



FUEL SPILL CONTINGENCY PLAN

JAMES CREEK CAMP

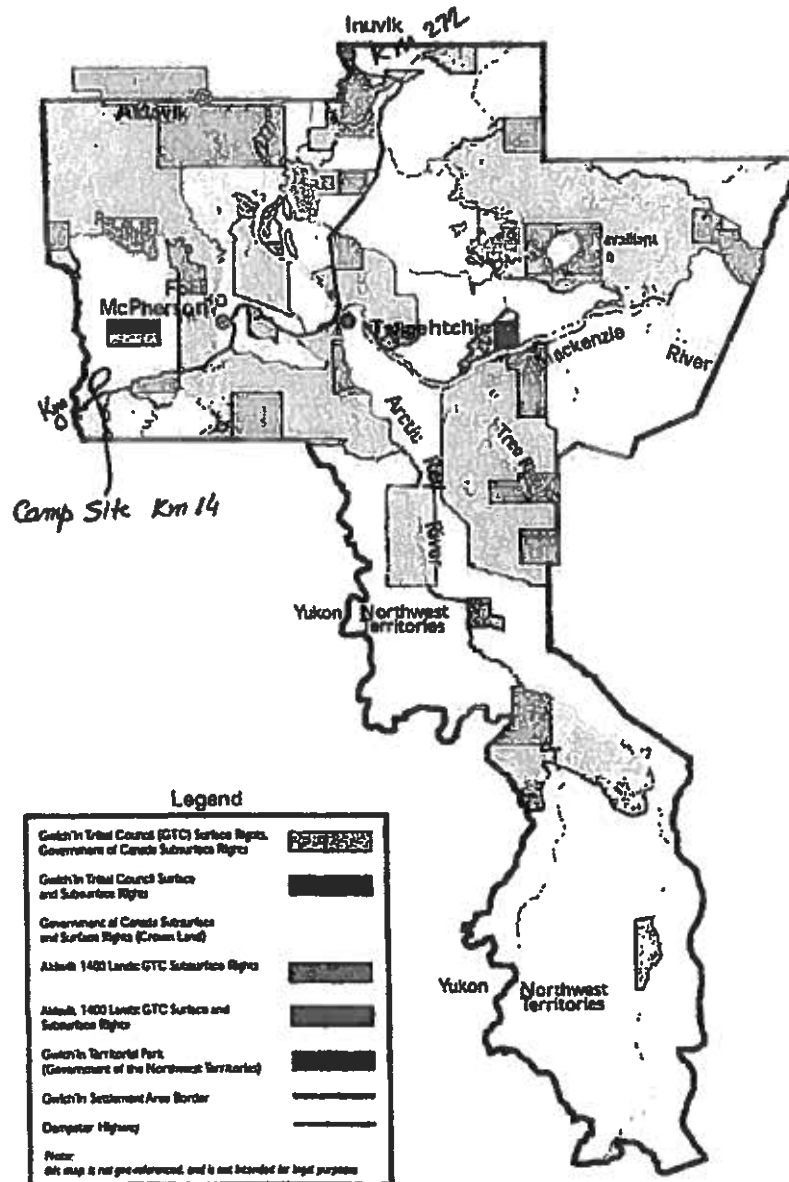
Located at Km 14 of Highway # 8

JAMES CREEK, NT

INSTRUCTIONS TO THE READER

**This is a guide and not a training manual.
You should not be reading it for the first time during an actual spill.
Please familiarize yourself with this document and be prepared now.**

Land Ownership Gwich'in Settlement Area



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1.0 INTRODUCTION, LEGISLATION & REGULATIONS

The Department of Transportation has determined that facilities that use or store dangerous products must have an emergency preparedness plan to account for spills and spill clean-up. The lack of emergency spill response companies in the Northwest Territories may result in increased damages to the environment in the case of a spill. To reduce the risk of environmental damage, an emergency plan will be developed to assist staff and improve existing operations. These improvements are required to respond to the needs of the Environmental Protection Act, EPA, and the Northwest Territories Spill Contingency Planning and Reporting Regulations, NTSCPRR.

Under sections 34(1) q) and r) of the EPA, the intention is to first, prevent and safeguard against a spill occurring and second, to be prepared with materials and equipment onsite to deal with a spill. Under the NTSCPRR, "any person storing contaminants in an underground storage facility with a capacity equal to or greater than 4000 litres or kilograms or any person storing contaminants in an aboveground storage facility with a capacity equal to or greater than 20,000 litres or kilograms is required to file a spill contingency plan. These quantities represent the minimum requirements for filing a Spill Contingency Plan."

The Department of Transportation, DOT, has concluded that Spill Contingency Plans shall be prepared for all facilities that store products that are defined as dangerous goods or hazardous materials under the Transportation of Dangerous Goods Act and Regulations, see Table One, Appendix F. It is DOT's intention to develop a Spill Contingency Plan that will be concerned with our most common Table One items: diesel fuel and gasoline. This 'Fuel Spill Contingency Plan' will operate as a standard in the DOT Highways Maintenance work place to improve fuel storage and handling safety with respect to the existing operational strategy, See Figure One in Appendix F.

This Fuel Spill Contingency Plan document has been written to assist DOT field staff and facility personnel deal with spill situations for diesel fuel and gasoline. It consists of six main sections and six appendices. The main sections are: 2 - Fuel Spill Contingency Plan with priorities and plan components. 3 - Prevention and the Responsible Person. 4 - the Spill Response. 5 - Spill Containment. 6 - Spill Clean-up. And 7 - Maintenance Camp Description, Equipment Inventory, Potential Spill Sources, and Training.

The six appendices supporting the main body are: A - Initial Spill Response component complete with the Initial Response Flowchart, the Emergency Spill Response Checklist, a list of emergency phone numbers, and the Fuel Spill Reporting Form. B - the Spill Containment component complete with suggested methods for berm construction and boom placement. C - the Spill Clean-up component with a suggested method for organizing the movement of people and equipment during clean-up efforts. D - Site Maps and Sketches. E - Equipment List for heavy equipment, assorted tools, materials, and spill kits. And F - Prevention component complete with reportable volumes, Spill Plan Logic and Potential Spill scenarios.

2.0 FUEL SPILL CONTINGENCY PLAN

Every work site, refuelling depot, and vehicle storage location may become a fuel spill area. Spills can be caused by:

1. an accident,
2. mechanical failure,
3. operator's error, or
4. vandalism.

The Intention of this Fuel Spill Contingency Plan, FSCP, is to assist staff in being more knowledgeable with:

1. spill prevention methods,
2. spill containment, and
3. spill clean-up procedures.

2.1 OVERVIEW

This Fuel Spill Contingency Plan is a general guide for the DOT staff including: supervisors, managers, and crews stationed at the various Highway Maintenance Camps in the NWT. It will help with diesel fuel and gasoline spill problems. See Table One in Appendix F for reportable volumes of spills. Diesel and Gasoline are flammable liquids in Table One where any spilled volumes in excess of 100 litres are reportable. All spills regardless of type must be reported to your supervisor and cleaned up.

The logic used to show how this Fuel Spill Contingency Plan fits into the DOT operational strategy is shown in Figure 1 in Appendix F. The Fuel Spill Contingency Plan will be an essential component for an ongoing program of improvement and review. It will combine all existing fuel-handling methods with:

1. practical fuel spill prevention,
2. improved fuel spill containment, and
3. spill clean-up methods.

2.2 PURPOSE

The purpose of this Fuel Spill Contingency Plan is to improve all fuel handling activities in order to prevent spills. If a spill does occur, DOT staff will be trained to respond and to minimize any environmental damage. Experience has demonstrated that three things are necessary for the quick and effective clean-up of a fuel spill:

1. To have all key personnel trained in spill response, containment and clean-up.
2. To have an understandable, reasonable, and practical plan to deal with spills. And
3. To be properly equipped with spill containment materials and equipment, including on-site standby earth moving equipment, absorbent materials, and booms.

2.3 PRIORITIES

The goal of this Fuel Spill Contingency Plan is that the following five priorities be addressed at the time of a fuel spill.

- 1) The protection of life.
- 2) To prevent and to minimize injuries.
- 3) That any environmental impacts are minimized.
- 4) That the required information is reported to the NWT Spills Hotline.
- 5) To effectively implement the resources to contain and clean-up the spill.

2.4 COMPONENTS OF THE FUEL SPILL CONTINGENCY PLAN

The two integral components of the FSCP are:

1. The prevention of fuel spills component.
2. The spill response component to be taken upon the discovery of a fuel spill.

Both components address priorities 1, 2, and 3. The spill response component of the FSCP will address priorities 4 and 5. The spill response component is composed of the following four sections:

1. Initial Spill Response section.
2. The Spill Containment section.
3. The Spill Clean-up section.
4. The Maintenance Camp section which will detail location, facilities, potential spill locations, on-site equipment list, and staff training.

3.0 PREVENTION COMPONENT OF FUEL SPILL CONTINGENCY PLAN

The prevention of fuel spills is now expected to become a part of the standard DOT operating procedure for all camps and work areas. Each camp and work area will have an acceptable and annually updated Fuel Spill Contingency Plan in place and an assigned Responsible Person to operate and update the Fuel Spill Contingency Plan.

3.1 OVERVIEW

Common sense would indicate that the best fuel spill contingency plan is to not allow a fuel spill to occur in the first place. Spill prevention must be a large part of how we now conduct our day-to-day operations and it is unacceptable to allow any contaminants to enter into the environment and cause pollution. See Appendix F, for examples of potential and actual fuel spill scenarios and their preventative measures.

