3.VI.2.6.1 Orientation Training

All employees, contractors, and visitors will be instructed on the policies and procedures established within this plan. Specific instructions will be given to individuals working in activity areas, such as the Plant, underground, or in handling potentially hazardous materials.

Safety and environmental concerns and awareness will also be discussed at safety meetings and when new operations start-up. If plans or procedures change, employees will be informed and, providing additional training if necessary.

The training for spill response will be part of the worker orientation at NICO. Personnel will be made aware of hazardous substances present on-site through the orientation program and MSDSs located in prominent

locations. Personnel on the spill response team will receive additional training allowing them to respond to incidents quickly and safely. All employees on-site will have valid Workplace Hazardous Materials Information System (WHMIS) certificates and will be familiar with the MSDSs for the hazardous substances used on-site.

Each employee will be aware of the locations of storage facilities and spill containment and recovery equipment.

3.VI.2.6.2 Responsibilities

The safety coordinator will be responsible for maintaining current emergency training plans and, in consultation with the mine manager, will review and update the emergency preparedness and response procedures on as required. The review will include changing site conditions and regulations, incident and near miss reports and contact telephone numbers. Personnel will be notified of changes to the plan and procedures and, if necessary, training will be provided.

3.VI.2.6.3 Drills and Practices

Personnel will conduct periodic testing of the emergency response procedures. The outcomes will be recorded and reviewed for improvement purposes by the management team for that area and the environmental and safety coordinators.

3.VI.2.6.4 Training Topics

Emergency preparedness training will include the following:

- medical emergencies, accidents, or fatalities;
- spills or leaks of petroleum products, reagents, explosives, tailings, sewage, and effluent;
- fire;
- flood;
- extreme cold emergency;
- equipment or people falling through ice;
- aircraft missing or crash;
- missing person(s); and
- winter survival.

3.VI.2.6.5 Site Safety Handbook

Virtually all incidents and near misses are preventable and prevention can be achieved if all personnel believe it to be true. Employee safety handbooks have been in use at the NICO Project and will continue to be used and updated. A copy will be provided to each site worker in conjunction with the site orientation training.

The safety coordinator will be responsible for keeping the Site Safety Handbook updated and making them available to all site workers.

3.VI.3 SPILL CONTINGENCY

Spills can cause adverse environmental effects, harm to people, and cost the company financially and in reputation. They can also result in charges and fines against the company and, potentially, individuals. Therefore, spills must, first of all, be prevented to the extent practical. In the event of a spill, they must be treated with great care and dealt with promptly to minimize impacts to the environment and human health.

3.VI.3.1 Objectives

The principal objectives of the Spill Contingency Plan are to:

- comply with the company's environmental management policies;
- comply with regulatory requirements;
- identify the spill response organization, responsibilities, and reporting procedures;
- provide readily accessible emergency information to the cleanup crews, company management, and government agencies;
- promote safe and effective spill response;
- minimize impacts on water or land; and
- facilitate the management of affected soil or water.

Since petroleum products will be used in large quantities at the NICO site, the non-material specific information in this plan is geared toward helping deal with spills of petroleum products (typically diesel-type fuels). Spill mitigation techniques for non-petroleum-based hazardous materials (e.g., antifreeze, sewage, etc.) are covered in material specific sections.

Much of the information provided in this plan is intended to cover situations up to and including large spills. Specific information relative to small spills is included, as appropriate, however, spill responses are understood to require a scaled approach in relation to the size of the spill.

3.VI.3.2 Spills Definitions

3.VI.3.2.1 Spill

The *Spill Contingency Planning and Reporting Regulations* and *Environmental Protection Act* of the Northwest Territories defines a spill as a discharge of a substance to the environment which endangers human health and safety or the health of animal life, or causes damage to plant life. The Act and Regulations do not differentiate between spills on land or water.

Spills may be the result of the following types of occurrences:

- tanks, drums, or containers that develop leaks or rupture;
- failure of equipment such as hoses, valves, piping, or containment structures;
- overfilling;
- improper storage;

- transfer from one container to another or to equipment; and
- mishaps during transportation.

In almost all circumstances the spill could have been prevented by following proper procedures.

3.VI.3.2.2 Reportable Spill

The regulatory reporting thresholds for spills are provided in Schedule B of the Regulations. Reportable spill quantities for materials commonly used at the NICO Project are:

- diesel/Gasoline: 100 litres (L);
- propane: any amount from a container larger than 100 L;
- explosives: any amount; and
- ammonium Nitrate: 50 kilograms (kg)

Any spill that results in human injury or loss of wildlife should also be reported to regulatory authorities. In addition, if the quantity of the spill is not known but could exceed the reporting threshold, it too must be reported to the regulatory authorities.

To comply with the *Fisheries Act* (Section 36.3) and the *Migratory Bird Regulations* (Section 35), all spills of any quantity, in or near water bodies or sensitive areas, or posing a threat to a listed species at risk or its critical habitat, must be reported to regulatory authorities.

3.VI.3.2.3 Non-Reportable Spill

In addition to regulatory requirements, all spills or probable spills occurring in conjunction with the NICO Project must be reported to the company and properly documented. These spills must be cleaned up regardless of size as part of regular maintenance, and the spill and clean-up must be documented.

3.VI.3.3 Spill Prevention

All reasonable measures must be taken to prevent spills from occurring. Regular worksite inspections must be completed to identify spill risks. All personnel will be trained to be aware of the potential hazards associated with the substances with which they work. The following will be provided or conducted to support spill prevention:

- current and accessible MSDS for hazardous materials;
- regular inspections of chemical storage areas;
- training for workers in the use of safe work procedures for hazardous materials, avoidance of overfilling, and procedures to deal with spills;
- regular reinforcement of the objectives to prevent spills;
- proper storage practices; and
- spill response materials at storage areas.

