SPILL CONTINGENCY PLAN HACKETT RIVER EXPLORATION PROJECT

Water Licence No. 2BE-HAK0915
AANDC Land Use Permit No. 2010C0015
KIA Land Use Licence No. KTL304C010-Renewed

GLENCOREXSTRATA

Prepared By: Scott Burgess Reviewed By: Robert Prairie	Reference Number:
Approved By: Denis Hamel	

Note: Only the electronic version of this procedure located on the Xstrata Zinc Intranet is considered the most current document. Any paper copies of this procedure posted or in a procedure binder must have an approval signature, appear on a controlled distribution list and updated in a timely manner when the electronic original is revised.

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1. PREAMBLE

This is the updated Spill Contingency Plan, for GlencoreXstrata's (formerly Xstrata Zinc Canada's) Hackett River Project (Licence No. 2BE-HAK0915). This plan has been updated to reflect changes at the Hackett River camp. It includes spill contingency planning for the Hackett River Camp and the associated airstrip. This plan will be reviewed annually.

2. CONTACT INFORMATION

Site Owner and Employer

GlencoreXstrata
8801 Transcanadienne, Bureau 400
Saint-Laurent, Québec
H4S 1Z6
Tel: 514 745-9365
Fax: 514 745-9379

Person(s) responsible for and authorized to activate the spill plan and call in additional support

Primary contact: Scott Burgess, Camp Manager

24 hour, emergency site contact	(778) 372-3276
Hackett River Camp office ph:	(778) 372-3293
Hackett River Camp alternate ph:	(778) 372-3294
Hackett River Camp fax:	(403) 451–3263
Cellular phone:	(807) 251–3335
sburgess@xstratazinc.ca	

Alternate contact: Michel Boucher, General Manager, Mining Projects

Montreal Office phone	(514) 745–9375 or 514 745-9365
Hackett River Camp office ph:	(778) 372-3293
Hackett River Camp alternate ph:	(778) 372-3294
Hackett River Camp fax:	(403) 451–3263
mboucher@xstratazinc.ca	

Appendix A lists the Spill Response Team members.

3. CAMP LOCATION AND DESCRIPTION

The Hackett River mineral exploration camp is located at:

Latitude: 65º 55'N, Longitude: 108º 22'W
619684 E, 7312501N on NTS Map Sheet 76 F/16 (NAD 83 Datum, Zone 12W)

4. POTENTIAL CONTAMINANTS ON SITE

Potential contaminants on site include a number of materials as summarized in Table 1. Material Safety Data System sheets (MSDSs) are provides in Appendix B.

Camp layout and sensitive receiving areas are illustrated in Figures 1, 2 and 3.

Table 1 Location and Quantity of Potential Contaminants, Hackett River Camp, March 2013

Potential Contaminant	Location	Quantity
Av Gas	Fuel cache, with gasoline	2-205 litre drums
Acetylene	Drillers shop	2 – 100 lb. tanks.
Diesel	Fuel caches (35)	Up to 4200-205 litre drums altogether
	Kitchen building	<200 litres
	Drillers dry tent	<200 litres
	Drillers dry building	<200 litres
	Tool sheds / workshops (3)	<300 litres, combined, per building
	Drill foreman's office / telecommunications	<200 litres
	Project office	<200 litres
	Environmental	<200 litres
	Incinerator shed	<2200 litres in bulk tanks Up to 12-205 litre barrels
	Main Generator (2010) and 2 storage sheds	<2290 litres in bulk tank Up to 8-205 litre barrels
	Main Generator (2008) shed	<2270 litre in bulk tank Up to 16 -05 litre barrels
	Core cutting area	<200 litres
	Core logging building	<1000 litres
	Recreation tents (2)	< 200 litres per tent
	Drill supplies storage sheds (2)	<200 litres per shed
	Accommodations (33 tents/sheds)	< 200 litres per tent/shed
	Helicopter supply sheds (2)	< 200 litres
Gasoline	Fuel Cache (2)	Up to 110-205 litre drums altogether

	Winter fuelling station	Up to 4 – 205 litre drums
Oil	Tool sheds / workshops (3)	<250 litres, combined, in each building
	Main Generator (new) and storage sheds	<2290 litres in bulk tank Up to 8-205 litre barrels
	Core storage shed	<50 litres
	Main Generator (2008) Shed	<2270 litres in bulk tank Up to 16-205 litre barrels
	Helicopter supply sheds (2)	<20 litres
	Drill supplies storage sheds (2)	Up to 4 cases of 4 5 litre jugs
Waste Oil	Incinerator shed	1100 litres in bulk tanks Up to 4-205 litre barrels
	Main Generator (2010) and 2 storage sheds	<2290 litres in bulk tank Up to 8-4 litre jugs
	Main Generator (2008) Shed	<2270 litres in bulk tank 1-205 litre barrel
Lubricants	Tool sheds / workshops (3)	<250 litres, combined, in each building
	Supply shed	<50 litres
	Core storage shed	< 50 litres
Duron Multigrade Engine Oil SAE Viscosity Grade 10W-30	Drill supplies storage sheds, workshops	100-12 litre cases
Duron Multigrade Engine Oil SAE Viscosity Grade 15W-40	Drill supplies storage sheds, workshops	100-12 litre cases
Drill Rod Heavy Grease	Drill supplies storage sheds (3)	100-5 gal tub
Jet A/B Fuel	Fuel Caches (6)	Up to 2350-205 litre drums altogether
	Helicopter landing pads (3)	< 1500 litres in 205 litre barrels
Propane	Propane Cache	Up to 70-45 Kg cylinders
	Kitchen building	1-45 Kg tanks for kitchen 6-45 Kg tanks for shower/laundry
	Drillers dry tent	2-45 Kg tanks
	Drillers dry building	2-45 Kg tanks
	Core cutting area	1-45 Kg tank
	Tool sheds / workshops (3)	2-45 Kg tanks per shop
	Welding gas storage area	1-45 Kg tank
Black water	Pacto sheds (4)	Up to 40 litres
Paint	Tool sheds / workshops (3)	<250 litres, combined, in each building
	Supply shed	<50 litres
Linseed Soap	Drill supplies storage sheds (3)	Up to 65-5 gal pails
Matek DD 2000	Drill supplies storage sheds (3)	Up to 425-5 gal pails
Poly-Drill 1300	Drill supplies storage sheds (3)	Up to 270-5 gal pails
PureVis	Drill supplies storage sheds (3)	309-5 gal pails