3.2 ROLES AND RESPONSIBILITIES OF THE RESPONSIBLE PERSON

The RP, Responsible Person or their designate, will be an experienced, knowledgeable, and competent person responsible for the safe, daily operations of their Camp or work area. In the event of a fuel spill incident, the RP will be responsible for setting up, and running the Emergency Spill Response shown in Section 4.1.

The RP for the James Creek Camp will be Mr. Bruce Krutko, Highway Foreman.

4.0 SPILL RESPONSE COMPONENT OF FUEL SPILL CONTINGENCY PLAN

A spill has occurred at your facility or your work site. The following section on "SPILL RESPONSE" will assist you with the activities and procedures to deal with the spill event.

4.1 THE INITIAL SPILL RESPONSE

The "INITIAL SPILL RESPONSE" section is in Appendix A of this document (the laminated pages). It was written to assist you and to give guidance during the stressful time of a fuel spill event. The Fuel Spill Report will assist with the 'information gathering' required to evaluate and to respond to the fuel spill.

Upon the discovery of a fuel spill you or the RP would activate the "INITIAL SPILL RESPONSE" section. The "Initial Spill Response" section contains:

1. the Initial Spill Response Flowchart, see page 1 of Appendix A,
2. the Emergency Spill Response checklist, see page 2 of Appendix A,
3. the Emergency Contact List, see page 2 of Appendix A, and
4. the Fuel Spill Reporting Form, see page 3 of Appendix A.

4.2 THE EMERGENCY SPILL RESPONSE

- 1) Activate the Initial Spill Response Flowchart shown in Appendix A on Page 1.
- 2) Ensure the safe containment of the spill or the safe evacuation of the spill area.
- 3) Ensure measures are taken to protect public health and safety.
- 4) Report to your Supervisor and your RP for assistance.
- 5) Contact the NWT 24 Hour Spill's Hotline at: (867) 920-8130 and report spill.
- 6) Fill out the "Fuel Spill Report." – see Appendix A on Page 3.
- 7) Initiate 'spill clean-up measures' through other agencies or resources if necessary.
- 8) Follow through on the proper disposal of spill contaminants.
- 9) Conducting follow-up reports and activities to assist in the closing of the spill file.

4.3 SPILL RESPONSE: EMERGENCY PHONE NUMBERS

Emergency phone contact numbers are provided in Appendix A, on Page 2, to assist you during a fuel spill. Contact information is provided for: the facility Responsible Person, their alternates, DOT supervisors and other government agents. Emergency services and the NWT Spills Hotline contact phone numbers are also included.

5.0 SPILL CONTAINMENT METHODS AND SUGGESTED MEASURES

This Spill Containment section will discuss safety, site assessment, berms on land and booms in the water.

5.1 GENERAL OVERVIEW

Speed is one important factor as it is in the first minutes during a flowing spill that can cause a large portion of the potential damage. A second important factor is safety. Safety always comes first in any spill situation and all actions must be completed in a safe manner.

The perfect situation would be to control the entire spill and to corral all of the spill volume behind berms and booms in a safe manner. However, it may not be possible to contain the entire slick and the best alternative would be that you achieve some containment and reduce the size of the spill. The larger the size of the spill, the more damage it will cause and the more opportunity for it to enter into a water body.

Another alternative is to evacuate to a safe area away from the spill zone and report the spill event to the NWT 24 Hour Spill's Hotline as soon as possible for a large spill.

5.2 SPILL CONTAINMENT SAFETY ASSESSMENT

Crews responding to a spill must have protective clothing, proper 'spark-proof' tools, reliable equipment and most importantly "clean air" to breathe.

WCB approved work clothes may be used as 'protective clothing' for a fuel spill. Spark-proof tools may be required for containment work around a gasoline spill. However during your initial safety assessment your greatest need will be for clean breathable air. Excessive fumes are dangerous.

Fumes are the fuel mixing with air rising from the spilled material. Fumes can be irritating to the eyes, nose, throat, and they can cause breathing problems, unconsciousness, and potentially death. Always work the spill site from the upwind side during the assessment. Be very aware of the wind direction and the temperature. Warmer temperatures can produce dense fumes from the spilled product.

If fumes are a problem it is essential to evacuate the area, barricade access and call for 'Special Assistance,' from DOT Environmental Affairs, the Fire Department and from Emergency Services.

5.3 SPILL SITE ASSESSMENT FACTORS

Several factors are important in the assessment of a spill for Spill Containment. Spill Containment itself is a difficult task. It can be made more difficult by:

1. the terrain,
2. the ground surface,
3. the season, and
4. the weather.

Terrain includes hills, low areas, lakeshores, riverbanks, and swamps. The ground surface means the soil and the ground cover. Sandy soils and gravel will allow for fast penetration while clay and silty soils will resist immediate soaking. Rock and pavement will allow the spill to quickly flow overland.

The season can also influence the soil and ground cover. Frozen ground will assist containment, as the fuel will not easily penetrate into the earth. Snow may also be available for building berms and can be used as an absorbent. A still, quiet, and cold day in the middle of winter can have its advantages over a warm and windy day in the summer. Fumes from fuel are more evident and more dangerous on warm days.

The weather with rain and falling snow will also cause problems in that the fuel spill could be quickly washed into a water body or covered in snow making detection of the spill difficult and dangerous. You may need to probe beneath the snow cover to find the limits of spill. **Warning: in deep snow this can be dangerous; do not work alone when probing.**

5.4 BERMS ON LAND

With these factors in mind you must address the spill flow with the equipment and materials available to you. The goal of Spill Containment is to stop or to slow the flow by placing a barrier in front of the flow to control its movement. Two effective types of barriers are berms and booms of sorbent materials. Berms are constructed with earth or snow depending on the season using heavy equipment for berms larger than 0.3 metres in height.

Hand tools can be used for smaller initial berms before the arrival of heavy equipment. Berms should be built with the excavated trench on the spill side. This allows for the plastic sheeting to be placed into the trench and weighted down with rocks or dirt and then pulled over the top of the berm and weighted down to prevent damage from the wind.

The plastic sheeting will then hold back the spill volume while the berm holds the plastic sheeting. The excavated material berm made of earth or snow is quick and simple to build.

Important: the berm material should be packed down before placing the plastic sheeting. See Figures B1 and B2, in Appendix B, for suggested construction methods. Later when equipment becomes available, you can strengthen containment with additional material being added to the downside of the initial berm.

5.5 BOOMS ON LAND

Booms are quick and easy to deploy when they are dry. The booms will need to be weighted down with rocks or anchored with 'wooden stakes' in order to start operating properly. Once wet they become very heavy. Fuel spill containment booms are made up of hydrophobic sorbent materials. These sorbents will shed water and absorb oils, fuels, and solvents.

On land, sorbent booms should be positioned in a wide and shallow V pattern with the point of the V pattern being the lowest point or down grade from the spill. If possible, a second V shaped boom should be placed down grade a short distance from the first boom in order to catch any leakage. See Figure B3, in Appendix B, for placement locations and ground orientation.

5.6 BOOMS IN THE WATER

If the spill has entered a water body, immediately consult with Environmental Affairs staff for 'Special Assistance.' However, if it is safe to do so, and on the advice of Environmental Affairs, you may deploy booms into the water. Short-term booms can be quickly constructed by tying up, existing rolled sorbent blankets cut to length, with rope.

Be aware that any large waves, rapids, white water, and large debris will damage the booms and cause loss of containment. High winds will also cause problems with spill containment.

Deploy booms in creeks and streams in the quiet water areas some distance downstream from where the spill entered the water. The spilled fuel will typically be on the surface, floating as a slick on the water. The boom may easily contain the slick where the water is still, wave action is small, and current action is weak.

In moving water, the boom should be deployed in a long curving C-shape, if possible. The middle of the C-shape, being farther downstream, will contain the majority of the fuel spill. Long ropes may be needed to maintain the C-shape from shore and to anchor the booms against the current.

Boom deployment on lakes will require extra attention, as the slick will be easily pushed by the wind. Any boom placement may require a powerboat to assist with deployment. See Figure B4, in Appendix B, for water placement locations and stream orientation.

6.0 SPILL CLEAN-UP METHODS AND SUGGESTED MEASURES

This Spill Clean-up section will discuss safety assessment, pumping and scooping, spill clean-up work methods and spill clean-up work guidelines.

6.1 GENERAL COMMENTS

This Spill Clean-up section will deal with spills on land in winter and in summer. Special conditions will prevail with fuel spills in water or for spills on an icy river or lake. Due to the special nature of water, frozen or fresh, you will need 'advice and Special Assistance' from Environmental Affairs.

6.2 SPILL CLEAN-UP SAFETY ASSESSMENT

Please refer to Section 5.2, Spill Containment Safety Assessment for additional details. Typically, due to size or location, some fuel spills may require a vacuum truck and heavy 'earth moving' equipment. Small spills may only require a shovel and a wheelbarrow. Always make safety your first priority.

The following are general warnings for working around spill sites and with heavy equipment:

- ◆ Always work with a partner and use a buddy system for safety.
- ◆ Be aware of fumes and always stay upwind from the spill area.
- ◆ Locate and secure spill source and any ignition sources.
- ◆ Fuel soaked sorbents are flammable. They may ignite and burn without warning.
- ◆ Place all spent sorbents into sealed drums prior to transport to disposal site.
- ◆ Use extreme caution when working with heavy 'earth moving' equipment. As they can provide an ignition source. Also they can be a danger to ground personnel.

