



**PROPOSED WINTER TRANSPORTATION ROUTES
KIVALLIQ REGION**

NTS – 66 a,b,g,h; 55 j,k,m,n,o,

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1. INTRODUCTION

1.1 Company Overview

Matrix Aviation Solutions Inc. (Matrix) is a Yellowknife based company that provides customized expediting and logistical services to meet the distinctive needs of their client. They have been in operation for nine years and specialize in services in the arctic and remote locations.

Matrix recognizes the time and expense that companies invest in logistics to have a successful field season and, they also recognize the risks associated with the ineffective management of any aspect of this process. Their team of professionals provides clients with peace of mind and the ability to focus on the exploration task at hand, rather than spend valuable human-resource hours in logistics.

Matrix's efficient single-source service for exploration field logistics includes:

- Planning
- Management (*Process, Records, Logistics*)
- Budget & Accounting
- Supplier Sourcing and Negotiations
- Facilities (*Located in Yellowknife*)
- Expediting (*Purchasing, Movement, Storage*)
- Camp (*Rental, Construction, Setup, Site Clean Up*)
- Camp Management
- Satellite/Terrestrial Communications
- Ice Air Strip and Ice Roadway Construction & Maintenance
- Safety First
- Fuel Cache and Management (*Fuel Purchase, Storage, Fuel Burning, Drum Removal*)
- Fixed Wing Management
- Snow Cat (*Fuel Hauls, Drill Moves, Mobile Camps*)

Their head office is in Yellowknife with additional offices in Vancouver and Kelowna, BC.

Their contact address is:

Matrix Helicopter Solutions Inc.
#8 Yellowknife Airport
Yellowknife, NT X1A 3T2
Tel: 867.766.3134
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1.2 Project History

Matrix presently (2008- 2009 field season) has several clients in the Kivalliq region that require large fuel hauls for their exploration programs. In all cases these clients have a land use permit for fuel storage once the fuel is at their camp or storage area. In the past the most common way of moving fuel to these sites was by aircraft. This was expensive and could only be accomplished efficiently once an air strip had been prepared on a lake near the camp or fuel storage area so that a plane could land to deliver the fuel.

Movement of the fuel from the aircraft to the ice and then to the fuel cash was also labor intensive and presented an additional environmental risk.

Matrix has developed and proven a fuel movement method using Snow Cats and sleds in the NWT. This method involves the use of fuel sleds carrying up to 30 barrels (205 liters barrels) of fuel. The sleds are especially designed and built for the purpose. The advantages of the system are as follows:

1. Low pressure surface transportation
2. Minimum Fuel handling
3. Cost efficient
4. Reduced wildlife impact

Matrix is proposing to use this transportation system in the Kivalliq region of Nunavut over existing routes and this document outlines the project parameters and is intended as additional information to support their application for land use permits for the routes.

2. DEVELOPMENT SUMMARY

The permit application will be for a total of five (5) routes as outlined in Table 1. The full route maps and details can be found in Appendix 2. 1:250,000 NTS maps of the routes can be found in Figures 1 to 6.

Table 1: A summary of the distances and land ownership along the routes covered in this application.

Route	Distance Inuit Lands (km.)	Distance Crown Lands (km.)	Distance Sea Ice (km.)	Distance Lake Ice (km.)	Total (km.)
Baker Lk. North	38	65	0	54	157
Baker Lk. West	27	83.	0	151.	261
Baker Lk. West 2	0	37	0	0	37
Rankin Inlet South	60.8	14.7	13.1	25.4	114
Rankin Inlet North	21	40.6	17.4	0	89
Total	147	240	31	230	658

Figure 1:

Figure 2:

Figure 3:

Figure 4:

Figure 5:

Figure 6:

2.1 Regulatory Requirements

The project as outlined in this report will require the following permits and reviews:

1. Review for Conformity with the Keewatin regional Land Use Plan (Nunavut Planning Commission)
2. Screening by the Nunavut Impact Review Board
3. Land Use Permit for Access to Inuit Lands from the Kivalliq Inuit Association (KIA)
4. Land Use Permit for use of Crown Lands From Indian and Northern Affairs Canada (INAC)

All the above will be applied for simultaneously.