Proper storage practices include the following:

- sealing or closing drums and containers;
- keeping petroleum containers and fueled equipment in secondary containment;
- securing petroleum storage containers or areas from unauthorized or inadvertent access;
- segregating of incompatible materials; and
- protecting petroleum containers from weather and physical damage.

Spill kits must be available for use in all areas of the operation in which petroleum or other potentially hazardous materials are being used. The spill kits should be suited to the materials being handled, the environment in which a spill might occur and the quantity of material that might be spilled. Guidelines for the contents of spill kits for land and water-based situations are provided in a subsequent section of this plan.

Fire protection equipment must be readily available and personnel must be properly trained in the use of fire extinguishers and hoses.

3.VI.3.4 Initial Action

Initial actions for spills include assessments of personnel and site safety, identification and containment of spilled materials, reporting of the spills to on-site officials to determine the appropriate response, notification of regulatory agencies, and recording the incident. This section provides information on the recommended initial general procedures for reacting to a spill. Further information regarding roles and responsibilities is provided in a subsequent section.

In all cases the immediate concern of the first responder to the site will be the safety of all people at the site. The spill team leader of the occurrence is to provide an initial assessment of the situation.

3.VI.3.4.1 Safety

Personnel and site safety is the responsibility of all site personnel, particularly the first responder who would initially have the most knowledge of the spill. In the event of a spill, the following guidance is provided to maintain site and personnel safety:

- be alert;
- maintain personal and personnel safety;
- assess hazards to exposure of nearby personnel and notify them of the incident;
- shut off operating equipment, ignition sources such as vehicles and unplug electrical equipment, as necessary;
- prevent smoking;
- establish exhaust ventilation, if necessary;
- attend to injured or affected personnel;
- notify site supervisory personnel, identify the location and request assistance as required;

- if vapours might ignite (e.g., gasoline, aviation fuel) do not approach the spill; and
- keep unauthorized personnel away from the spill site.

Personnel who deal with potentially hazardous materials must have training in first aid and safe materials handling, including WHMIS training. In addition, regular training updates and site-specific exercises and drills are integral to preventing incidents.

3.VI.3.4.2 Identifying, Containing, and Reporting a Spill

Identifying a spilled material is essential to safely handling and containing a spill. The material properties must be known to assess potential hazards, first aid measures for affected personnel, and to assess the appropriate containment measures for a spill. The appropriate MSDS at the nearest WHMIS station should be consulted to identify health and safety hazards associated with the product or material.

In the event of a spill, the following tasks are recommended to properly contain the spilled material:

- assess the severity of the spill;
- assess whether the spill, leak, or system failure can be readily stopped or brought under control;
- stop product flow or leak, if possible and if it is safe to do so;
- wear appropriate personal protective equipment, such as impervious clothing, goggles, and gloves when containing the spill; and
- approach from upwind if it is safe to do so.

Depending on the type of substance spilled and, if it is safe to do so, consider the following general spill response procedures:

Solids

- prevent it from contacting water to avoid further mobilization or reaction;
- protect it from snow, rain, or wind by covering the spill area with an appropriate tarp; and
- evaluate if absorbent materials or soil should be used to create dykes, or whether ditches should be constructed to protect the spill area from surface water runoff.

Liquids

- if the spill has occurred on land: use appropriate absorbent materials, earthen dikes, or trenches to prevent it from flowing out of the spill area or toward waterbodies;
- if the spill has occurred on water and the material floats on water: use floating booms to contain and skimmers to recover; and
- recover the spill as soon as possible.

3.VI.3.5 Spill Response Personnel

3.VI.3.5.1 First Responder

The initial responsibility of the first responder must be the safety of personnel. If necessary, evacuation from the area affected by the spill may be required. The next priority will be notification of the spill team leader to provide an initial assessment of the situation. The first responder should not attempt to deal with a spill that represents a potential immediate danger to human health.

The first responder should take the following steps:

- identify the source of the spill and risk to personnel;
- take actions to protect personnel or assist injured;
- immediately stop the work that caused spill;
- control sources of ignition, including smoking;
- if safe to do so, stop or contain the spill, prevent access of spilled material to water, provide ventilation and/or put out fires, as appropriate for the spill;
- assess the size and severity of the spill and safety and environmental concerns; and
- notify site supervisory personnel.

3.VI.3.5.2 Team Leader

The spill response team leader must have a detailed understanding of the NICO Project facilities, initial response actions, and the available spill response equipment. The team leader's responsibilities are:

- take control of the situation and responsibility for response actions;
- take the required safety measures to preserve and protect human life;
- identify potential fire hazards and request standby or response from the emergency response team;
- when safe to do so, secure the source of the spill;
- restrict further operations that may interfere with responding to the spill incident;
- in consultation with the mine manager, develop the overall plan of action for containment and cleanup of the spill, then direct and implement the plan;
- assess the requirements for people, equipment, materials, and tools to contain the spill in light of available resources and urgency;
- in consultation with the mine manager mobilize additional resources, as required;
- evaluate the size of the response required and the necessity of specialized assistance;
- implement protective measures and containment procedures to minimize environmental damage; and
- oversee containment, cleanup, and restoration operations.

The team leader should also:

- establish communication with head office;
- liaise with other managers, as required; and
- document all events.

The team leader should monitor the spill response process for safety and to direct cleanup efforts.

3.VI.3.5.3 Spill Response Team

The specific duties of the spill response team members will be performed under the direction, and at the discretion, of the spill team leader. The size of the team activated (number of individuals to respond) will be based on the:

- quantity of substance spilled and area that the spill has affected; and
- environmental sensitivity of the area affected.

Members of the spill response team may:

- stop or reduce the discharge, if safe to do so;
- deploy booms, absorbents, and other equipment and materials as required to construct barriers or a ditch to contain a spill on land;
- deploy solid flotation boom for spills of non-volatile products on water;
- if possible, prevent access of spilled material to water;
- deploy additional spill response equipment as directed by the team leader;
- continue cleanup as directed by the team leader or until relieved; and
- restore damaged environment and property as directed.