Calcium Chloride(CaCl)	Drill supplies storage sheds (3)	Up to 380 pallets (50-50lb bags per pallet)
Oxygen	First Aid tent Welding gas storage area	7-0.65 Kg, 2-7 Kg tank 1-7 Kg tank

Other chemicals consumed in small quantities during the drilling program include kitchen and laundry soaps and cleaning agents, bleach, waterless hand cleaners, hand sanitizer, and other similar household items. Other items on site would include paint, various oils, greases and lubricants for mobile equipment, bear spray and mosquito repellant.

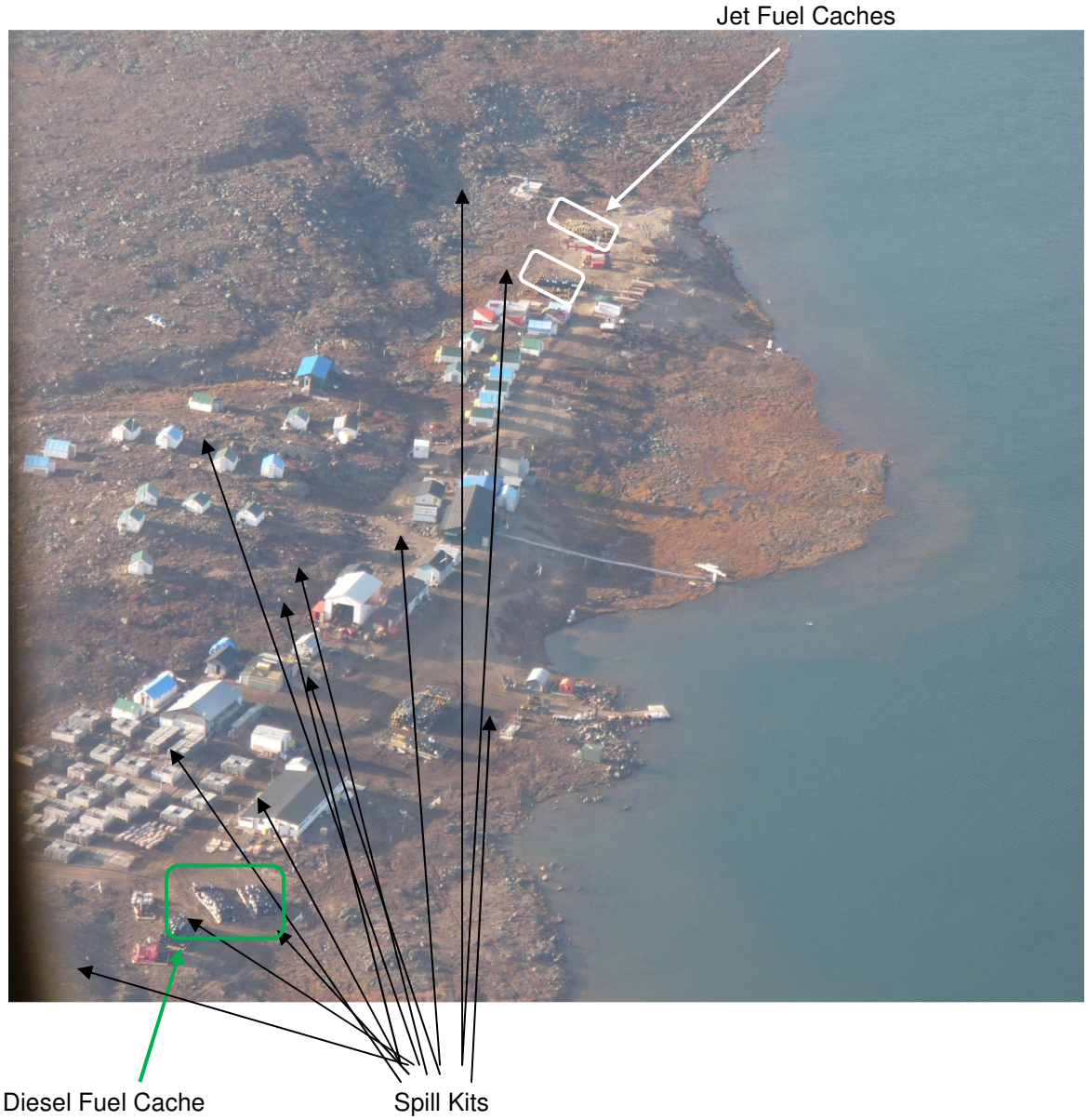


Figure 1 Fuel Storage Areas, Hackett River Camp, March 2013

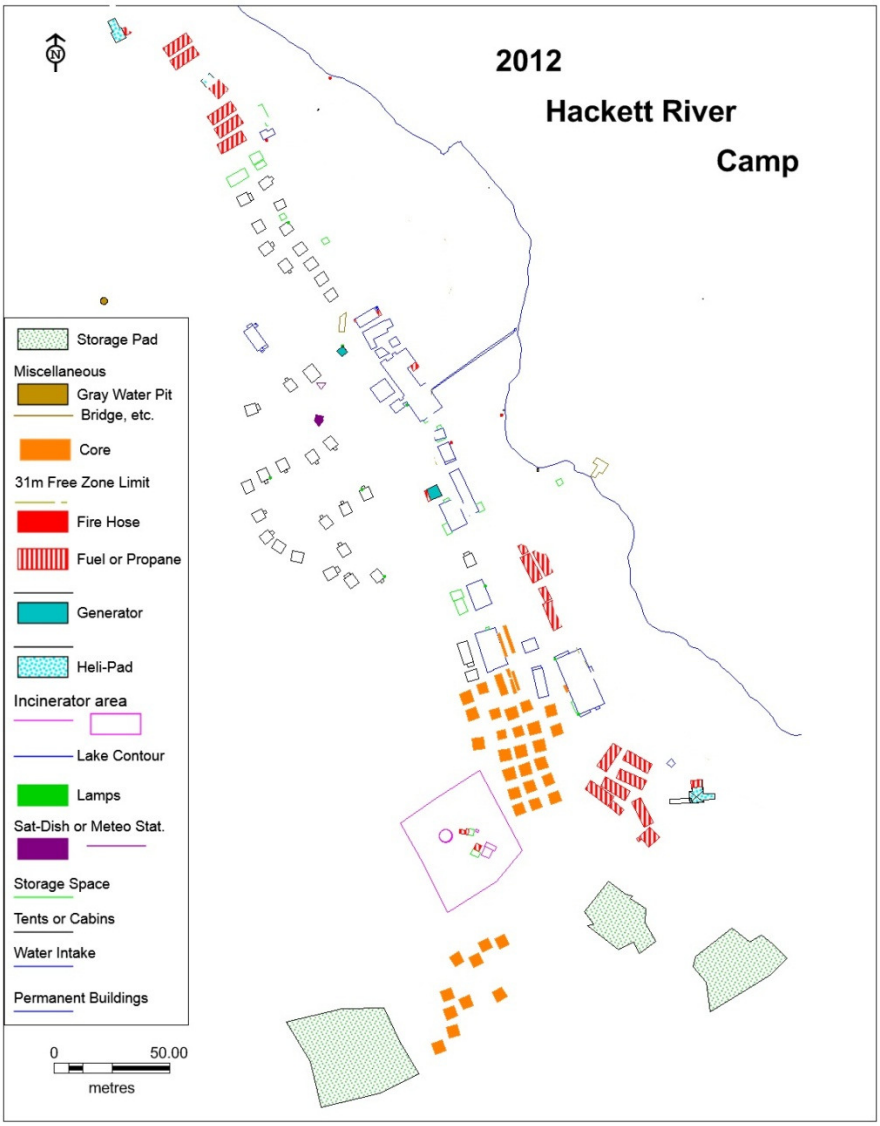


Figure 2 Site Layout, Hackett River Camp, 2012

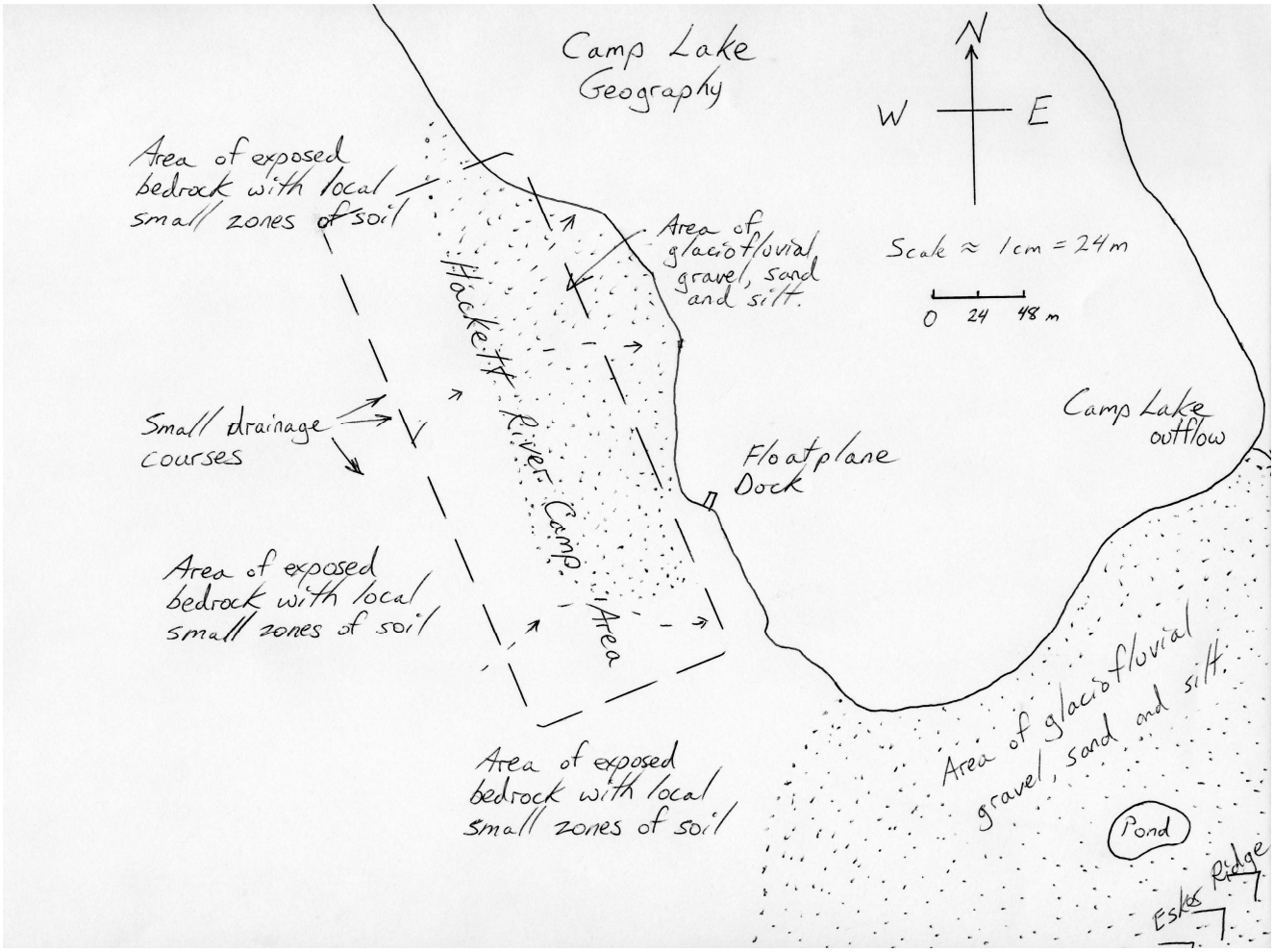


Figure 3 Physical Geography of the Hackett River Camp Area

5. SPILL PREVENTION

GlencoreXstrata (Xstrata) stores all materials at its Hackett River site appropriately to ensure all personnel and contractors remain safe and the environment is adequately protected. Any personnel involved in the handling, transfer or storage of any materials receive adequate training, including operations, inspections, maintenance and spill response actions.

5.1 Storage and Handling

The Hackett River Camp has 3 principal fuel storage areas (Figure 1) in addition to satellite storage areas, adjacent to buildings or helicopter pads where the fuel is utilized. Drummed fuel is stored in secondary containment berms or trays that are maintained dry and free of punctures or tipping hazards. A total of 33 berms are in use, most of them 15' x 40' in size. As full drums