6.3 PUMPING AND SCOOPING

Spill Clean-up for diesel and gasoline fuels is a two-step process after containment. Both steps involve the physical removal of the spilled liquid and any material that is soaked with that liquid. Both of the steps are difficult, dangerous and imperfect.

Step one: Use whatever means available and practical to pump up the bulk of the liquid and as much of the liquid/solid mixture of the fuel and the soil/snow/water as possible. The pumped liquid and mix is stored in tanks for transport to a refinery. Any type of pumping or removal of spilled liquids will involve 'Special Assistance' that will be dispatched by Environmental Affairs staff.

Step two: Using earth moving techniques to scoop and remove the bulk of the liquid/soil/snow/water mixture that cannot be pumped. This scooped material, a mixture of some liquid and mostly solid, may be sent to a soil farm.

6.4 SPILL CLEAN-UP WORK METHODS

The spill clean-up effort can be large. The fuel soaked soil, snow, or ice can now become the storage zone for many future problems. Take care to remove as much of the affected soil and snow as possible as a small percentage of the spill will always remain behind as a residue.

Leakage can be a problem during excavation of the affected area. For an effective clean-up job, 100% of the affected material and pollutant must be picked up for disposal. The difficulty with any kind of clean-up that requires 100% removal is that the material soaked with a pollutant must be picked up without any secondary spillage. There is no point in picking up fuel soaked soil or sorbent blankets and allowing them to leak and 'drip' all over the equipment and the ground that was just cleaned. Such secondary leakage will only hinder clean-up efforts and potentially expand the contamination area.

Important: To stop the spread of secondary leakage you may need to set up a confined area for the loading of trucks and establish a travel zone for excavating equipment. All of these areas may need a re-clean after the main clean-up effort is complete. See Figure C1, in Appendix C, for a spill clean-up scenario showing work zone set-up. This scenario will assist you in reducing the area that may require re-cleaning.

Public Works and Government Services Canada has quoted that a single gallon, 4.55 litres, of diesel fuel can make one million litres of water unfit for human consumption. To prevent any future problems it is important to remove all 100% of the contaminated materials cleanly. Any type of excavating of fuel soaked soils or snow for transport to a disposal site will involve special attention on your part.

6.5 SPILL CLEAN-UP WORK GUIDELINES

The following are guidelines for working to excavate fuel soaked sorbents, soils, snow and boom removal:

- Any removal or replacement of sorbent materials or booms will require that the new sorbent unit be placed down grade or downstream from the spent unit. This will prevent spillage and escape of excess pollutants contained by the first unit.
- When removing fuel soaked sorbent materials from a spill be cautious of their weight. Always use proper 'back-saving' work procedures and use equipment for pick-up whenever possible.
- Be cautious of spillage and leaks from over soaked sorbents. A wet fuel soaked sorbent material blanket or boom will now be many times heavier than when dry. And the very effort of removing it from the spill will cause leaks from the sorbent.
- Always work from good ground to bad. Push, scrape or shovel the soaked ground and snow ahead into the spilled area before pick-up by excavator or shovel. Be aware of the footing where you are standing. Always stand on solid clean ground. Excavate all suspect fuel soaked soil and snow before advancing.
- Some fuels will easily penetrate into the soil and ice leaving a soft muck or mulch, which will not support any weight. Deep snow soaked with fuel can behave in a similar manner. Probe the snow and check the ice for safety and to monitor weight carrying capacity. Always work with a partner, as this can be dangerous.
- Establish a short travel distance to the collector unit, dump truck or wheelbarrow. This will minimize spillage and avoid recontamination of the cleaned area. The affected area may require re-cleaning if there has been excess spillage. Any berm material, soil or snow, including the plastic liner will also require disposal.
- Establish eye contact with the equipment operator when in close proximity to the equipment and before crossing their line of travel. Never work behind moving equipment. Avoid sudden movements. Always look before you step. If you do not know where the equipment is, at all times, then how does the equipment operator know where you are?

7.0 MAINTENANCE CAMP SITE DESCRIPTION

The James Creek Facility is located at Km 14 of NWT Highway No. 8, see Appendix D.

7.1 INVENTORY OF SPILL RESPONSE EQUIPMENT

The James Creek Facility is a contractor-operated seasonal camp which operates mainly in the winter. Several highway maintenance camps are owned by the Government of the Northwest Territories but operated by a contractor. The inventory of heavy equipment onsite can vary according to the needs of the highway maintenance section and the volume of work being completed by the contractor. The list of 'on-site stand-by' vehicles and equipment noted the 'equipment list' is available on short notice.

Appendix E details the available heavy equipment and a tools list. The exact equipment and tools necessary for the containment and clean-up of a spill will depend on the size of the spill, the material spilled, and the proximity of near-by water bodies. Typically, where large amounts of fuel are stored, the Responsible Person would be aware of the requirements of 'on-site stand-by' equipment.

7.2 POTENTIAL FUEL SPILL SOURCES

The James Creek Facility stores petroleum products on site as described below:

- ◆ One 100,000 L diesel storage tank and dispensing system. Tank is double walled.
- ◆ Vehicle Storage Yard. Parking for Fleet vehicles and equipment within fence line.
- ◆ Employee Parking Lot. Parking stalls for employee and visitor vehicles.
- ◆ Main Repair Shop. Routine vehicle and equipment maintenance activities complete with appropriate fluid containment measures.

7.3 HEALTH AND SAFETY TRAINING

All required staff, DOT personnel, and field employees are provided with training in:

- ◆ WHMIS
- ◆ First Aid
- ◆ Safety Awareness
- ◆ Hazard Identification

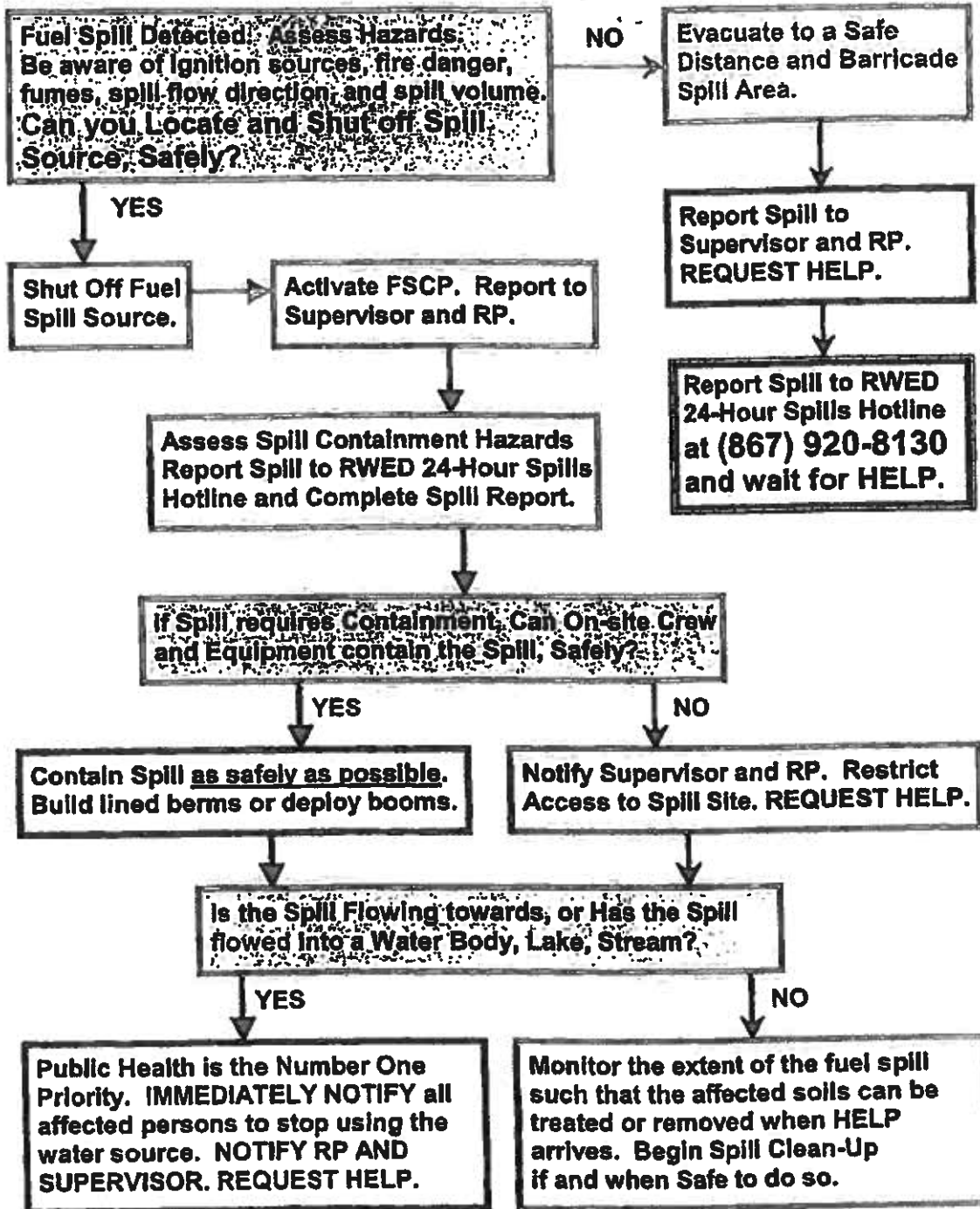
All staff must be familiar with this Fuel Spill Contingency Plan and its amendments by the end of December 2003. The required staff will be provided with Fuel Spill Prevention and Fuel Spill Clean-up Methods Seminars as they become available. It is recommended that all fuel dispensing station and storage depot staff will practise the use of absorbents for spill clean-up and the deployment of spill containment booms every second year.