3.VI.3.5.4 Environmental Coordinator

The environmental coordinator should:

- provide cleanup and disposal advice to the spill response team leader;
- assist in the preparation of press releases, if required;
- develop safe and effective spill management and prevention practices;
- provide advice to the spill response team of storage and disposal options;
- report spills to the 24-hour Spill Line and obtain confirmation of receipt of spill report (spill may also be reported by his/her designate); and

- assist the mine manager with regulatory and licensing reporting requirements, including gathering relevant information and submitting reports detailing the spill and response, as well as submitting an incident reporting form, as required.

Subsequent to the spill occurrence and cleanup, the environmental coordinator should:

- prepare a report on the spill event, cleanup, and environmental impacts;
- take action, as necessary, to prevent a recurrence;
- liaise with government agencies, as required;
- recommend an investigation into the spill, if deemed necessary; and
- implement a monitoring program to assess the effects of the spill, if necessary.

3.VI.3.5.5 Mine Manager

The mine manager is responsible for implementing and maintaining the Emergency Response and Spill Contingency Plan. In addition, the mine manager's responsibilities in the event of a spill are to:

- consult with the environment coordinator regarding official reporting requirements;
- prepare and submit formal reports to regulators, and Fortune management detailing the occurrence of a spill and response, as well as submitting an incident reporting form;
- establish an investigation team at the request of the environmental coordinator or the safety coordinator; and
- make sufficient resources available for spill response personnel to receive adequate training to fulfill their responsibilities.

3.VI.3.5.6 Public and Media

During the course of a spill response, the primary objectives must be containment or the spill and the corrective response. In the event of a large spill, public interest and concern will require communication with the public. Placing the incident in perspective and preventing the spread of misinformation will be the responsibility of the environmental coordinator, working with the mine manager and corporate head office, to release the appropriate information, if necessary.

If the immediate health or safety of off-site people is potentially affected by the spill, which is unlikely in the case of the NICO Project, the appropriate action and release of information will occur as soon as possible.

No NICO Project site personnel should make public statements concerning a spill incident. Inquiries to site personnel should be directed to the mine manager who, in turn, will consult with corporate head office. All public communication should be coordinated with corporate head office.

Information released during the initial stages of the spill response operations should be simple statements of fact including the following:

- name of the company;

- time of incident;
- spokesperson's name, position, and contact information; and
- any other statements of fact such as company steps taken for containment or cleanup.

The public should be reassured that the company intends to do everything within its capabilities to reduce the risks to property, the environment and to protect the health and safety of workers and others potentially affected.

No one other than corporate head office should release information containing the following:

- spill impact cost estimate;
- comments concerning possible causes;
- speculations concerning liability or legal consequences; and
- comments regarding the ability to restore site conditions.

3.VI.3.6 Response and Mitigation

The feasibility of containing and recovering a spill will depend on its location and the rate and quantity of the release, spreading, transport, and evaporation. These rates should be compared with the total time needed to deploy response equipment to evaluate whether or not containment or absorbent and skimming operations can be effectively implemented.

Monitoring throughout the spill response must be undertaken to maintain safety and to direct cleanup efforts. Examples of the type of monitoring required include:

- explosive gas concentrations in the atmosphere using an explosion meter;
- spill movement and behaviour in order to properly direct response efforts; and
- risks to the safety of people, property, and the environment.

3.VI.3.6.1 Cleaning Up Minor Spills

It is acceptable for a first responder to clean-up a spill if it is assessed to be a minor or simple spill. A minor or simple spill is defined as a spill of hazardous materials that does not involve highly toxic, highly reactive, or explosive substances in a situation that is not life threatening. In addition, the spill should present a manageable physical or health hazard to personnel who, when wearing proper personal protective equipment, will not be exposed at levels that exceed recognized action levels or exposure limits. Minor spills must also be reported, but they are not expected to involve emergency responders. As an example, a minor spill is one that could be addressed with the materials available in the spill kit or perhaps a shovel and pail.

Before cleaning up a minor spill, the first responder must be confident that it can be done safely. The first responder must also wear the appropriate personal protective equipment, at a minimum, appropriate eye protection, protective gloves, and protective clothing. Additional protective equipment may be required for spills that present special hazards (such as corrosive or reactive spills or spills that have a splash potential).

If breathing protection is required, such as a respirator, the spill is not considered a simple spill and the assistance of the spill team will be required.

Small spills can be often be cleaned up with absorbent pads. On muskeg, peat moss can be used as an absorbent. In some cases, small petroleum spills may be best left in place to degrade naturally with or without soil turning or the addition of nutrients. For some small spills, the damage caused by a clean-up, by both personnel and equipment could be more significant than the spill itself, in particular in wet or sensitive areas.

3.VI.3.6.2 Large Spills

In the case of large spills, the initiation of response actions should be considered if safety allows, in conjunction with the knowledge and advice of regulatory agencies, as appropriate and available.

The spill should be assessed as to whether or not it has entered a water body, and whether or not access by land or water to control points is possible, so that booms, absorbents, skimmers, and/or vacuum trucks can be deployed, if necessary.

3.VI.3.6.2.1 Land

Quick containment of spills is necessary to prevent spreading over a large area. This is of greatest concern when spills occur in granular soils (e.g., sand, soil, pebbles, cobbles, boulders) and with light products, such as diesel and gasoline. Petroleum products will flow, either as a liquid or gas, to low points, downslope and away from the initial spill source.

In some cases, a simple trench can be dug ahead of the spill on the downslope side to collect the liquid for removal by means of absorbent booms, pads, buckets, or pumps. To facilitate this, the following steps can be taken.

- construct a soil berm downslope of the spill;
- block entry into waterways, if required, and contain the spill with earth or other barrier(s);
- if appropriate, use synthetic, impervious sheeting to act as a barrier;
- where possible, recover spills through manual or mechanical means, including shovels, heavy equipment, and pumps;
- absorb petroleum residue with synthetic absorbent pad materials; and
- recover spilled and contaminated material, including soil and vegetation.