2.2 Equipment

The equipment that will be used to haul the fuel and supplies over the applied for routes are a Snow Cat and Custom Designed Sled.

The information for the Snow Cat can be found in Table 2.

Table 2: The design characteristics for the Snow Cat BR2000.

Year	2001 and 2002
Make	Bombardier
Model	BR2000
GVW	7,484 kg. (16,500 lb.)
Ground Pressure	5.9 kilopascal (0.86 psi)
Fuel	Diesel
Fuel Consumption	~ 10 liters/hr.

The typical Snow Cat can be seen in Photo 1.



Photo 1: A Snow Cat in operation in the NWT.

The sleds that are hauled by the Snow Cat have been specifically designed for northern work and for fuel hauls. Their design is shown in Figure 7. One specific feature of the design is that they have a solid bottom that contains any fuel spillage that may result from a ruptured barrel or accidental spillage during transportation. The sleds are designed to carry up to 30 – 205 liter steel drums of fuel. Each Snow Cat will be hauling two (2) sleds giving a total load of 60 barrels (12,300 liters). The dimensions and characteristics of the sleds are contained in Table 3.

Table 3: Design characteristics for the fuel sleds.

Overall Length	6.36 m.
Overall Width	1.81 m.
Net Weight	1454 kg. (3200 lb.)
Ground Pressure Empty	1.21 kilopascals (0.175 psi)
Load Capacity	5688 kg (12540 lb)
Ground Pressure Loaded	5.98 kilopascals (0.867 psi)

Figure 7: The design of the steel sleds.

This will be the first time that this type of operation has been mobilized in Nunavut. Matrix has used this equipment for fuel hauls in the NWT for the past several years. These NWT hauls have been under permit from the Mackenzie Valley Land and Water Board and have been done for Seabridge Gold Inc. and Trigon Exploration.

When hauling there will be two units (Snow Cat plus sled) working together. In addition the units will be accompanied by two local guides wop will be traveling on snow machines to locate and truth the route in front of the units. These guides will be hired from the local Hunters and Trappers Association. Each of the units will also have an onboard GPS guidance system that will have preprogrammed routes and real time GPS readings projected onto topographical maps. This will allow for a wider window of operation and less downtime because of weather.

The fuel to be hauled will be a mixture of diesel, Jet A, Gasoline and Propane. The general compositions of the loads are outlined in Table 4.

Table 4: Breakdown of fuel to be carried on the sleds by type.

Diesel	48%
Jet A	48%
Gasoline	2%
Propane	2%

The total volume of fuel to be hauled to each camp will vary between 500 and 1,000 barrels (102,500 and 205,000 liters). This will translate into between four (4) to nine (9) trips per camp.

2.3 Routes

This application covers five basic routes in the Kivalliq region (Table 1). These routes are all previously used access routes and have been permitted by either KIA, INAC or both in the past. The routes are shown in Figures 1 to 6 and details of the waypoints and land ownership are contained in Appendix 2.

2.4 Project Timing

All trips over the applied for routes will be conducted between March 1, 2008 and May 1, 2008 and November 1, 2008 and May 1, 2009. This is assuming that the necessary permits are obtained before March 1, 2008. If logistical problems or weather extend the program no trips will be done after May 15 of each year so that the operations will be in compliance with the Keewatin Regional Plan, Caribou Protection Measures.

2.5 Logistical Support for Hauls

The hauls will be staged out of Baker Lake and Rankin Inlet, depending on the route being used. Support for the hauls will come from these centers. Once moving the haul will not stop until it reached the destination. No camp will be required for this operation as the crews will stay in the destination camp when the haul is completed. All the destination camps are or will be covered by land use permits held by the exploration companies.

Turnaround times for the trips will be limited by rest for the crews and the time necessary for the unloading of the fuel.