are used, the berms are converted to storage for empty drums, awaiting backhaul to Yellowknife. Tanks containing fuel are double-walled tanks, identified on the Federal Identification Registry for Storage Tank Systems (FIRSTS), situated within secondary containment berms, which are maintained dry. All fuel berms are equipped with a Rain Drain filtration system to aid in maintaining secondary containment dry. Further, fuel transfer occurs over drip trays. Refer to the *Fuel Management Plan (2012)* in Appendix C for additional information relating to fuel storage on site.

Calcium chloride (CaCl) is stored within the drilling supplies storage area, at the south end of camp. CaCl is stored in plastic bags stacked on pallets which are then shrink-wrapped. Any loose bags of salt are transferred to megabags, which are stored off the ground, on tarps placed on pallets or old tent floors in order to minimize the chance of water dissolving the stored salt.

Propane is stored on a wooden deck located between the dock and generator shed. Cylinders are secured in the upright position.

Welding gases are stored in a secure, open, roofed storage area outside the drill repair shed.

Medical oxygen tanks, and helium tanks (for weather balloons) are stored indoors, and are upright and secured to the wall.

5.2 Leak and Spill Prevention

Leaks and spills most often occur during fuel handling but may also develop slowly over time. Leak detection is best accomplished through both inspection and reconciliation of storage volumes. Fuel drums and storage containers, secondary containment areas and associated spill containment