Once removed, recovered product or soil will be contained for handling and disposal. In the case of petroleum products, the recovered soil could be placed in a landfarm for treatment.

3.VI.3.6.2.2 Snow and Ice

Petroleum can remain relatively fresh (e.g., in an unweathered state) under snow and ice. Evaporation rates for gasoline and Jet B aviation fuel will be high when ultimately exposed to the atmosphere. Petroleum can also migrate over small rises, due to the capillary action of the snow.

Snow and ice, similar to soil, can be used to create berms to contain spills. Many of the techniques and objectives are similar to those on land. These include the following:

- blocking entry into waterbodies and containment with snow or other barrier(s);

- trenching or ditching (ice and snow are amenable to these methods) to intercept or contain flow of liquids on snow, where feasible;
- compacting the snow around the outside perimeter of the spill area (easily done with a snowmobile);
- constructing a snow berm, either manually with shovels or with heavy equipment such as graders and bulldozers, where available; and
- if feasible, using synthetic liners to provide an impervious barrier at the spill site.

The low point of the spill area should be located and clear channels can be created in the snow to allow free product to flow into that low point. All channels should be directed away from waterbodies. The liquid can then be collected by:

- shoveling spilled material into containers;
- picking it up with mobile heavy equipment;
- pumping liquids into tanker trucks; and
- using a vacuum truck to pick up material.

Where spills occur on ice:

- if feasible, contain the spill using methods described above for snow, or attempt mechanical recovery with heavy equipment;
- prevent petroleum from penetrating ice and entering waterbodies; and
- remove affected material, including snow and/or ice as soon as possible.

Containment of petroleum products under ice is difficult because of ice thickness and winter conditions. If the spill gets under ice:

- identify the area where the petroleum is located;
- drill holes through ice using an ice auger to locate the petroleum;
- once detected, use chain saws to cut slots in the ice, and remove ice blocks (in frozen rivers, where safety permits, cut angled slots or holes about 1 metre wide in the ice, to allow possible spill recovery); and
- the petroleum will rise up into the openings, and be available for recovery using skimmers or pumps.

Petroleum collected in ice slots or holes can be picked up via suction hoses connected to a portable pump, vacuum truck or standby tanker. Care must be taken to prevent the end of the suction hose from becoming clogged with snow, ice or debris.

3.VI.3.6.2.3 Water

Virtually all of the NICO Project facilities will be well removed from waterbodies, so spills on or near water are not considered likely. Despite this, the following plan is in place to handle potential spills.

Spills on or near water should be contained as close as possible to the release point. Spill containment booms can be used to concentrate floating product for recovery. However, gasoline and Jet B aviation fuels do not respond well to booming and, because of their high evaporation rates, can be hazardous to deal with. On small spills, absorbent pads can be used to pick up contained petroleum. On larger spills a skimmer may be required.

The road access to site will be an all-season land-based road, as opposed to a winter ice road. As a result, the risk for spills caused by vehicles is low, but spills could occur if a vehicle leaves the road near water or on a water crossing. If a full tanker truck breaks through ice into the water below, it will remain buoyant, since the density of petroleum is less than water. If this occurs, the first priority is to recover the driver of the truck safely. Buoyancy of the truck will be maintained while pumping at least a portion of its contained petroleum from the truck to another vessel, until the truck can be retrieved safely. The truck should be pulled out of the water as soon as possible.

When a spill occurs near a stream, it should be prevented from entering the water, perhaps by berming or trenching. If petroleum enters a stream, it should be intercepted in calm areas, using absorbent booms. Absorbent booms or pads should not be used in fast currents and turbulent water. The following strategies can be used to contain spills on slow moving or calm water:

- Contain spills on open water immediately to restrict the size and extent of the spill. Petroleum that floats on water may be contained through the use of booms, absorbent materials or skimming.
- Deploy containment booms to minimize spill area; the effectiveness of booms may be limited by wind, waves and other factors.
- Use absorbent booms to slowly encircle and absorb spilled material. These absorbents are hydrophobic (they absorb hydrocarbons and repel water).
- Once booms are secured, use pumps, absorbents, or skimmers to draw in petroleum and minimal amounts of water. Skimmed liquids can be pumped through hoses to empty tanks and/or drums.
- Culverts control water flow and can allow petroleum to be captured and collected along the surface with absorbent materials.
- Use absorbent pads and similar materials to capture small spills and/or oily residue on water.

The selection of a strategy for containment will depend on a number of factors, such as:

- speed of travel;
- location of possible containment sites;
- availability of personnel and equipment;
- location of sensitive areas; and
- safety of operations.

Absorbent or non-absorbent booms can be effective in containing spills on still or slow-moving waters, but is difficult in currents exceeding 0.7 knots (0.4 metres per second) because the petroleum can become entrained in the water flowing under the boom, resulting in significant losses. These types of booms should be checked and

replaced if they become saturated, as they tend to float very low in the water or even sink and release petroleum downstream.

3.VI.3.6.3 Alternative Techniques

Alternative techniques include:

- in-situ combustion (burning);
- chemical response methods including:
  - dispersants;
  - emulsion-treating agents;
  - visco-elastic agents;
  - herding agents;
  - solidifiers; and
  - shoreline cleaning agents;
- biological response methods include nutrient enrichment and natural microbe seeding.

These techniques will be considered on a site/spill specific basis for their suitability. Ammonium nitrate fuel oil

3.VI.3.7 Substance Specific Measures

3.VI.3.7.1 Explosive Materials

Although, the bulk of the explosives used at site will be a mixture of ammonium, nitrate, and, fuel oil (diesel) (ANFO), this mixture will be prepared at the point of placement in the blast holes, so it will not exist in large quantities as an explosive material. Other explosive materials on-site will include emulsions, B-line, and detonators.