The fuel will be unloaded into fuel storage areas covered by the land use permits for the destination camps.

Each Snow Cat unit will carry survival gear; communication equipment and a two 45 gallon spill clean up kits (see Appendix 1 – Contingency Plan). Crews on the Snow Cats will receive training on the contingency plan and spill cleanup techniques before the haul season begins.

Once the fuel has been delivered to a permitted fuel storage area at the camps the responsibility for the fuel will revert from Matrix to the permittee for the camp.

In cases where appropriate the Snow Cat Units may be used to back haul equipment or empty barrels from the camps to Baker Lake or Rankin Inlet.

2.6 Contingency Planning

The contingency plan for this permit application can be found in Appendix 1.

2.7 Reclamation

It is not anticipated that the project will cause any surface disturbance. If surface disturbance is noted by the land use inspector and it can be attributed to this operation it will be reclaimed as directed by the inspector.

3.0 COMMUNITY CONSULTATION

Matrix is setting up a complete consultation program for this project. The parties to be consulted are:

- Baker Lake Hunters and Trappers Association (HTA)
- Baker Lake Hamlet Council
- Rankin Inlet Hunters and Trappers Association (HTA)
- Rankin Inlet Hamlet Council
- KIA

Unfortunately no meeting dates can be arranged until January of 2008. Matrix will provide the regulatory bodies with meeting notes when they are available. One of the features of the meetings with the HTAs will be to seek recommendations for the hiring of local guides for the program.

4.0 EXISTING ENVIRONMENT

4.1 Environmental Setting

The project is located in the Northern Arctic ecozone and the Wager Bay Plateau ecoregion of Nunavut. These areas have been described as follows (Ecological Stratification Working Group, 1995):

Northern Arctic Ecozone

“The Northern Arctic ecozone extends over most of the non-mountainous areas of the Arctic Islands, and portions of northeastern District of Keewatin and northern Quebec. It incorporates the coldest and driest landscapes in Canada.

Climate The climate is very dry and cold. The mean annual temperature ranges from —17°C in the northern islands to -11°C in northern Quebec. The mean summer temperature ranges from -1.5°C in the north to 4°C in the south, and mean winter temperatures range from -31°C in the north to -20°C in northern Quebec. Winters pass in darkness. The mean annual precipitation ranges 100-200 mm, the lowest in Canada. This ecozone is often referred to as a polar desert. Snow may fall any month of the year and usually persists on the ground for at least 10 months (September to June).

Vegetation A harsh climate, high winds and shallow soils result in sparse and dwarfed plant life. Herb and lichen dominated communities constitute the main vegetative cover. The latter is closely associated with the rock fields and hilly upland areas. Common herbs are purple saxifrage, mountain avens, and arctic poppy, often mixed with shrubs such as arctic willow. The size of shrubs decreases rapidly as one moves north. Vegetative cover tends to be greater on wetter sites confined to coastal lowlands, sheltered valleys and moist nutrient-rich corridors along streams and rivers.

Landforms and Soils The western portion of this ecozone is underlain by flat-lying Palaeozoic and Mesozoic sedimentary bedrock, and consists mostly of lowland plains covered with glacial moraine, marine deposits and bedrock outcrops. East of Prince of Wales and Somerset islands, the terrain is composed mainly of Precambrian granitoid bedrock, and tends to consist of plateaus and rocky hills. The Arctic Islands circumscribe a variety of oceanic conditions. In the northern half of the ecozone, the waters are ice-fast, even through the summer. Towards the south, open waters are more common in the summer, but pack ice usually persists offshore. The permafrost is continuous and may extend to depths of several hundred meters. Cryosolic soils (i.e. those affected by permafrost-related processes) predominate.