devices, pumps and product-handling equipment, and overfill protection devices are monitored according to federal regulations and permit conditions. Records are kept on site, and include employee's name, areas monitored, any deficiencies noted and actions taken to address deficiencies.

Records are reviewed by site management to ensure deficiencies are addressed. Findings are discussed at daily and weekly camp safety briefings and meetings.

Daily monitoring, and weekly reconciliation of storage volumes are routinely completed. A spill response is initiated in the event of any unexplained loss over five or more weeks. Leaking or damaged drums are noted, immediately marked and drained/removed, with the empty drum placed in a secondary containment berm for transport back to Yellowknife for proper disposal. Weekly monitoring is conducted to inspect the berms, and to detect leaks or identify conditions that could result in a leak.

Inspections of all mobile equipment are also performed, with any leaks noted and fixed, and the repair is recorded. Mobile equipment that is being stored after seasonal use is placed over absorbent matting, to catch any drips or melting snow, which may contain hydrocarbons. Seasonal equipment storage facilities (Quonset hut) are lined to contain any fuel or lubricant which may leak or drip during storage (seasonal closure).

5.3 TRAINING AND AWARENESS

All employees in camp participate in a Workplace Hazardous Materials Information System (W.H.M.I.S.) training session as close as possible to the start of the exploration program. Refresher training is provided as necessary.