Appendix A

Initial Spill Response

Initial Spill Response Flowchart.....	Page 1 of 3
Emergency Spill Response Sequence.....	Page 2 of 3
Emergency Contact Phone Numbers.....	Page 2 of 3
Fuel Spill Reporting Form.....	Page 3 of 3

FUEL SPILL CONTINGENCY PLAN – INITIAL SPILL RESPONSE FLOWCHART



EMERGENCY SPILL RESPONSE CHECKLIST

- 1) Activate the Initial Spill Response Flowchart shown in Appendix A on Page 1.
- 2) Ensure the safe containment of the spill or the safe evacuation of the spill area.
- 3) Ensure measures are taken to protect public health and safety.
- 4) Report to your Supervisor and your RP for assistance.
- 5) Contact the NWT 24 Hour Spill's Hotline at: (867) 920-8130 and report spill.
- 6) Fill out the "Fuel Spill Report." – see Appendix A on Page 3.
- 7) Initiate 'spill clean-up measures' through other agencies or resources if necessary.
- 8) Follow through on the proper disposal of spill contaminants.
- 9) Conducting follow-up reports and activities to assist in the closing of the spill file.

EMERGENCY PHONE LIST – CENTRAL REPAIR FACILITY

<u>Name</u>	<u>Position</u>	<u>Office</u>
Mr. Bruce Krutko	Highway Foreman	952-2279
Mr. Gurdev Jaggel	Regional Superintendent	777-7348

EMERGENCY CONTACT LIST – FUEL SPILL REPORT

<u>Department</u>	<u>Phone or Fax</u>
NWT SPILLS HOTLINE PHONE	Phone: (867) 920-8130
NWT SPILLS HOTLINE FAX	Fax: (867) 873-6924
DOT Environmental Affaires Manager	Phone: (867) 873-7063
DOT Environmental Affaires Fax Line	Fax: (867) 920-2565

OTHER EMERGENCY NUMBERS

<u>Emergency Services</u>	<u>Phone</u>
Fort McPherson FIRE Contact Number	952-2222
RCMP – Fort McPherson	952-1111
Fort McPherson Health Centre	952-2586

CONTRACTORS AVAILABLE FOR ASSISTANCE

Dinjii Zhuh Trucking Ltd	(867) 952- 2440
James Ross	Cell: (780) 9406302



Fuel Spill Report



Reporting Date 4	Date and Time of Spill (if known)	RWED Spill Number (ask for one)
Area Description or Location/Map Co-ordinates of Spill (if known) and Direction if moving E		
Party Responsible for Spill (if known) C		
Product Type (if known) and Estimated Spill Quantities (Provide Metric Weights/Volumes if possible) D		
Cause or Actions Leading to Spill F		
Is Spill Terminated or Continuing? F		
Extent of Contaminated Area (Visual Estimate of Area in Square Metres) G		
Factors Affecting Spill or Recovery - Temperature, Wind, Snow, Ice, Terrain, Buildings, etc. H		
Describe Containment - Natural, Dykes, Berm and Liner, Booms with Spill Slicks, or Other or No Containment Possible J		
Action (if any) Taken or Proposed to Contain, Recover, Clean up or Disposal of Contaminated Soils K		
Hazard to Persons or Property or Environment - Fire, Drinking Water, Threat to Fish or Wildlife. L		
Warning of Affected Communities and Persons - Obtained Permission for Soil Disposal/Transport M		
Do you require assistance? If yes please describe N		
Comments, Actions, or Recommendations O		
Reported by: P	Position, Employer, Location	Telephone:
Reported to: Q	Position, Employer, Location	Telephone:

Report to "NWT Spills Hotline:"
Report to "Environmental Analyst:"

Yellowknife Phone: (867) 920-9130;
Yellowknife Phone: (867) 873-7103;

Yellowknife Fax: (867) 873-6924
Yellowknife Fax: (867) 920-2565

Appendix B

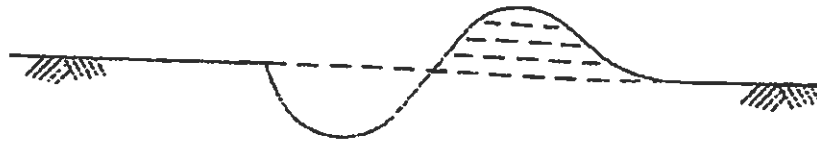
Spill Containment Suggested Methods and Practise

Suggested Containment Methods for Fuel Spills:

- B1: Earth and Snow Berm Construction Scheme – Hand Tools**
- B2: Earth and Snow Berm Construction Scheme – Equipment**
- B3: Berm Placement and Boom Deployment on Land**
- B4: Boom Deployment on Water (Creek example)**

Spill Side

Down Side



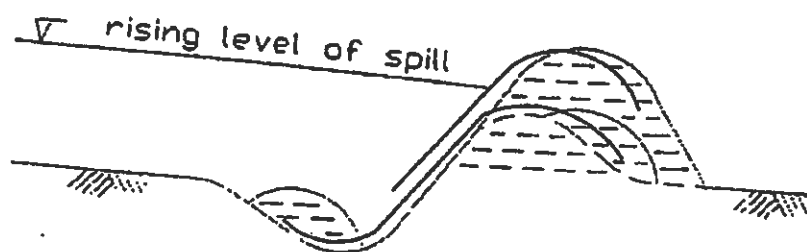
1. Excavate and build a compacted berm on downstream side.



2. Spread plastic sheeting to cover bottom and to cover top.



3. Place rocks or fill to hold down plastic sheeting



4. Extra sheeting and fill can build berm higher if needed

Appendix B: Simple Berm Construction Scheme - Hand Tools

Spill Side

Down Side



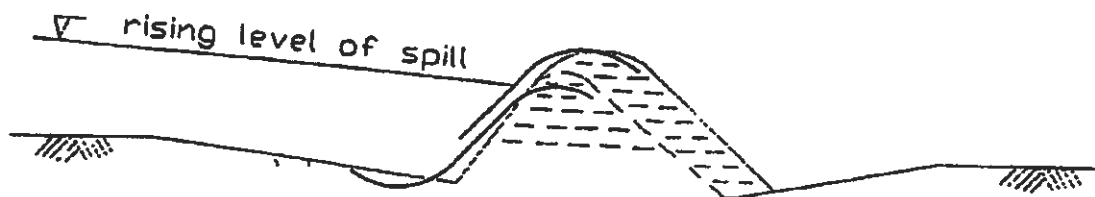
1. First Pass: Excavate shallow trench and cast low.
2. Second Pass: Scrap and clean to cast high windrow.
3. Third Pass: Compact windrow with track.



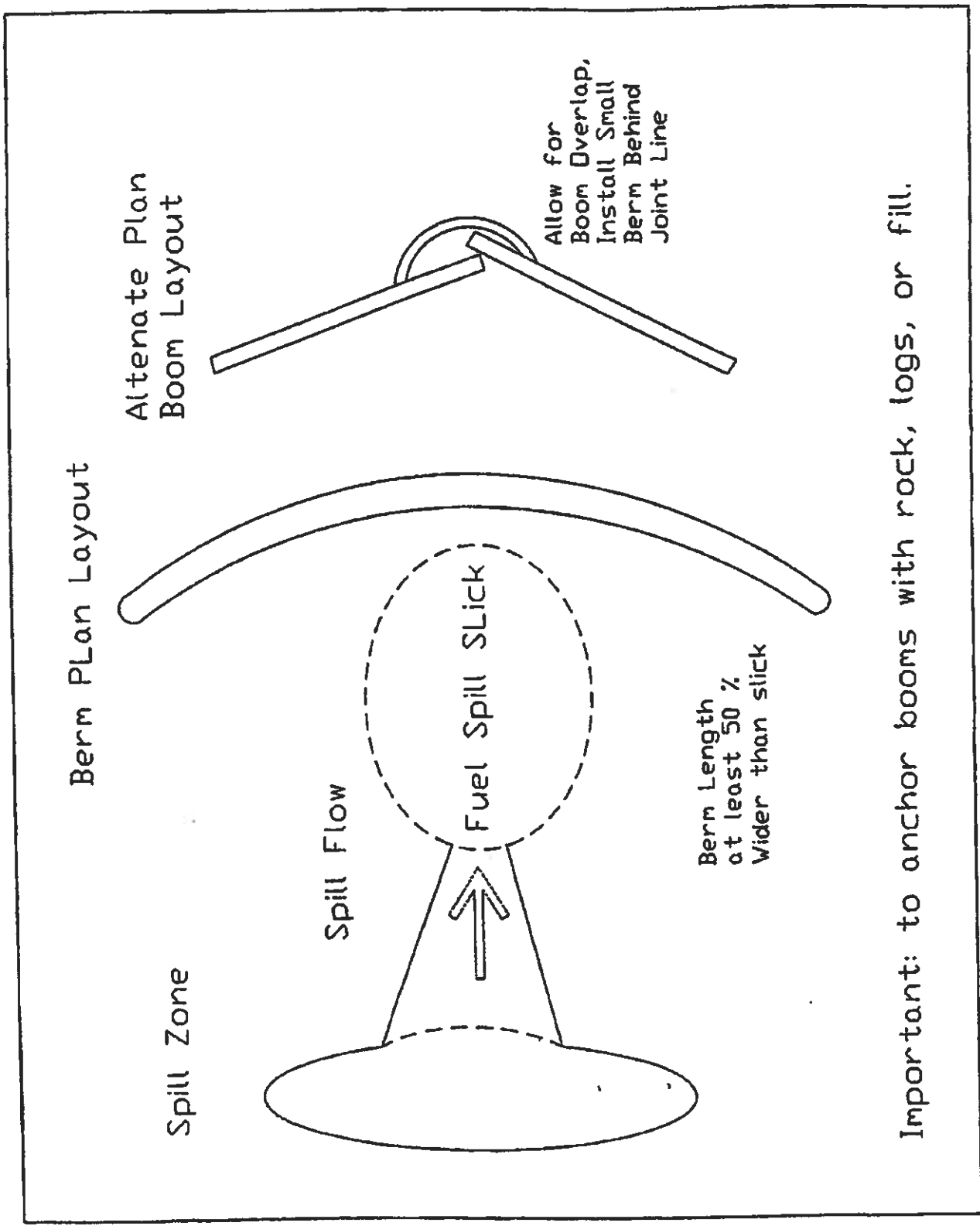
4. Spread plastic sheeting to cover bottom and to cover top.