Wildlife Mammals include Peary and barren-ground caribou, muskox, wolf, arctic fox, polar bear, arctic hare, and brown and collared lemming. The Peary caribou are found only in the high Arctic Islands. In the spring the ecozone provides a major breeding habitat for migratory birds, including snow goose, brant, Canada goose, eider and oldsquaw duck. Other representative birds include red-throated loon, gyrfalcon, willow and rock ptarmigan, red phalarope, parasitic and long-tailed jaeger, snowy owl, and snow bunting. In the marine environment, typical species include walrus, seal, beluga whale, and narwhal. Marine fauna are most abundant in the eastern and western margins, rather than in the central core of the zone.

Human Activities Hunting, trapping and fishing remain important activities in the local economy. Some areas are targeted for hydrocarbon development, and several mining enterprises are active. Sparsely populated, the total population of the ecozone is just over 16 000. Inuit form about 80% of the population. Iqaluit on Baffin Island is the largest centre with a population of approximately 3600. Other centers with populations over 1000 include Baker Lake, Cambridge Bay, and Pangnirtung.

Wager Bay Plateau Ecoregion

This large ecoregion covering the northeastern District of Keewatin extends westward from the northern portion of Southampton Island on Hudson Strait to Chesterfield Inlet in the south, and as far west as Back River. The mean annual temperature is approximately -11°C with a summer mean of 4.5°C and a winter mean of -26.5°C. The mean annual precipitation ranges 200-300 mm. This ecoregion is classified as having a low arctic ecoclimate. It is characterized by a discontinuous cover of tundra vegetation, consisting of dwarf birch, willow, northern Labrador tea, *Dryas* spp., and *Vaccinium* spp. Taller

dwarf birch, willow, and alder occur on warm sites; wet sites are dominated by willow and sedge. Lichen-covered rock outcroppings are prominent throughout the ecoregion, and towards the south the vegetation becomes a mix of tundra vegetation and open, dwarf coniferous forest. This ecoregion is composed of massive Archean rocks of the Canadian Shield that form broad, sloping uplands, plains, and valleys. It rises gradually westward from Chesterfield Inlet to 600 m asl elevation, where it is deeply dissected. Turbic and Static Cryosols developed on discontinuous, thin, sandy moraine and alluvial deposits are the dominant soils in the ecoregion, while large areas of Regosolic Static Cryosols are associated with marine deposits along the coast. Permafrost is continuous with low ice content. Characteristic wildlife includes caribou, muskox, wolverine, Arctic hare, fox, walrus, seal, whale, polar bear, raptors, shorebirds, and waterfowl. Land uses include trapping, hunting, and fishing. Repulse Bay and Baker Lake are the main settlements. The population of the ecoregion is approximately 1700.”

5.0 POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION

5.1 Noise

Any increases in ambient noise levels from the transportation activities will be limited and of short duration. The Snow Cats are equipped with muffler systems that produce a noise level similar to an automobile and these muffler systems will be maintained to motor vehicle standards.

Past and ongoing operations in the area have not created an acoustic impact on wildlife. These operations are not expected to significantly change the existing situation. Additional mitigation measures for possible impacts on caribou are outlined in section 5.2 below.

5.2 Wildlife Disturbance

Travel on the indicated routes may impact wildlife but this impact is expected to be minimal and of a limited duration. The project will not involve the use of fixed wing aircraft or helicopters which appear to have the most impact on wildlife from a disturbance perspective. In addition hunting activities will not be permitted by project members along the transportation route.

Caribou

Matrix recognizes that the proposed operations are in caribou habitat and that some of the routes are within the designated calving area for the Beverly and Qamanirjuaq caribou Herd. To mitigate environmental impacts on the caribou Matrix commits to the following measures for caribou protection contained in the Keewatin Regional Land Use Plan (June 2000):

1. (a) The Permittee shall not, without approval, conduct any activity between May 15 and July 15 within the Caribou Protection Areas depicted on the map certified by the Engineer as the “Caribou Protection Map” and annexed to this Land Use Permit.
(b) A Permittee may, upon approval by the Land Use Inspector, operate within the said Caribou Protection Areas beyond the May 15 deadline set out in 1(a), provided that, when monitoring information indicates that caribou cows are approaching the area of operation, the Permittee will implement 1(c).
(c) On cessation of activities pursuant to 1(a) or 1(b), the Permittee will remove from the zone all personnel who are not required for the maintenance and protection of the camp facilities and equipment, unless otherwise directed by the Land Use Inspector.