On site orientation is provided to all employees to ensure that all employees are aware of the location of:

- MSDS sheets, Spill Report Forms, and Spill Record Book.
- Fuel caches.
- Spill response kits.
- Muster Stations, fire extinguishers, water pumps and firefighting equipment.
- Valves that may be used to stop the flow of a fuel.
- *Spill Contingency Plan* and the *Fire Action Plan*.

Onsite training for the following is provided to all employees:

- Spill kit contents.
- Fire extinguishers and water pumps.

Training is provided to all camp operations employees so that they are able to:

- Turn off the valve to stop the flow of fuel, at the ignition point and at the source.
- Activate the *Spill Contingency Plan* and the *Fire Action Plan* (see Appendix D).
- Identify, evaluate and mitigate the hazards posed by any spilled product by using appropriate personal protective equipment (PPE).
- Identify and avoid the conditions which may lead to a spill.
- Develop an understanding of the potential environmental impacts of a spill.
- Develop and understanding of the financial costs of a spill.
- Recognize the hazards associated with sources of ignition (smoking, electrical sparks) near a fuel source.

For employees involved in fuel handling, additional training is provided regarding appropriate refueling techniques and drum handling procedures.

Simulated fuel spill exercises are conducted periodically to ensure familiarity with the *Spill Contingency Plan* and ensure that the Plan is relevant and useful throughout the exploration season. The *Spill Contingency Plan* is brought to the weekly safety meetings every two months, and its location is mentioned every time new personnel come to site. Single sheets, with the action plan printed on them, are posted throughout camp for easy access.

Copies of the *Spill Contingency Plan* are stored in the following locations:

- Main dry building.
- Tool shop.
- Major Drill shop.
- Incinerator.
- Coreshack.

MSDS sheets are maintained current and are stored in the following locations:

- Helicopter shack.
- Drill foreman's office.
- Kitchen.
- Main office.

6. SPILL RESPONSE

Given that the potential contaminants most often used, and therefore most likely to evoke a spill response at Hackett River Camp, are petroleum products relevant response procedures are outlined below.

In the event of any spill, the following procedures are to be followed:

- Evaluate the scene and ensure personal safety and the safety of any others.
- Find and locate the source of the spill and either stop or contain the spill if possible. Contain the spill by damming with earth or other suitable material.
- Remove all sources of ignition. Be prepared to use a fire extinguisher.
- Be aware that gas vapors flow downhill and are extremely explosive.
- Work from the upwind side to avoid inhaling fuel vapors and becoming engulfed in flames if a fire starts.
- Notify the Camp Manager and/or Site Manager, one of whom will activate the Spill Contingency Plan and call the 24 hour Spill Report Line at **(867) 920 – 8130, Fax: (867) 873-6924**. The Camp Manager will also call the AANDC Water Resources Inspector at **(867) 975 – 4295**.
- Avoid flushing spilled fuel or contaminant into potentially higher risk areas. Protect water sources and septic systems.
- Clean up and dispose of all free product or contaminant by shoveling the contaminated earth or absorbent material into metal containers. Dispose of contaminated cleanup materials in an approved manner.
- Clean up the spill site using site appropriate absorbents, tools and procedures. Clean up and dispose of all fuel contaminated soil or absorbent material by shoveling into sealed containers.
- Dispose of contaminated cleanup materials in an approved manner.
- Record the spill on the Spill Report Form and conduct follow-up monitoring if required.
- Ensure that all ignitable vapors are dispersed before resuming normal activities.
- Review the incident with others in camp and share ideas on to prevent a similar type of spill from occurring again.

The above points are outlined in the “Action Plan in the Event of a Spill or Leak” and posted throughout camp.

The physical setting of a spill may determine, in part, the methods used to contain and clean up the spill. The physical settings likely to be encountered during a spill response at Hackett River Camp include: land; muskeg; ice and snow; open water; flowing water. Considerations for spill response in each setting are outlined below. In all instances, captured product, spent absorbent material, and contaminated soil, water, snow, ice and vegetation need to be contained and disposed of appropriately.

Land

- Stop flowing spills with earth, snow, plastic or other barrier.
- Prevent entry to waterways.
- Remove free product with absorbent pads.
- Excavate contaminated soil.
- On well vegetated tundra remove as much free product as possible using absorbent pads followed by removing any remaining contaminated soil and vegetation.

Muskeg

- Carefully place absorbent matting on vegetation to remove as much free product as possible.
- If a drainage outlet is present, deploy spill containment booms to contain the spill to the immediate area.
- If possible, keep equipment off the muskeg as it is likely to cause more damage to vegetation.

Ice and Snow

- Stop flowing spills with snow, plastic or other barrier.
- Prevent entry to waterways.
- Remove free product with absorbent pads, if possible.
- Collect contaminated snow and ice into a mega-bag or suitable cargo sled and transport it to one of the fuel containment berms where it can melt.
- Once melted, collect the free product with absorbent matting and Rain Drains.
- Melt and combust diesel from candled ice surfaces using a propane-powered flame torch.

Standing Water

- Deploy absorbent spill containment booms around the spill source.
- Deploy absorbent spill containment booms at the outflow of the body of water and monitor to prevent downstream contamination.
- Use absorbent pads to remove free product.

Flowing Water

- Deploy absorbent spill containment booms in areas with slow moving water if possible.
- Utilize multiple booms if the current is strong.