Initial actions regarding spills of ANFO or emulsions will include the removal of personnel from the immediate area, and the elimination of ignition sources and combustible material if possible. Only trained personnel will handle explosive materials. Untrained personnel must not attempt to contain or remove spills. Fires involving large quantities of ANFO or emulsion should not be fought.

Spilled explosives on land, snow or ice will be swept up or collected by trained staff. Disposal of such material is addressed in the Hazardous Substances Management Plan (Appendix 3.V). In water, the material will be segregated and removed to the extent possible.

3.VI.3.7.2 Compressed Gases

Compressed gases such as propane, acetylene, and oxygen are flammable gases that can ignite and explode if exposed to an ignition source. Gases cannot be contained when released, and it is important that personnel withdraw immediately from such releases. If tanks are damaged, the gas should be allowed to disperse with no attempt at recovery.

Compressed gas leaks can generally be divided into 2 categories, those from the tanks themselves and those from equipment attached to the tanks (lines, tubing, or apparatus). Leaks from the tank cylinders generally cannot be stopped by closing the cylinder valve. Leaks from attached equipment can generally be stopped by closing the main cylinder valve, although in some cases this may not be possible due to safety concerns or deteriorated valves. Compressed gas leaks that cannot be stopped by closing the cylinder valve are considered an emergency.

3.VI.3.7.3 Flammable and Combustible Liquids

Flammable liquids have flash points below 37.8 degrees Celsius (°C), evaporate quickly, and within a short period of time can reach high vapour concentrations in air. Flammable liquids include aviation fuel, gasoline, and some solvents. Spills of flammable liquids represent an extreme fire hazard, and an explosion hazard if vapour concentrations exceed the lower explosive limit. They can be harmful if inhaled and absorbed through skin.

Combustible liquids such as diesel fuel have a flash point above 37.8°C but below 93.3 °C and are not fire hazards at room temperature. The principal hazard from these spills is exposure to the vapour by inhalation or skin absorption. For the purposes of spill response actions, lubricating and motor oils have been considered combustible liquids because they are petroleum hydrocarbons.

The spill responses described in the main part of this plan were based on spills of these types of substances.

3.VI.3.7.4 Oxidizing Substances

Oxidizing substances tend to promote combustion and can ignite organic solvents and combustible materials. They may also be harmful if inhaled or absorbed through the skin. Where an oxidizing substance, such as ammonium nitrate, is spilled, general safety measures include avoiding inhalation (e.g., by using a dust mask or half faced respirator), ingestion and eye contact. In addition, ignition sources and combustible materials should be removed from the spill area.

Spills on land, snow and ice can be contained by berms, as appropriate, using non-combustible materials. Since ammonium nitrate dissolves in water, spills near or in water will be dammed or diverted and removed to the extent possible.

3.VI.3.7.5 Toxic Substances

Toxic substances include those with high acute systemic toxicity, and substances with chronic toxic effects such as carcinogens, reproductive or developmental toxins (embryotoxins, teratogens), and mutagens.

The response to these substances will be guided by the individual MSDSs. In general, however, approaches to liquids and dry substances will be similar to those described above.

3.VI.3.7.6 Infectious Substances

Infectious substances such as biological wastes from the sewage treatment plant are potentially hazardous when inhaled, ingested or contacted (particularly eye contact). Initial preventative measures include wearing appropriate personal protective equipment (impermeable gloves, eye protection, and respirators appropriate for the size and type of spill).

Raw sewage contains pathogens such as bacteria, viruses, fungi, and parasites, and can give off gases and vapours that can cause illnesses and, in some cases, death. Following a spill, the survival of pathogens depends

on a number of factors: location, type of surface affected, environmental conditions and whether disinfectants are used in cleaning. The risk to health depends on the types of pathogens present, duration of exposure and method of exposure.

In the event of a spill on land, the material will be contained by berms. Liquids spilled in water will be dammed and diverted if possible. Where raw sewage is spilled, the spill material can be sent to the sewage treatment plant to be processed.

3.VI.3.7.7 Corrosive Substances

Corrosive substances include acids, bases, and alkali compounds. The most corrosive substances to be used at the NICO Project include hydrochloric acid and caustic soda.

Dilute acid solutions irritate the skin, while concentrated solutions can result in burns and react violently with water. Many acids produce toxic fumes and are harmful if inhaled. Some acids are also flammable or oxidizers and can start a fire if in contact with organic matter. The resulting fire may produce irritating or toxic gas. Hydrofluoric acid can penetrate skin deeply and damage underlying tissue.

Like acids, the principal concern with basic or alkali compounds, like caustic soda, is their corrosive effects. Dilute solutions irritate the skin, while concentrated solutions can result in burns. Concentrated alkali compounds can penetrate skin deeply and damage underlying tissue. Most bases do not wash off the skin and eyes with cold water. Consequently warm water must be used to wash the affected areas, often for prolonged periods of time, up to several hours. They may be in solid form and cause airborne dust which is harmful if inhaled. Fires may produce irritating or poisonous gas.

Personnel dealing with these substances will be limited to trained staff. In the event of a spill, safety measures will be implemented immediately. Personnel will be removed from the area of the spill until appropriate spill containment is acquired and protective gear is donned. Before handling corrosive materials, personnel must review safety, storage and handling measures. The general method of dealing with acid or base/alkali spills is to apply a neutralizing agent that reacts with the original material to form a much less hazardous, often benign, neutralized product.

3.VI.3.7.8 Tailings Spill Response

Details of tailings line operation are provided in the Co-Disposal Facility (CDF) Management Plan (Appendix 3.II). The overall principals of this plan include the following:

- Senior plant management must approve changes of operation regarding the Plant tailings line or operation of the CDF and these changes must be logged in the tailings log book in the control room.
- If the tailings line is shut down with management approval, the line being shut down must be thoroughly flushed, drained at the low points and left open at the low point, or points until the line is to be used again and all spigots and the respective line must be open and clear.
- In case of emergency during full Plant operation, the line must be completely drained at low points and all spigot valves must be open and clear.
- If the Plant is down, sufficient water must be added to the tailings box to keep the spigots clear and to avoid sanding or freezing the tailings line.