5. Fourth Pass to cover bottom of plastic.
6. Fifth Pass to cover top of plastic.



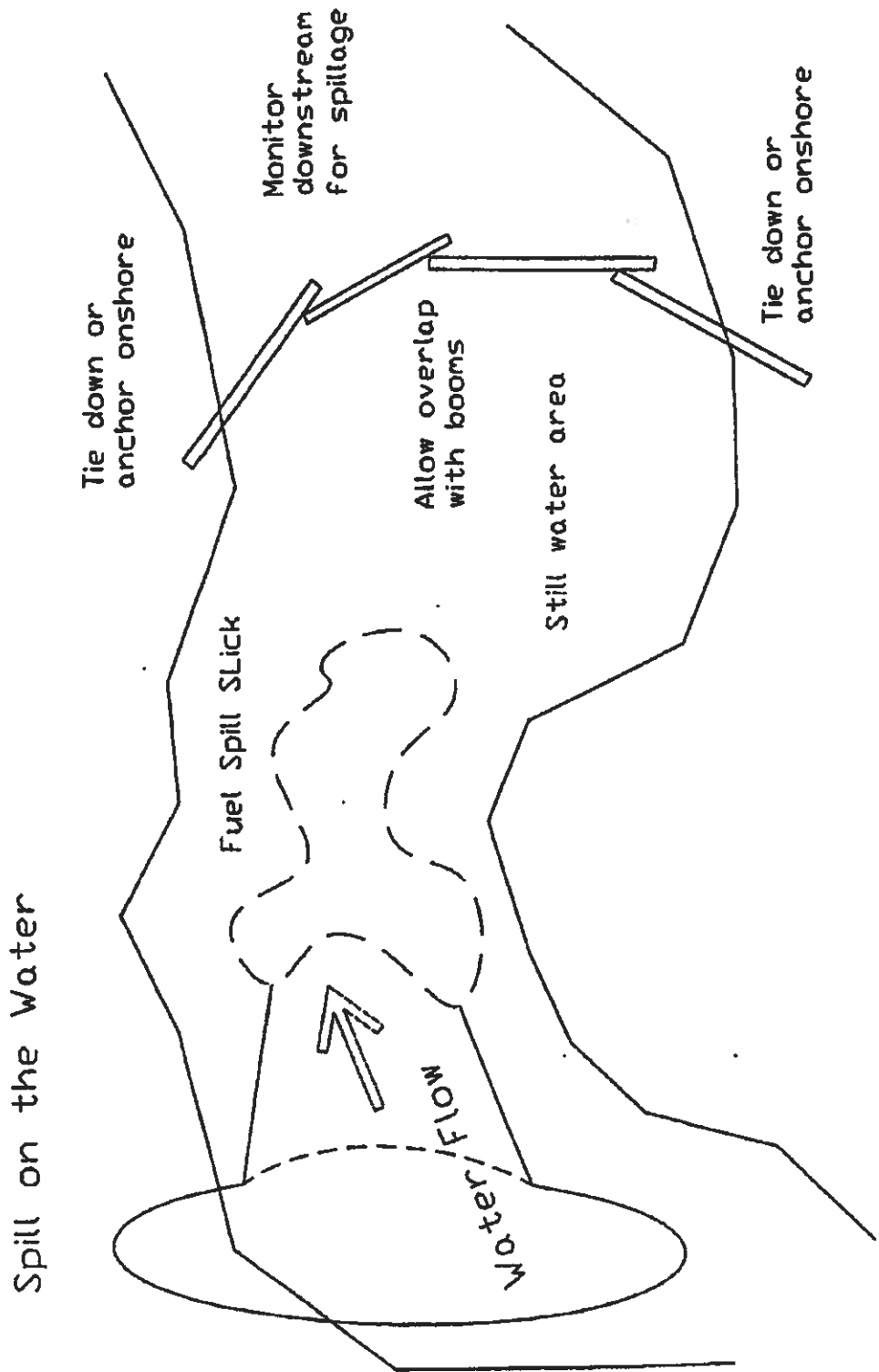
7. Extra sheeting and fill can build berm higher if needed.



Important: to anchor booms with rock, logs, or fill.

Appendix B: Berm and Boom Placement on Land

Boom Deployment Plan Layout



Important: to anchor booms on shore and to each other

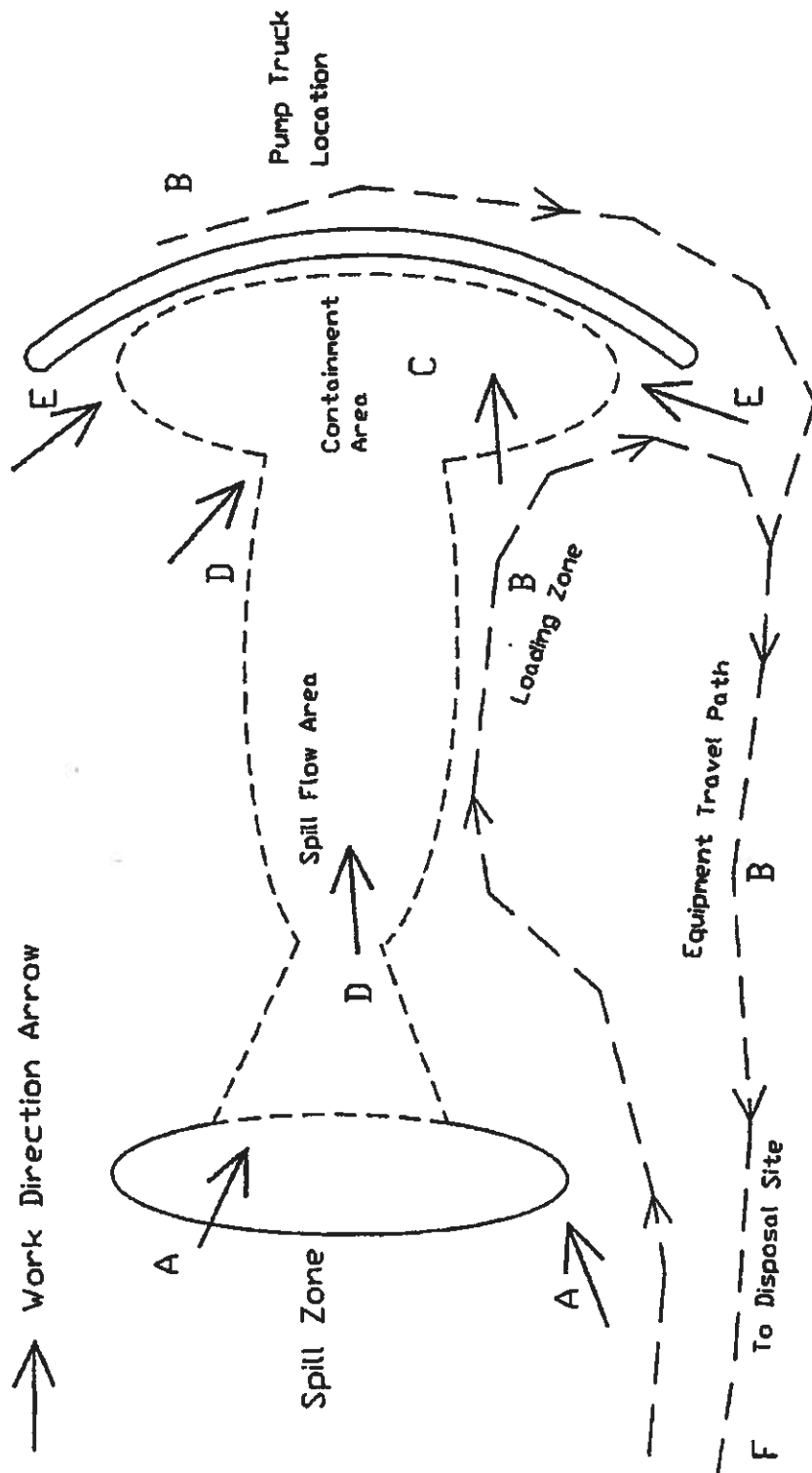
Appendix C

Spill Clean-up Suggested Method and Practise

Suggested Clean-up Method for Fuel Spills:

C1 Pump and Scoop Scheme complete with Designated Travel and Loading Zones

Pump and Scoop of a Berm Contained Spill



- A: Push fuel soaked soils forward into spill area before pick-up
- B: Designate Equipment Travel Zones and Loading Areas
- C: Pump out Max. Fluid from Spill Containment as possible
- D: Scrape out Fuel soaked soils from Spill Flow Area
- E: Removal of affected soils, plastic liner, and berm soils for Disposal
- F: Final Clean-up and Reclean of affected soils at loading and travel zones