-
- (d) The Permittee may commence or resume activities prior to July 15 within those parts of the Caribou Protection Areas released by the Land Use Inspector for the reason that caribou cows are not expected to use those parts for calving or post-calving.
2. (a) In the event that caribou cows calve outside of the Caribou Protection Areas, the Permittee shall suspend operations within the area(s) occupied by cows and/or calves between May 15 and July 15.
- (b) In the event that caribou cows and calves are present, the permittee shall suspend:
- (i) blasting;
 - (ii) over flights by aircraft at any altitude of less than 300 meters above ground level; and
 - (iii) the use of snowmobiles and ATVs (all-terrain vehicles) outside the immediate vicinity of the camp.

In addition to item 1(a) above Matrix commits to attempting to complete all hauling on the designated routes by May 1, of each year assuming that weather conditions permit.

Matrix will also implement the following caribou mitigation measures in relation to their operation:

- Caribou have the “right-of-way”, and will not be blocked or deterred from moving over the designated travel routes.
- No aircraft will be used along the designated travel routes unless in the case of emergency.

5.3 Vegetation

Travel on snow covered routes in the region is not anticipated to create significant impacts on vegetation. Travel will be limited to periods when snow cover is a minimum of 20 cm and the both the Snow Cats and Sleds have very low ground pressure. If it is shown that the operation of this project causes disturbance to vegetation, re-vegetation will be conducted on sites that are proven to be disturbed. A detailed GPS log of all travel routes will be maintained and will be used to assess damage from the activity.

5.4 Archeological Impacts

The bulk of the archeological sites are found on eskers. These areas are not anticipated to be impacted by the proposed project. The travel will be adjusted if there is a conflict with archeological sites and Matrix is committed to minimizing its impact through re-locating travel routes where required.

5.5 Air Quality

The scale of the proposed program will not significantly impact air quality in the region.

6.0 EMERGENCY RESPONSE PLAN

The Emergency Response Plan is contained in Appendix 1.

7.0 LITERATURE CITED

Ecological Stratification Working Group, 1995. A national framework for Canada. Ottawa. Environment Canada. 125pp.

Keewatin Regional Land use Plan. June 20, 2000

Appendix 1

Contingency Plan

Contingency Plan

**PROPOSED WINTER TRANSPORTATION ROUTES
KIVALLIQ REGION
NTS – 66 a,b,g,h; 55 j,k,m,n,o,**

Matrix Aviation Solutions Inc.

#8 Yellowknife Airport
Yellowknife, NT X1A 3T2

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1.0 Introduction

This plan has been developed as part of a commitment by Matrix Aviation Solutions Inc. (Matrix) to minimize any detrimental effect its operations may have on the environment. The focus of the plan will be on the exploration camp diamond drilling operation.

The plan is designed to combat spills on land and/or into watercourses.

As the need arises Matrix may enter into agreements for the sharing of expertise and equipment with other companies, municipalities and resource agencies.

The Plan will be updated and revised as required.

2.0 Reporting Procedures

ORGANIZATION AND RESPONSIBILITIES

The overall responsibility for the contingency plan lies with:

Ron Corey
Matrix Aviation Solutions Inc.
#8 Yellowknife Airport
Yellowknife, NT X1A 3T2
Tel: 867.766.3134
Fax: 867.766.3374

The onsite responsibility for the plan also lies with Matrix's Project Manager **Ron Corey** who will be the On-site Coordinator (OSC). The camp, when in operation, will have phone number 867 766-4952

Contractors, sub-contractors and suppliers will provide assistance in all phases of a clean up as directed by the OSC. In the event that a contractor, sub-contractor or supplier or their employees causes a spill, Matrix will charge clean-up and disposal expenses to the responsible party. The OSC will:

1. Be familiar with fuel spill procedures, equipment and contact numbers.
2. Provide liaison with Territorial Government Emergency Programs, Ministry of Environment and Department of Fisheries personnel where applicable.
3. Direct the actions of personnel during clean-up operations.
4. Familiarize key personnel with fuel spill equipment and procedures.
5. Prepare a report on all aspects of any spill.