- When operating the Plant at reduced tonnage, sufficient water must be added to the tailings box so as not to sand or freeze the tailings line and to keep the spigots running free and clear.
- Maintenance, including piping or spigotting at the CDF, must be approved by senior plant management.

These operating principals are subject to revision to improve operation.

In case of major tailings line failure outside of the CDF, the Plant must be shut down in accordance with standard procedures. Spill neutralization and cleanup must be undertaken immediately, along with the tailings line repair. The Plant foreman will oversee the containment, cleanup, and repair procedure and draw on other departments as required. A spill report must be filed immediately after cleanup of the spill.

3.VI.3.8 Spill Kits

For land-based spills, the following are considered as appropriate spill kits. The inventory of these will depend upon the operation.

Standard Spill Kit:

- three 205 L 16 gauge drums;
- 2 closing rings - one for ease of entry into the drum, and the other to ensure absolute containment of hazardous products for transport and temporary storage;
- 4 pairs of neoprene or oil/chemical-resistant gloves;
- 4 protective disposable suits;
- 4 pairs of protective goggles;
- 12 metres (m) of containment boom;
- 50 absorbent pads - approximately 46 centimetres (cm) x 46 cm x 8 millimetres (mm) thick;
- 25 m of absorbent blanket - approximately 70 cm x 8 mm thick;
- 10 polyethylene bags with ties approximately – 71 cm x 46 cm x 165 cm to 3 mm thick;
- 2 large polyethylene tarps;
- shovel, rake (aluminum for explosives area);
- 2 fire extinguishers;
- tool kit including screwdrivers, utility knife, duct tape, hack saw, hammer, etc.;
- notebook and pencils; and
- copy of spill management plans and pertinent MSDSs.

Spill kits intended for water use should also include the following items:

- 150 m flotation boom;

- 6 x 15 kilogram grapnel anchors;
- 3 Norwegian anchor buoys;
- 8 standard buoys (yellow);
- 4 x 100 m coils anchor rope (1 cm);
- 5 x 200 m coils towline rope (1 cm);
- a 6 m response boat with outboard motor and 2 lifejackets;
- 20 bags peat moss; and
- 1 pump.

Personal Equipment:

- 1 emergency eyewash station;
- 20 pairs Petroleum, Oil, Lubricants (POL)-resistant gloves;
- 7 pairs POL-resistant goggles;
- 1 bag 20 disposable respirators;
- 2 pairs safety hip waders;
- 1 toolbox (assorted tools);
- 2 x 25 L containers with lids; and
- 100 m nylon rope (1 cm thick).

The following equipment should be available on-site for deployment:

- excavator;
- loader;
- all-terrain vehicles;
- snowmobiles (in winter);
- chain saw; and
- pump and hose.

3.VI.3.9 Site Restoration

Site restoration is the final spill response step. Due to seasonal variations and various site settings, a standard restoration program cannot be prescribed. The following sections describe a general approach to spill restoration at the NICO Project. Consultation with environmental coordinators and regulators will be required prior to undertaking restoration to minimize residual adverse impacts.

As a general rule, remediation efforts should minimize impact to shoreline or muskeg, particularly vegetated areas, during the spill response. Some remediation methods can cause more damage than an untreated spill in some habitats, especially where permafrost and vegetation are present. The selection of remediation and restoration approaches must consider the following:

- environmental sensitivity;
- property, archaeological or other damage; and
- natural regeneration at the site.

Petroleum products typically do not adhere to banks of fast-moving rivers. Usually, little or no cleanup action can be taken in such areas. On the other hand, muskeg can experience long-term effects and reduced environmental productivity that cleanup may or may not help to alleviate, because of other damage that may be caused in the process. Whatever method is chosen to deal with an area affected by a spill, it is vital to minimize damage to root systems.

In the remediation process, consensus should be obtained from regulators and advisors on remediation targets prior to undertaking operations. If petroleum has entered marshy areas and wetlands, personnel and equipment should not be deployed into these areas without a clear plan to avoid damage to both upland and wet areas.

3.VI.3.9.1 Disposal

The wastes produced from responses to spills depend on the nature of the spill and the method for responding. In some cases, particularly for solid spills, much of the spilled material can be recovered and re-used for its intended purpose. As a general rule, waste materials should be segregated as much as possible.

During disposal, the appropriate personal protective equipment (e.g., gloves, goggles, face shield, apron, boots) should be used and appropriate care should be exercised to place spilled material into suitable, properly marked containers.

In the case of acid or base spills, neutralizing agents may render the recovered liquids suitable for disposal back into the ore extraction process.

In the case of spills of flammable and combustible materials, the recovered wastes may be suitable for on-site incineration or for landfarming.

Deteriorated or damaged ANFO should be destroyed. If the quantities are small, then they can be added to blast holes in a production blast. If larger quantities require disposal or destruction, the appropriate method of disposal or destruction and subsequent course of action will be selected by authorized personnel or the explosive supplier.

Some materials will not be suitable for reuse, treatment or disposal on-site, and they will have to be packaged and sent off-site for recycling, treatment, or disposal at an approved facility..

3.VI.3.9.2 Contaminated Soils and Water

Some spills can result in significant, longer-term environmental impact to soil, groundwater, or surface water. Each spill incident will be assessed for additional sampling and testing required to complete remediation or to develop long-term monitoring and contingency plans.