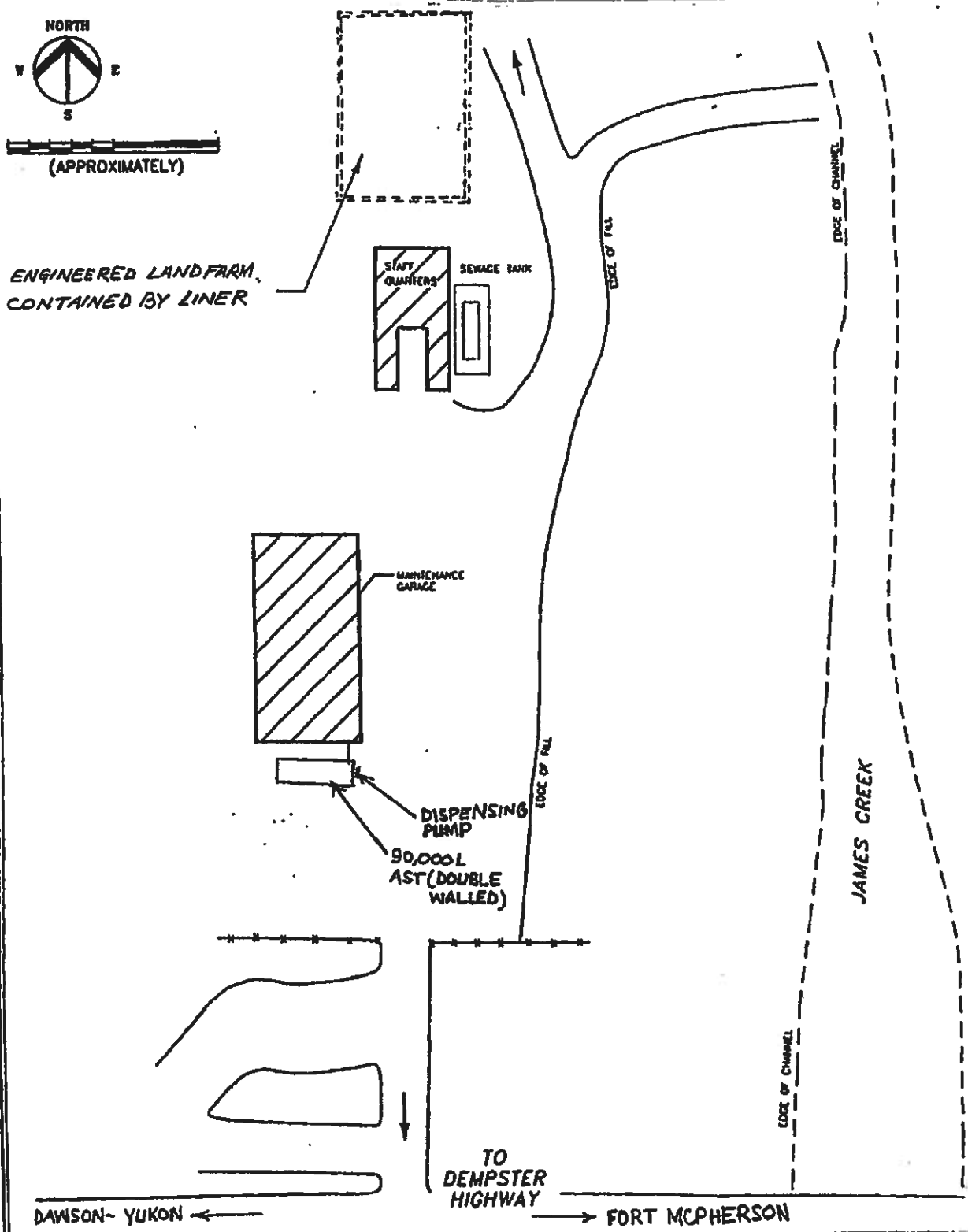
Appendix C: Pump and Scoop Sequence

Appendix D

GENERAL SITE MAPS AND SKETCHES

List of Maps

D1. Site Plan of James Creek Camp Facilities



SURVEY AND DRAWINGS BY OTHERS	TITLE:	SITE PLAN	PROJECT:	FSCP
	SITE:	JAMES CREEK CAMP	SCALE:	N.T.S.
	DEPT.:	TRANSPORTATION	DATE:	APR. 19, 2004
			FIGURE NO.:	D1A

Appendix E

EQUIPMENT LIST

List of Equipment available for Fuel Spill Incident

- James Creek Camp Equipment Inventory
- Contractor "As and When" Equipment List
- Spill Kit List

Equipment List

The following is a typical list of equipment available at the James Creek Camp:

- ◆ Pick up trucks, usually two available for use

Additional equipment and materials is available on an "As and When" basis from local and area contractors including the following:

- ◆ Tandem truck complete with snowplow and sanding attachments
- ◆ Motor grader – Cat 140H type
- ◆ Rubber tired loader – Cat 966 type – 2.0 cubic metre capacity
- ◆ Crawler Tractor – Cat D7
- ◆ Sand and Gravel
- ◆ Miscellaneous portable equipment: hand compactors, chainsaws etc.
- ◆ Various hand tools including round and flat shovels, picks, rakes, pry bars, brooms, squeegees etc.

Pending Spill Kit List

The following is a list of Universal Spill Kits as manufactured by Can-Ross for use in cleaning up fuel spills. The Can-Ross Environmental type of hydrophobic sorbent materials will absorb oils, hazardous chemicals, caustics, solvents, and fuels without absorbing water. The kits come in various sizes from the Acklands Grainger:

- ◆ 30 L capacity Pick-up Truck size
- ◆ (optional) 240 L capacity extra large size

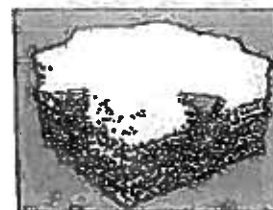
SPILL CONTROL

LIQUITROL GENERAL MAINTENANCE UNIVERSAL SORBENTS (NON-SELECTIVE)

Will absorb most hazardous and non-hazardous liquids. Universal sorbents eliminate the guesswork regarding proper sorbency selection during emergency spill clean-up.



Economy Cat. No.	Premium Cat. No.	High Performance Cat. No.	Description	Size
Hazardous Materials				
---	BIGU1	---	Pillows	5' x 12'
BIGTU4	BIGU4	---	Pillows	12' x 13'
BIGTU2	BIGU2	---	Socks	3' x 4'
BIGTU210	BIGU210	---	Socks	3' x 10'
---	BIGU5	BIGSBS2-55	Booms	5' x 10'
---	---	BIGS2PL50+	Pads	16" x 18" d.w.
BIGTU100	---	---	Pads	17" x 18"
BIGTU200	---	---	Pads	17" x 18"
---	BIGU100	---	Pads	16.5" x 20" d.w.
---	BIGU200	---	Pads	16.5" x 20" s.w.
---	---	BIGSBS2-75	Pads	18" x 18" d.w.
---	BIGU180	---	Rolls	18" x 115' d.w.
---	---	BIGSBS2-90	Rolls	32" x 180' d.w.
---	BIGS2PL50+	---	Perforated Roll	18" x 18" x 3/8"
---	BIGU-8	---	Particulate	10 lbs.



U100

RAILROAD MATS

Cat. No.	Size
BIGM147	58" x 80'
BIGM148	30" x 80'
BIGM149	18 x 80'
BIGM151	58" x 60' & 30" x 80'

LIQUITROL SPILL KITS

Universal Spill Kits (SK-U Series) will absorb most hazardous chemicals (acids, caustics, solvents, oils and fuels). Oil Spill Kits (SK-O Series) will absorb oils, fuel, and solvents, but will not absorb water (hydrophobic).

Cat. No.	Description	Sorbent Capacity
Universal Spill Kits (SK-U Series)		
BIGSK-UHND	Nylon Carry Bag	17 L
BIGSK-UHND-D	Nylon Carry Bag, Includes Drain Cover	17 L
BIGSK-U5	Polyethylene Pail, 5 Gallon	20 L
BIGSK-UCAB	Metal Wall Cabinet, 15" x 30" x 10"	33 L
BIGSK-U14	Polyethylene Pail, 14 Gallon	45 L
BIGSK-U30	Polyethylene Drum, 30 Gallon	98 L
BIGSK-UL	Spill Locker, 42" x 30" x 28"	215 L
BIGSK-UL-W	As SK-UL with Weather-Strip	215 L
BIGSK-UL-C	As SK-UL with Castors	215 L
BIGSK-UL-WC	As SK-UL with Castors and Weather-Strip	215 L
BIGSK-UOVP	Polyethylene Overpack Drum	215 L
BIGSK-U79	Polyethylene Overpack Drum	275 L
Oil Spill Kits (SK-O Series)		
BIGSK-OHND	Nylon Carry Bag	15 L
BIGSK-OHND-D	Nylon Carry Bag, Includes Drain Cover	15 L
BIGSK-O5	Polyethylene Pail, 5 Gallon	20 L
BIGSK-OTRK	Nylon Carry Bag for Truck Use	30 L
BIGSK-O30	Polyethylene Drum, 30 Gallon	90 L
BIGSK-OL	Spill Locker, 42" x 30" x 28"	240 L
BIGSK-OL-W	As SK-UL with Weather-Strip	240 L
BIGSK-OL-C	As SK-UL with Castors	240 L
BIGSK-OL-WC	As SK-UL with Castors and Weather-Strip	240 L
BIGSK-OOVP	Polyethylene Overpack Drum	240 L
BIGSK-O79	Polyethylene Overpack Drum	305 L



E1
E2
E3

SPILL KIT ACCESSORIES

Cat. No.	Description	Size
BIGGZ-DRCV	Drain Cover	36" x 36" x 1/16"



Search

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have 0 Items in your Shopping Cart

Sort by Category | NONE

Log In
Forgot your password? [click here](#)

Item Description

Oil Spill Kits (SK-O Series) will absorb oils, fuel, and solvents, but will not absorb water (hydrophobic). Nylon Carry Bag for Truck Use. 30 liter sorbent capacity

Acklands - Grainger
Catalog part Number: **BIGSK-OTRK**

Brand Name: Can-Ross Environment

Manufacturer Model No.: SK-OTRK

Manufacturer Name.: Can-Ross Environment

Unit of Measure: KT

Price: \$125.34



To add an item to an order, enter a quantity in the field provided and click "Add items to order".