3.0 Transportation Information

The fuels that are transported in this project are diesel, Jet A, gasoline and propane. The loads will be transported on two sleds drawn by a Snow Cat. The maximum load will be 30 barrels (205 liters/barrel) of product per sled. Loads will vary depending on the destination but the general breakdown of the loads are outlined below:

Diesel	48%
Jet A	48%
Gasoline	2%
Propane	2%

The total volume of fuel to be hauled to each camp will vary between 500 and 1,000 barrels (102,500 and 205,000 liters). This will translate into between four (4) to nine (9) trips per camp.

There are a total of seven camps that will be supplied in this manner.

4.0 Failure Prevention

The system components where spills are most likely to occur are:

Petroleum Products and Other Fuels

- Drummed product: Leaks or ruptures may occur. This includes drums of Diesel, Jet B, Waste Fuel, and Waste Oil.
- Fuel cylinders: Propane, leaks may occur at the valves. All cylinders are secured at all times.
- Vehicles and equipment: The Snow Cats and Snow Machines used for route truthing may also be a source of leaks during refueling.

The risk of spills will be reduced through regular inspection of the loads and equipment associated with the fuel handling in accordance with recognized and accepted standard practices. This will include:

- Loaded sleds will be inspected before commencing the haul and every 50 km. during the haul.
- Routine checks of fuel transfer hoses and cam lock will be made before and after refueling the vehicles.
- Carefully monitor fuel content in the receiving vessel during transfer.
- Cleaning up drips and minor spills immediately.
- “Manifesting,” will be implemented to ensure all fuel loaded at the source is delivered to the camp. This will ensure no barrels are lost along the route. Manifests also provide detailed information to first responders.
- Training personnel, especially those who will be operators, in proper fuel handling and spill response procedures.

A record of these inspections and any remedial action will be maintained in on each Snow Cat during the hauls.

Spill response training is provided to personnel who handle fuels and other petroleum products, and at least one emergency response drill will be held during the project. A report will be prepared by the response coordinator following each drill, noting response time, personnel involved and any problems or deficiencies encountered. This report will be used to evaluate emergency response capability and remedy any deficiencies if required.

Three 45 gallon spill kits will accompany every haul, one on each sled and one on the Snow Cat.

5.0 Response Action

Discovery of a fuel spill

Upon discovery of a spill personnel will immediately

- a) identify the product that is spilling, or has spilled;
- b) assess immediate hazards, and ensure all on-site persons are aware of them;
- c) secure the site, and,
- d) commence initial notification of appropriate personnel and agencies.

Identification/Assessment of spill

This step is critical to ensure the safety of responders, and to minimize the impact to the environment. The assessment should include:

- a) reassess the material spilled and quantity spilled;

- b) reassess any immediate hazards;
- c) identify all the safety issues that need to be dealt with before taking action.
These
 - include ignition sources, protective clothing and public safety.
- e) Refer to Material Safety Data Sheets for product identification and handling.