3.VI.3.10 Documentation

Written and photographic records of spill occurrences, and written records of spill response procedures must be documented. Spill documentation records include, but are not limited to the following:

- spill response plans;
- inspections and audits of worksites and work activities;
- lists and MSDS sheets for potential toxic substances and contaminants in use at worksites;
- internal and external memos and reports on work activities;
- spill report, accident, and incident reports;
- documentation of a spill cleanup, including photographs;
- inspections of a spill site after cleanup;
- training records; and
- regulatory requirements and notices.

A written report should be sent to company management as soon as possible. Company management should then expedite delivery of the written report to the appropriate regulatory authorities. Pertinent information to include in this report is as follows:

- name and phone number of the person making the report;
- time of spill or leak;
- time of detection of spill or leak;
- type of product spilled or leaked;
- amount of product spilled or leaked;
- location of spill or leak;
- source of spill or leak;
- type of accident (e.g., rupture, collision, overflow, other);
- whether the spill or leak is still occurring;
- whether the spill or leaked product is contained and, if not, where it is flowing if known, include information on owner of product and their phone number;
- relevant climatic and environmental information, such as wind velocity and direction, temperature, proximity to water bodies, water intakes and facilitie, and snow cover and depth; and
- terrain and soil conditions.

3.VI.3.11 Reporting

Reporting of the spill, whether to management or to the appropriate authorities, is the responsibility of the environmental coordinator, or his/her designate, under the direction of the mine manager.

When reporting an incident to regulatory authorities, the following information should be provided:

- name and telephone number;
- the time, location, and source of the spill;
- the type of spilled material;
- the owner of the spilled material, if known; and
- the cause of the spill, if known.

Spills or accidents that immediately threaten public safety (e.g., gasoline and chemical spills) should be reported directly to the appropriate authority.

The regulatory report should be made on the standard spill reporting form provided by the Government of the Northwest Territories and include the information described in the Documentation section, above.

The highest priority and the quickest means available should be used to make the initial report after a spill. Additional information regarding the spill and clean-up efforts will be provided to regulators as soon as possible after the initial report.

Follow-up reports should be sent, as needed, to keep those involved informed of developments. As a general guideline, in the case of a major spill, the initial report should be sent within an hour of the incident, and follow-up reports hourly thereafter.

3.VI.4 EMERGENCY RESPONSE

3.VI.4.1 Natural Incidents

When a natural disaster such as a flood, earthquake, or severe windstorm sufficient to cause damage occurs, site personnel should carry out the following steps immediately:

- sound the alarm;
- designate a Responsible Person;
- evacuate to muster point or shelter as instructed by the Responsible Person;
- hold a roll call and confirm everyone is accounted for;
- report missing personnel to the Emergency Response Team; and
- call for outside help as required.

The safety of people takes precedence over all else.

Depending upon the nature of the natural disaster, it may or may not be possible to use the designated muster point(s). If unavailable, then the Responsible Person must make alternative plans, depending upon the circumstances.

3.VI.4.2 Severe Weather

3.VI.4.2.1 Severe Cold

All workers will be expected to be familiar with working in the cold weather. Workers will receive orientation and training on the proper methods for working in cold weather. Procedures will be established for the various work tasks to protect outside workers, including work restrictions due to extreme cold.

3.VI.4.2.2 Whiteout Conditions

Physical work must cease during whiteout conditions. This is particularly important for persons using equipment or cutting tools because an injured person may not be able to reach either the first aid post, or be evacuated to a hospital until the conditions improve. Personnel are to remain within shelter until the emergency has passed. No one will be permitted to operate vehicles (i.e., truck, all-terrain vehicle, snowmobile) except in emergencies, and then only in pairs and with the consent of the mine manager.

3.VI.4.3 Human Caused Incidents

3.VI.4.3.1 Facility Fire

Specific fire fighting procedures will be developed and special fire teams will be trained to deal with particular conditions or hazards that may be present in the Plant or other processing facilities on-site.

On discovering a fire, the following steps should be carried out immediately.

- Small fires that can be safely extinguished should be put out, provided a safe exit or retreat and fresh air are available.
- If the fire can be extinguished, it must be completely out and monitored to make sure it does not restart. If the fire fighting team must leave the location of a fire believed to be extinguished, the location should be rechecked it to make sure the fire has not restarted. Communication should be maintained by radio with the supervisor.
- If the fire cannot be extinguished, emergency procedures should be initiated as follows:
  - alarm should be sounded and radioed in;
  - fire should be reported to the supervisor immediately along with name, current location, the location, and size of the fire and the destination muster station;
  - people should be evacuated to the muster point;
  - smoky areas should be avoided;
  - doors should be felt for heat before opening;
  - if no safe route is available, retreat to the closest safe place and obtain fresh air;
  - doors should be firmly closed, but not locked, as people evacuate;

- people should assemble at a muster point;
- a roll call should be taken to accounted for everyone; and
- a response leader should be chosen.

Depending on the location, temporary shelter may be required, separate from and away from the facilities involved, where there are emergency rations, blankets, a method of heating the shelter, sufficient seats for everybody and means of communication to off-site emergency response.

An evacuated facility must not be re-entered until the mine manager, or his designate, provides authorization after checking for adequate ventilation and structural integrity.

3.VI.4.3.2 Forest/Ground Fires

A plan to address forest or ground fires at the NICO Project will be developed in accordance with the Northwest Territories Forest Fire Prevention and Suppression Guidelines for Industrial Activities, the *Forest Protection Act*, and the Mine Health and Safety Regulations.

3.VI.4.3.3 Mine Rescue

The *Mine Health and Safety Act* and Regulations govern all mine activities. The mine rescue procedures are complex and require specific skills and training that are too detailed to be included in this Plan. Fortune will have a separate document for underground mine emergencies that will encompass all underground activities including mine rescue in place before underground activities start. Fortune will use the *Mine Health and Safety Act* as a guide for the plan and consult with the agencies responsible.

3.VI.4.3.4 Medical Treatment and Emergencies

During construction and throughout the life of the NICO Project, the site will have a full time medic with the appropriate level of training for the number of personnel. The medical treatment and emergency procedures will be developed in consultation with the mine manager. Emergency procedures will comply with the Workers' Safety & Compensation Commission requirements.