5.1 EQUIPMENT

Spill response equipment available on site is summarized in Table 2.

Table 2: Spill Response Equipment, Hackett River Camp, March 2013

Equipment	Location
Fire extinguishers	Adjacent to each fuel storage location
Wajax Mark III Pump	Near heli pads
Honda Fire Pump	Near kitchen
Subaru Pump	Near core shacks
Cat 297 Skid steer	Near Site tool shop
Torches	Tool shop
4 Shovels (heavy duty, steel snow or "coal") shovels	At most structures in camp
4 Spades	In tool shop and old core building
2 Pick axes	In tool shop
Chain saw	Tool shop
Hand crank fuel pump	Various locations, for camp fuelling
Extra absorbent material	Rolls of blue matting throughout camp
Empty drums	Near incinerator, and outside tool shop
8-20 litre Spill Kits	Placed throughout camp
15-205 litre Spill kits	Near all berms, heli pads and scattered throughout camp

20 of the large and 8 of the small spill response kits are available on site. In addition, kits are located at each operating drill as well as the ice air strip and the esker air strip, when in use. Kit contents are listed in Table 3.

Table 3 Spill Response Kit Contents, Hackett River Camp

20 litre All Purpose Spill Response Kit	205 litre H.O.W. Spill Response Kit
1-20 litre poly containment pail	150-17" X 19" oil absorbent pads
12-16" X 20" oil absorbent pads	8-3" X 48" oil absorbent socks
2-3" X 48" oil absorbent socks	2-5" X 120" oil absorbent booms
1 heavy duty disposal bag (8 mil)	4-temporary disposal bags 42x48-XS
1 pair Chemi-Pro gloves	1-pair nitrile gauntlet gloves
3 lbs. of all purpose absorbent	1-pair disposable coverall
	1-pair clear safety goggles
	1-4 oz. temporary Gapseal stick
	1-205 litre containment drum (metal/poly) with quick release lever lock system

5.2 REPORTING

All spills must be reported to the site manager. Spills of any petroleum product, allied petroleum product, chemical or hazardous material in quantities less than 25 L must be documented on the form found in Appendix E.

Any spill, or incident that may likely result in a spill, of an amount equal to or greater than the amount listed in Table 4 shall be promptly reported to:

1. NU/NWT 24 hour spill line at **(867) 920 – 8130, or Fax: (867) 873-6924**.
   The spill line will then contact the lead regulatory agency. Collect calls are accepted.
2. AANDC Water Resources Inspector at **(867) 975 – 4295**.

Table 4 Spill Reporting Requirements Thresholds

Item No.	TDGA Class	Description of Contaminant	Amount Spilled
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 litres.
3.	2.2	Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 litres
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 litres
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25 kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 litres or 50 kg
11.	5.2	Organic Peroxides	1 litre or 1 kg
12.	6.1	Poisonous substances	5 litres or 5 kg
13.	6.2	Infectious substances	Any amount
14.	7	Radioactive	Any amount
15.	8	Corrosive substances	5 litres or 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 litres or 50 kg
17.	9.2	Environmentally hazardous	1 litre or 1 kg
18.	9.3	Dangerous wastes	5 litres or 5 kg
19.	9.1 (in part)	PCB mixtures of 5 or more parts per million	0.5 litres or 0.5 kg
20.	None	Other contaminants	100 litres or 100 kg

If in doubt about whether a spill is reportable, report it. All spills, regardless of quantity, into watercourse must be reported.

When reporting a spill, provide as much information as is available at the time including:

- Spill location with map coordinates (if known).
- Direction of flow (if moving).
- Date and time or estimated time of spill.
- Time of observation of the spill.
- Party responsible for contaminants at the time of the spill.
- What product or products spilled.
- Estimated spilled quantities (in metric if possible).
- Cause of the spill.
- Whether spill is ongoing.
- Estimate of the rate of spillage.
- Determination if further spillage possible.
- Extent of contaminated area (in square meters if possible).
- Any factors are affecting the spill, weather, snow cover, terrain, etc.
- Containment measures in place (natural depression, dykes, booms, absorbent pads, etc.).
- Actions, underway to contain, recover, clean-up and dispose of the spilled product and contaminated materials.
- Whether assistance is required contain, recover, clean-up and dispose of the spilled material.
- Possible hazards to persons, property or environment (e.g. fire, drinking water, fish or wildlife habitat).
- Any other relevant information.
- Your name, your job title, employer, address and phone number.

After the spill has been called in, and a spill number has been assigned, complete a written Spill Report Form (Appendix E).

5.3 DISPOSAL

Appropriate disposal for any recovered product and contaminated soil, water or absorbent clean up materials is regulated and must be authorized by the agency investigating the incident.

Fuel-contaminated soil would be flown out to Yellowknife for disposal at an approved facility.

Any non-reusable recovered product, contaminated soil and clean up materials, which cannot be incinerated, will be stored in covered containers on site prior to disposal at an approved facility.

Additional advice on how to treat or dispose of contaminated materials or soil as well as environmental site assessment and remediation may be obtained through:

Rescan Environmental Services
Sixth Floor – 1111 West Hastings St.
Vancouver, British Columbia
V6E-2J3
Tel: (604) 689 – 9460
Fax: (604) 687 – 4277
Attn: Francois Landry, Project Manager

Any waste material will be disposed of through:

KBL Environmental
PO Box 1108
Yellowknife, NT
X1A 2N8
Tel: 867-873-5263
Fax: n/a
Attn: Jeff Bembridge

A waste generator number and manifests are required for all shipments of hazardous materials, including materials resulting from spill clean-up. The waste generator number for 2013 is NUG#100050.