Notification

The On Site Coordinator will take note of the following information from the discoverer of the spill:

- a) discoverer's name
- b) time and location of the spill;
- c) material spilled and approximates quantity;
- d) cause of spill if known;
- c) weather conditions;
- f) action taken so far',
- g) immediate serious threats (water courses, fire)

The OSC will then make the following contacts:

1. Immediately notify the BAYSWATER corporate office
2. The 24 Hour SPILL LINE DIAND:
 - a. Spill Line Tel.1-867-920-8130, fax. 1-867-873-6924.**
 - b. DIAND Tel. 1-867-975-4283**
3. The Nunavut Spill Report Form is filled out as completely as soon as possible before or immediately after contacting the 24 Hour Spill Line.
4. Other members of the response team are notified as deemed necessary
5. Other contacts for spill response/assistance as necessary

The Contact list for this BAYSWATER Thelon Project is as follows:

Organization	Personnel	Telephone Number
Matrix Aviation Solutions	Martin Knutson	(867) 766-3134 Cell: (867) 445-2640
	Ron Corey, Project Manager	(867) 766-3134
Nunavut 24-Hour Spill Report Line		867.920.8130
Environment Canada	Jim Nobel, Environmental Enforcement Officer	867 975 4644 867 920 5131 (Pager)
Government of Nunavut	Department of Environment	867.975.5900

	Manager Pollution Control and Air Quality	867.975.5907
Indian and Northern Affairs Canada	Spencer Dewar, Land Administrator	867.975.4283
	John Craig, Assistant Land Administrator	867.975.4285
	Environment Manager	867.975.4549
	Field Operations Manager	867.645.2831
	Water Resources Manager	867.975.4550
	Henry Kiblalik, Resource Management Officer	867.645.2831
RCMP Baker Lake		867.793.0123
Kivalliq Inuit Association		867.645.2800
Nunavut Water Board		867.630.6338

Action

This part of the plan will reconfirm steps that need to be followed when taking action. The person who takes charge is responsible and should:

- i) ensure the use of trained personnel is prioritized when possible;
- ii) brief responders on safety issues, first aid procedures for material involved;
- iii) secure the site from access;
- iv) ensure responders are wearing appropriate protective equipment;
- v) eliminate all sources of ignition;
- vi) stop the source of the spill or contamination
- vii) remain at the scene and use every effort to contain the spill until such time as help arrives. This would include the arrival of the OSC, or agency of authority.

Procedure for Spills on Rock

For hydrocarbon spills on rock outcrops, boulder fields, etc.:

1. First responder or his designate obtains plastic tarp(s) and absorbent sheeting on-site.
2. A berm of peat, native soil or snow is constructed down slope of the seepage or spill. the tarp is placed in such a way that the fuel can pool for collection and removal (e.g. at the foot of the berm). If there is a large volume of spilled product, pump the liquid into spare empty drums for sealing and disposal.
3. Absorbent sheeting is placed on the rock to soak up spilled oil, fuel, etc.
4. Multi Sorb (crushed lava rock) can be used to scrub the rock surface.
5. Saturated material is disposed of in an empty drum, which is then labeled and sealed. Alternatively, the pads may be wrung out into the empty drum(s), the drums marked and then secured for eventual disposal.
6. Depending on the nature and volume of the spill, the 24-Hour Spill Line may be contacted after Step 4 or Step 5.

Procedure for Spills on Land

1. First responder or his designate obtains plastic tarp(s), absorbent sheeting, Multi Sorb or other ultra-dry absorbent and any other necessary spill containment equipment, pump, hoses, etc.
2. A berm of peat, native soil or snow is constructed down slope of the seepage or spill. The tarp is placed in such away that the fuel can pool for collection and removal (e.g. at the foot of the berm).
3. If there is a large volume of spilled product, pump the liquid into spare empty drums, and dispose of product as advised by the 24-Hour Spill Line.
4. Applying a thin dusting of Multi Sorb or other ultra-dry absorbent to the groundcover may control petroleum-product sheen on vegetation.

5. Contact the 24-Hour Spill Line. Receive instructions from the appropriate contact agencies listed in Section 5.4 regarding collection of the contaminated soil or vegetation, its removal and site cleanup/restoration.