3.VI.4.4 Aircraft

Although most of the supply and re-supply will be by road, some air-lifting of personnel and small cargo may occur.

3.VI.4.4.1 Missing or Overdue Aircraft, and Aircraft Accident

Every aircraft transportation company has procedures for tracking overdue and lost aircraft. Fortune will develop procedures consistent with these procedures and will integrate them into the Emergency Response and Contingency Plan.

3.VI.4.4.1.1 Fixed Wing Aircraft

Fixed wing aircraft will generally be carrying people or supplies on a prescribed schedule with a defined flight plan filed with the originating airport. The Fortune personnel responsible for the landing strip will be aware of the aircraft's scheduled landing order to make sure that the airstrip is free of debris and wildlife.

The following procedure will be used for regular and extraordinary fixed wing flights.

- If Fortune has the correct frequencies, attempts to contact the aircraft will be initiated if it is overdue.
- After 30 minutes past scheduled arrival time with no contact from the aircraft and no information available, the mine manager, aircraft company, and the originating airport will be contacted to advise them that the aircraft is overdue.
- Attempts to contact the overdue aircraft will continue until the aircraft company initiates their search procedure or the authorities take over the communications and the search.
- If other aircraft are available on-site, these will be made available immediately to the organized search.
- Site personnel will be made available to the aircraft company for the search.

3.VI.4.4.1.2 Helicopters

For helicopters using the site as a base, it will be necessary for the pilot to file a flight plan with the Fortune person responsible for aircraft on the site. The following procedure will be followed during helicopter use on-site.

- If the helicopter is making short exploration flights to a number of areas, the pilot will radio to camp on a predetermined schedule as this will allow a faster response if an incident occurs.
- If there is no contact from the pilot at the predetermined time then the site person will attempt to contact the helicopter on the active frequency.
- Radio contact will be attempted every few minutes until 30 minutes has passed.
- If other aircraft are in the area they will be asked to attempt to contact the missing aircraft. If the pilot or crew is carrying a satellite phone then this should be used to attempt contact.
- If, after 30 minutes has passed, no contact has been established then the site person will call the helicopter company base to inform them and to determine whether they have heard from the pilot on another frequency.
- When all attempts at contact are negative and the helicopter has been overdue for 30 minutes the mine manager and the helicopter company will be informed that a search should be initiated. The aircraft company will then use its standard operating procedures for overdue aircraft with the full cooperation and resources of available in the area. During this procedure, attempts to contact the aircraft will continue.

3.VI.4.5 Vehicle Incidents

For mishaps involving vehicles or stationary objects, company procedures will be followed for insurance purposes. A system for recording vehicle incidents including near misses will be established. Wildlife will have the right-of-way; however, in the event of collision with wildlife, the following procedures will be followed:

- The incident will be reported to site and, as required, the regulatory agencies as soon as possible.
- If the animal has been killed, it will be removed from the roadway until it can be picked up.
- If the animal has been badly injured, ENR Renewable Resource Officers in Behchokö should be called first before anything is done with injured or killed wildlife. Injured animals can be dangerous so no attempt should be made to handle a wounded animal.

3.VI.4.6 Equipment or People Falling Through Ice

If people or equipment fall through ice on lakes and rivers (a situation considered unlikely with an all-season road), the following procedures will guide the response by those available at the time and place of the incident.

The health and safety of rescue personnel will be paramount based on the following considerations and procedures.

- Rescuers must be cognizant that ice tends to fracture for a considerable distance away from the hole, so a plank or similar item may be required to spread the weight of rescuers over a wide area.
- Rescuers must be secured by a rope to a point well removed from the hole, so that they can be hauled to safety if necessary.
- As it can be difficult to climb onto ice from water in wet clothes, a rope or pole may be required to assist the person being rescued.
- Rescued people must be treated for hypothermia as quickly as possible, by removing them from the wind, replacing wet clothes with dry and warming the person passively (perhaps in a sleeping bag using a second warm person to provide body heat). Medical attention must be sought as soon as possible.
- Equipment that is still accessible for removal should be lifted or towed with mechanical assistance as soon as possible.
- In most cases, removal of equipment or vehicles will not be possible. Mine management staff should be contacted as soon as possible to develop a plan to address the potential for petroleum leakage and equipment removal, and to notify the required regulatory agencies.

3.VI.5 DAM SAFETY

Prior to the start of operations, an operation, maintenance, and surveillance manual, as defined by the Mining Association of Canada, and an emergency preparedness plan, as defined by the Canadian Dam Association, will be prepared for the CDF that will include as-built drawings and construction information.

Emergency preparedness plans consist of 4 components: emergency identification, emergency operations and repair, and notification and evacuation. Typically they address 3 situations: discharges that would cause flooding downstream, excess upstream water impoundment, and dam failure. The plan for the NICO Project will only address dam failure as the potential for and risks of flooding are minimal since the CDF will not contain a large volume of water. Downstream, the sequence of small lakes and creeks combined with the very large distances to populated areas would act to buffer the impact of a large release. Upstream, the catchment area is very small (the bowl zone) and within the footprint of the CDF or Open Pit.

Because of the location of the site and the considerations outlined above, a dam breach would not require evacuations.

Once the emergency preparedness plan is prepared for the CDF, it will be incorporated into updates of this emergency preparedness section. For further information on the CDF management, refer to Appendix 3.II. For further information and discussion on accidents and malfunctions for the NICO Project, refer to Section 17 Accidents and Malfunctions.

3.VI.6 REFERENCES

NWT Spill Contingency Planning and Reporting Regulations.

NWT Mine Health and Safety Act and Regulations.

Miramar Hope Bay Ltd. 2007. Emergency Response and Contingency Plan.

INAC (Indian and Northern Affairs Canada). 2007. Guidelines for Spill Contingency Planning.