1

ADD ITEMS TO ORDER

Technical Specifications

Capacity	30 L
Description	Nylon Carry Bag for Truck Use
Type	Oil Spill Kits (SK-O Series)
Long Description	Oil Spill Kits (SK-O Series) will absorb oils, fuel, and solvents, but will not absorb water (hydrophobic). Nylon Carry Bag for Truck Use. 30 liter sorbent capacity
Brand Name	Can-Ross Environment

In the Catalog
Catalog Page:
See all the items on page 1431

Notes about product

Non Special Notes

3
E1



search

keyword catalog part # search part #

You have 0 items in your Shopping Cart.

NONE

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Item Description

Oil Spill Kits (SK-O Series) will absorb oils, fuel, and solvents, but will not absorb water (hydrophobic). Polyethylene Drum, 30 Gallon. 90 liter sorbent capacity

Acklands - Grainger Catalog part Number: **BIGSK-O30**

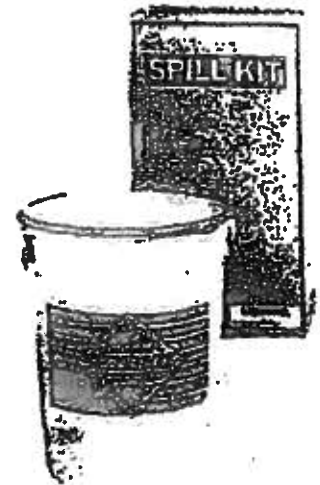
Brand Name: **Can-Ross Environmental**

Manufacturer Model No.: **SK-O30**

Manufacturer Name.: **Can-Ross Environmental**

Unit of Measure: **KT**

Price: **\$454.12**



To add an item to an order, enter a quantity in the field provided and click "Add items to order".

1

ADD ITEMS TO ORDER

Technical Specifications

Capacity	90 L
Description	Polyethylene Drum, 30 Gallon
Type	Oil Spill Kits (SK-O Series)
Long Description	Oil Spill Kits (SK-O Series) will absorb oils, fuel, and solvents, but will not absorb water (hydrophobic). Polyethylene Drum, 30 Gallon. 90 liter sorbent capacity
Brand Name	Can-Ross Environmental
Web Image Name	BIGSK-O30.jpg

In the Catalog # Catalog Page: See all the items on page 1431

Notes about product

Non Special Notes

E2



Search

keywords | catalog part # | manual part #

You have 0 items in your Shopping cart.

Quantity: NONE

Forgot your password? [Click here](#)

Item Description

Oil Spill Kits (SK-O Series) will absorb oils, fuel, and solvents, but will not absorb water (hydrophobic). Spill Locker, 42 inch x 30 inch x 29 inch, 240 liter sorbent capacity

Acklands - Grainger Catalog part Number: **BIGSK-OL**
 Brand Name: **Can-Ross Environmental**
 Manufacturer Model No.: **SK-OL**
 Manufacturer Name.: **Can-Ross Environmental**
 Unit of Measure: **KT**
 Price: **\$1,238.84**

To add an item to an order, enter a quantity in the field provided and click "Add items to order".

Technical Specifications	
Capacity	240 L
Description	Spill Locker, 42 x 30 x 29
Type	Oil Spill Kits (SK-O Series)
Long Description	Oil Spill Kits (SK-O Series) will absorb oils, fuel, and solvents, but will not absorb water (hydrophobic). Spill Locker, 42 inch x 30 inch x 29 inch, 240 liter sorbent capacity
Brand Name	Can-Ross Environmental
Web Image Name	BIGSK-OL.jpg

In the Catalog
 # Catalog Page:
 See all the items on page 1431

Notes about product
 Non Special Notes

3

Appendix F

Fuel Spill Contingency Plan Reportable Volumes, Logic, and Prevention

Table One – Reportable Volumes of Spill Material

Figure One – Fuel Spill Contingency Plan (Logic)

**Potential Spill Incidents - Scenario Consequences and Prevention
Worst Case And Best Case Scenarios for the following:**

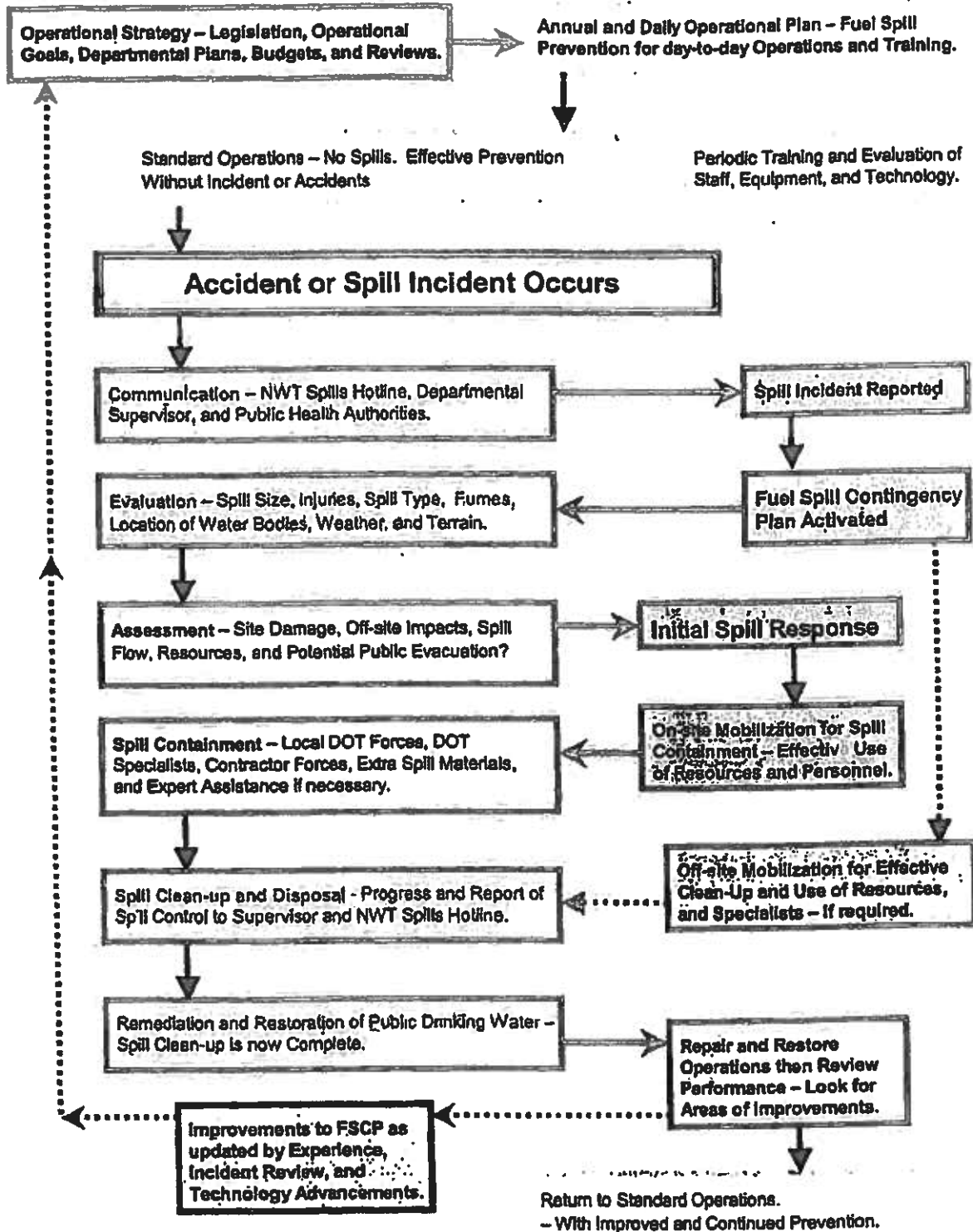
- **Fuel Tanker Involved In Accident near Water Body**
- **Refuelling of Vehicles Incident**
- **Vehicle Storage and Operations Incident**
- **Fuel Storage Tank Leakage Incident**

Table 1.0 Reportable Volumes of Spilled Material

Please note: that the **Bolded** Items are very dangerous and will require outside professional assistance. Evacuate all personnel to a safe distance, **Barricade** the area and **Report** the 'Spill' immediately.