Fuel Spills on Water

It is important to immediately limit the extent of spills. The following procedure is to be implemented when an incident occurs:

1. If the spill is small, deploy hydrophobic (water repellent) absorbent pads on the water. Hydrophobic pads readily absorb hydrocarbons. Alternatively, an ultra-dry absorbent designed for use on water-based spills may be deployed.
2. If the spill is larger, ready several empty drums to act as refuge containers for the spill.
3. Deploy containment booms on the water surface to "fence in" the spill area gradually and to prevent it from spreading. Keep in mind those environmental factors such as high winds and wave action can adversely affect attempts at spill cleanup. Absorbent booms can then be deployed to encircle and then absorb any hydrocarbon spillage that may have escaped the containment boom.
4. Once a boom has been secured, a skimmer may be brought on-scene to aid in capture of the hydrocarbon; once captured, the product should be pumped to the empty fuel drums and held for disposal.
5. As soon as possible either during or after the incident, contact the 24-Hour Spill Line. (This will ensure government agencies are informed).

Fuel spills on Snow and Ice

By its nature, snow is an absorbent, and fuel spilled on snow is collected with relative ease, either by shovel, in the case of small-range spills, and by loader, in the case of more extensive spills.

1. Assess the nature of the spill. Necessary equipment might include shovels, plastic tarp(s), empty drums, and wheeled equipment.
2. Shovel or scrape contaminated snow and deposit in empty refuge drums. If the spill is more extensive, build peat-bale berms or compacted snow berms with plastic over top, around the affected area.
3. Either during or immediately after the accident, notify the 24-Hour Spill Line. Receive instructions on the preferred disposal method (e.g. storage in sealed drums, incineration or deposit in a designated lined containment area on land) from the appropriate contact agencies.

Procedure for spills on Ice

Spills on ice are handled in similar fashion as those on snow. However, as ice presents the added danger of immediate access to water, care must be taken to respond quickly to

such spills. Should fuel seep or flow through cracks or breaks in the ice, despite all precautions, assistance should be sought immediately.

1. Construct a compacted-snow berm around the edge of the spill area.
2. Although hard ice will retard or prevent fuel entry to the receiving waters below, all contaminated snow and ice, as well as objects embedded in the ice (such as gravel or frozen absorbent pads) must be scraped from the ice surface and disposed of in an appropriated manner. Contact the 24-Hour Spill Line. Receive disposal instructions (e.g. sealing in drums, burn off, etc.) from the appropriate contact agencies.

6.0 SPILL RESPONSE EQUIPMENT AND SUPPLIES INVENTORY

Spill Kits and Absorbent Material

The basis of the spill response will be two 206-litres heavy duty polyethylene over pack containers which are available commercially pre-packed with an assortment of petroleum absorbent materials. A separate chest of additional absorbent materials and empty labeled chests to contain the materials from the overpacks should they be used will make the petroleum absorbent component of the spill response equipment. The kit contains:

- 150 absorbent pads – 16" x 20"
- 2 absorbent booms - 5" x 120"
- 8 absorbent socks - 3" x 48"
- 4 six mil clear disposal bags
- 1 pairs of safety goggles
- 1 pairs of nitrile gloves
- 1 Tyvek suit
- Instructions

Fuel Transfer Pumps

Dedicated manual fuel transfer pumps for each type of liquid fuel will be located on the Snow Cats during each haul.

Fire Extinguishers

Fire extinguishers of the proper type, size and number will be stationed on each Snow Cat during each haul.

7.0 Training Exercises

All members of the Response Team will be familiar with the spill response resources at hand, this Contingency Plan, and appropriate spill response methods. This familiarity will be acquired through:

1. Initial or refresher training, as appropriate, provided once per season.
2. Regular inventory updates are provided in list form to all team members.
Information to be reported includes listing of all resources, number of items, their location, condition, date of last inspection and any special comments (such as expiry dates, under whose authority they may be accessed and special handling instructions).

Practice Drills

Matrix is aware that without practice, no Contingency Plan has value. At least one practice drill will be held per season to give personnel a chance to practice emergency response skills. Each practice will be evaluated and a report prepared with the objective of learning where gaps and deficiencies (either in skills or physical resources) exist, and in what areas more practice is required.

Appendix 2

Details of the Travel Routes