TDGA Class	Description of Contaminant	Amount Spilled
1.0	Explosives	Any amount
2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 L
2.2	Compressed gas (non-corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100 L
2.3	Compressed gas (toxic)	Any amount
2.4	Compressed gas (corrosive)	Any amount
3.1, 3.2, 3.3	Flammable liquid (i.e. Gasoline, Diesel)	100 L
4.1	Flammable solid	25 kg
4.2	Spontaneously combustible solids	25 kg
4.3	Water reactant solids	25 kg
5.1	Oxidizing substances	50L or 50 kg
5.2	Organic Peroxides	1 L or 1 kg
6.1	Poisonous substances	5 L or 5 kg
6.2	Infectious substances	Any amount
7.0	Radioactive	Any amount
8.0	Corrosive substances	5 L or 5 kg
9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50L or 50 kg
9.1 (in part)	PCB mixtures of 5 or more ppm	0.5 L or 0.5 kg
9.2	Environmentally hazardous	1 L or 1kg
9.3	Dangerous wastes	5L or 5 kg
None	Other contaminants	100L or 100 kg

Figure 1 - Fuel Spill Contingency Plan (Logic)



Potential Spill Incidents – their consequences and possible preventative measures:

➤ Fuel Tanker involved in an Accident:

A fully loaded fuel tanker has an accident with the possibility of spilling fuel over a wide land area and into a water body. The accident could happen without knowledge of DOT or the Contractor. Other vehicles and individuals could also be involved. Injuries may have occurred that require both first aid and emergency assistance.

Consequences:

- a) **Best case scenario** – The first person on-the-scene reports that: the fuel tanker is not significantly damaged and is not leaking. The other vehicles in the accident are not damaged, and no critical or serious injuries. No fuel spill is visible and no fuel slick is visible in any nearby water bodies. Environmental damage potential is very low.

First Response Measures in Best Case Scenario:

First aid for the injured first. Any recovery efforts for the 'fuel tanker' may include pumping the existing fuel load into recovery tanks or to another fuel tanker prior to the removal of the tanker truck from the accident scene. The accident scene may be closed to regular traffic until cleanup is completed. Report accident to police. Call in emergency services as required for recovery assistance. Fuel spill crew on standby.

- b) **Worst case scenario** – The first person on-the-scene has called for help. The situation is serious. The 'fuel load' has leaked all its contents with a visible fuel slick on land and a visible slick heading towards a water body. Injuries are severe and life threatening. Vehicle damages are total. Tanker is leaking. Emergency crews are needed to help the injured. A serious danger from fumes, fire and explosion hazard exists at the accident site. Environmental damage potential is very high.

Emergency Response Measures in Worst Case Scenario:

Emergency services **MUST** be called to report accident and the fuel spill danger. The accident area must be barricaded from regular traffic. Evacuate all persons to a safe distance – **IMPORTANT** – only move the injured if absolutely necessary to avoid any extreme or dangerous situation. Be aware of onsite danger to fire, explosion, the effects of fumes, and the flow direction of fuel slick. See Initial Spill Response Flowchart on Page 1 in Appendix A.

Need to dispatch Police, Fire and Rescue crews immediately for the accident situation. Call Spills Hotline to request spill specialists with equipment and fuel spill containment materials. Call in other assistance as required. If the water body is a Drinking Water Source then all affected persons must be notified to the danger.

***Please note:** This 'extreme' worst case scenario would also require assistance from the Federal Environment Ministry as well as the Department of Fisheries and Oceans. The authorities of any nearby communities must be notified immediately as Alternate water sources, including the 'trucking-in' of potable water, may be required to address public health concerns. An extreme situation may require that any nearby affected communities be evacuated.*

➤ **Fuel Tanker Involved in an Accident (continued):**

Preventative Measures:

- i) Safe driving procedures would be implemented for all fuel delivery drivers and operators.
- ii) Coordination and communication would be implemented between DOT, the Contractor, and the fuel supplier to include: routes, departure times, check-in times, arrivals, and a progress update protocol to report any incidents or delays.
- iii) DOT personnel and contractor crews should be prepared to mobilize to assist at the scene, to contain the spill and to begin clean-up, as the on-site crew may be the closest respondents to the spill.
- iv) The fuel supply company will have a Fuel Spill Contingency Plan, complete with a Fuel Spill Containment Strategy, in place at all times.
- v) All crew and transport vehicles will be stocked with spill containment equipment.
- vi) All crew and transport vehicles will be equipped with radio communication.
- vii) All personnel will be trained in emergency first aid, radio communications, spill reporting procedure, the use of spill containment gear, and the safe spill cleanup methods.
- viii) All personnel would be required to render assistance to any specialized personnel which could be dispatched to effect containment, to complete the cleanup and to complete the recovery efforts.

➤ **Refuelling of Vehicles Incident:**

Refuelling hose could break, spring a leak, fall out of the gas receptacle, or the tank could be overfilled, thereby spilling fuel on the refuelling area.

Consequences:

- a) Best case scenario, small puddles of fuel affecting a small zone in the refuelling area.
- b) Worst case scenario, hose breaks off at truck, spraying large amounts of fuel over a large area resulting in a slick flowing steadily from truck.

Preventative Measures:

- i) All refuelling should occur in an area well back from environmentally sensitive areas such as: residential land, gardens, play grounds, wetlands, swampy areas, sewer drains, and ditches. Crews should be aware of emergency shut-offs and closure valves.
- ii) The refuelling site will be stocked with a complement of spills management material.
- iii) To reduce spillage leak spills – refuelling personnel should use drip pans.
- iv) All fuel storage tanks should be located within a bermed enclosure complete with liners and/or compacted dykes capable of holding at minimum 110% of the fuel storage volume.

> Vehicle Storage and Operations Incident:

Vehicles could leak fuel while in operation or during overnight storage. Vehicles could experience mechanical problems, discharging fluids at the storage area or in various amounts within the work operations area.

Consequences:

- a) At best, small puddles of fuel dropped at storage site.
- b) At worst, the entire contents of the vehicle tank could be discharged.

Preventative measures:

- i) Vehicles should be stored in an area well back from environmentally sensitive areas.
- ii) The site should be stocked with a complement of spills management materials.
- iii) Regular visual checks should be carried out to ensure no spills have occurred.
- iv) All storage tanks should be located at a safe distance from the ordinary high water mark.
- v) Crews should be aware of emergency shut off valves for the tanks.

> Fuel Storage Tank Leakage Incident:

Fuel could leak from the tanks during refilling, fuel could leak from the tanks while standing, or leak could be caused by vandalism.

Consequences:

- a) At best, small puddles of fuel.
- b) At worst, the entire contents of the tank could be discharged.

Preventative Measures:

- i) Regular visual checks should be carried out to ensure no spills have occurred.
- ii) All tanks should be stored at a safe distance from environmentally sensitive areas.
- iii) Site should be stocked with a minimum complement of spills management materials.
- iv) Crews should be aware of emergency shut off valves for the tanks.
- v) All tanks should be enclosed by adequate berms and/or dykes.

PETROLEUM PRODUCTS: REFUELING, STORAGE, HANDLING AND TRANSPORT

DESCRIPTION

Construction uses many petroleum products (like asphalt, diesel fuel and grease). As such, petroleum products and wastes are handled, and stored on the construction site. Fuels and petroleum waste through accidental spills or discharges can substantially damage the environment. This is of most concern for fuels (gasoline and diesel) which can be temporary stored in significant quantities on site. The proper transportation, storage, and handling of fuels and petroleum wastes can reduce the risk of environmental damage.

This Best Practice includes:

1. Fuel transport, storage and refueling
2. Petroleum waste transport and storage

This Best Practice does not include spill protection or responses, see Spills Prevention and Emergency Response.

KEY TERMS AND ACRONYMS

- **Petroleum products:** This includes gasoline, diesel, oils, greases, hydraulic and transmission fluids, lubricants, and asphalt.
- **WHMIS**
- **TDG**

APPLICABLE TERRITORIAL LEGISLATION

- *Environmental Protection Act, 1988*
- *Used Oil and Waste Fuel Management Regulations, 2004*

APPLICABLE FEDERAL LEGISLATION

Applicable legislation includes:

- *Fisheries Act, 1985*
- *Transportation of Dangerous Goods Act, 1992*
 - *Canadian Environmental Protection Act, 1999*
 - including Storage Tank Systems for Petroleum Products and Allied Petroleum Products SOR/2008-197
- *Hazardous Products Act, 1985*
- *Spill Contingency Planning and Reporting Regulations 2007*

FUEL TRANSPORTATION, STORAGE AND HANDLING

3. Refuelling

- Fuels should only be handled by personnel who are trained and qualified in handling these materials in accordance with manufacturers' instructions and government regulations.
- Refuelling operations shall be supervised at all times. Under no circumstances shall any refueling procedure be left unattended by the operator.
- Fuelling or servicing of mobile equipment shall not be allowed within 100 m of a watercourse, wetland, and in such a manner as to prevent spilled material from migrating to a watercourse, drainage ditch, or other environmental sensitive areas.
- Smoking shall be prohibited within 10 m of a refuelling area.

PETROLEUM WASTE AND STORAGE

4. Storage

- Waste oils and lubricants or other petroleum products shall be retained in a clearly labelled tank or closed container with a secondary containment system, and recycled or disposed of at an approved facility.
- Temporary storage areas for such wastes prior to disposal shall also have an impervious mat and be surrounded by an impervious dyke of sufficient size to contain not less than 125% of the capacity of the storage containers, plus 150 mm of freeboard.
- **TIME LIMIT FOR STORAGE AND REPORTING REQUIREMENTS?**
- All empty containers are to be returned to a designated location for proper disposal. Empty containers are not to be disposed of on site or in an unauthorized manner, such as at borrow sites. Do not discharge or dispose of petroleum products and/or waste into waterways or onto the ground.