7 DOCUMENT REVISION HISTORY

Twelfth revision: March 31, 2013
Eleventh revision: November 6, 2012
Tenth revision: March 14, 2012
Ninth revision: Dec 19, 2011
Eighth revision: May 5, 2011
Seventh revision: September 5, 2009
Sixth revision: February 18, 2009
Fifth revision: April 5, 2008
Fourth revision: November 7, 2006
Third revision: June 30, 2006
Second revision: March 20, 2006
First revision: July 29, 2004
Initial submission: March 5, 2004

Appendix A Spill Response Team

Xstrata Contacts:

Environmental Manager	Robert Prairie	(514) 745-9357
Project Manager	Denis Hamel	(514) 745-9349
Site Manager	Scott Burgess	(778) 372-3293; (807) 251-3335
Manager Alternate	Rob Davidson	(778) 372-3294, 3293
Camp Manager / Alternate	Scott Banton / Johnny Labrie	(778) 372-3290, 3295

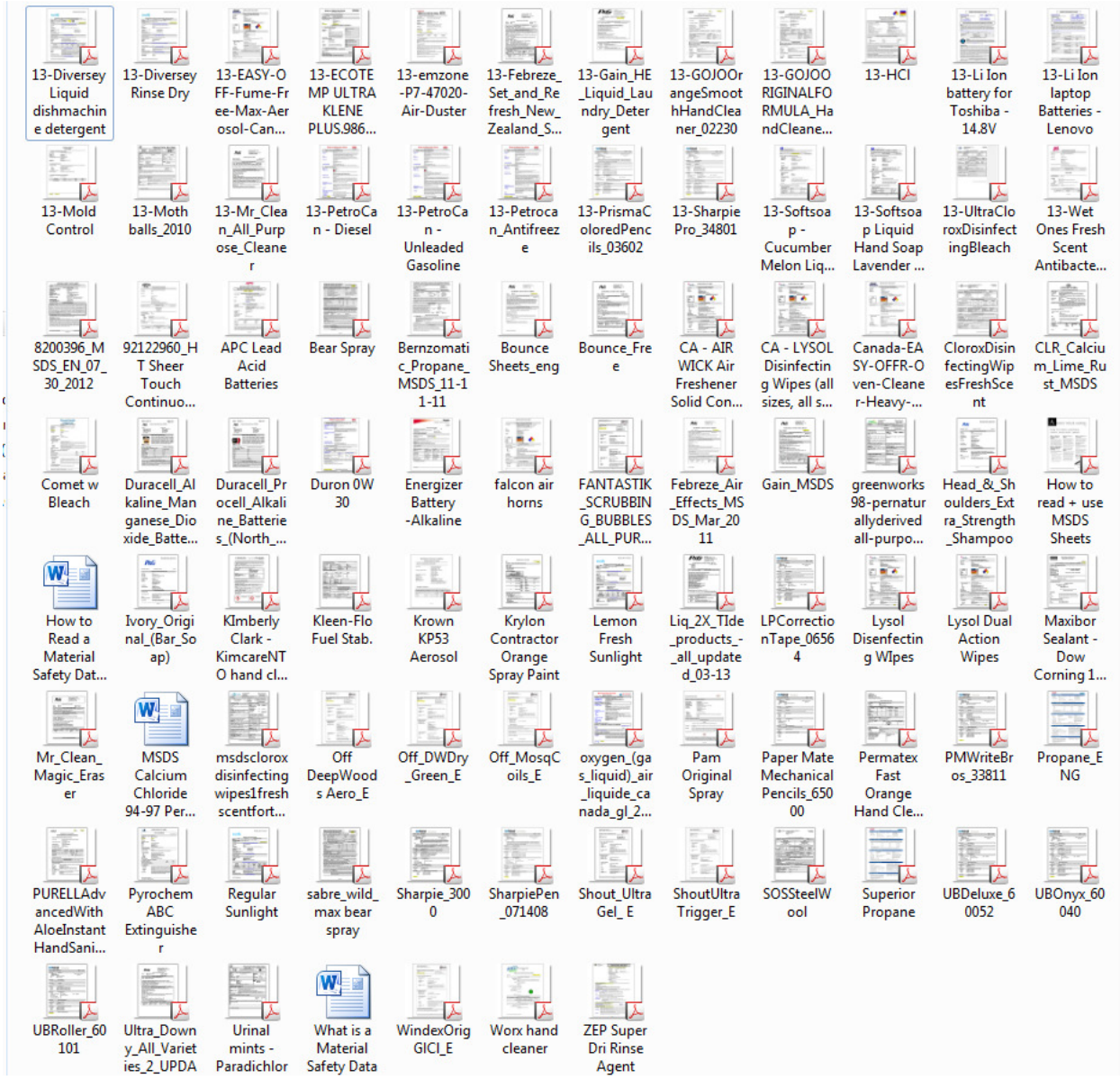
Additional assistance may be obtained, as necessary, from the following organizations:

Discovery Mining Services, Yellowknife	Andy Young	(867) 920-4600
Shell Canada, Mobile Environmental Response	Steve Bassett	(867) 874-2562
Kitnuna	Wilf Wilcox	(867) 983-2331
Nuna Logistics Ltd.	Court Smith	(867) 682-4667
Dupont (Fuel Dye)		(905) 821-5660
KBL Environmental	Jeff Bembridge	
Frontier Mining (Sorbents)		(867) 920-7617
Acklands (sorbents)		(867) 873-4100 (867) 920-5359

Key Government Contacts:

Nunavut Water Board	Phyllis Beaulieu, Manager of Licensing	(867) 360-6338
Environment Canada	Craig Broome, Manager of Enforcement Wade Romanko, Env. Emergencies Officer	(867) 669-4730 (867) 669-4736
Aboriginal Affairs and Northern Development Canada	Eva Paul, Water Resources Officer Karen Costello, A/Director Resource Management Erik Allain, Manager of Field Operations	(867) 982-4548 (867) 975-4546 (867) 975-4295
Government of Nunavut Environmental Protection	Robert Eno Director/Chief Environmental Protection Officer	(867) 975-7729
Department of Fisheries and Oceans	Margaret Keast	(867) 979-8000
RCMP (Yellowknife)		(867) 669-1111
RCMP (Cambridge Bay)		(867) 983-2111

Appendix B Material Safety Data System Sheets



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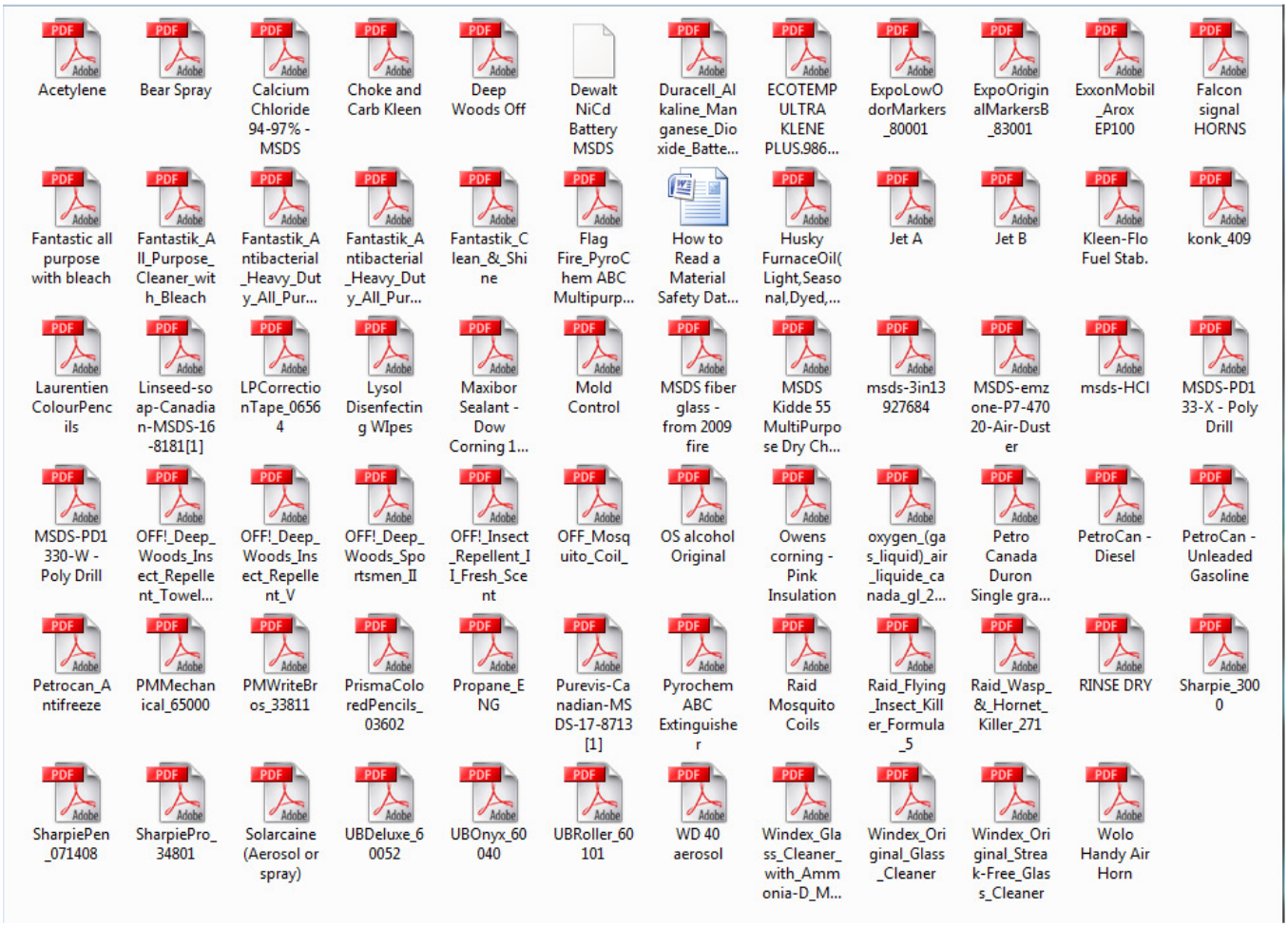
Acetylene
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Calcium Chloride 94-97% - MSDS
Choke and Carb Kleen
Deep Woods Off
Dewalt NiCd Battery MSDS
Duracell_Alkaline_Manganese_Dioxide_Batte...
ECOTEMP ULTRA KLENE PLUS.986...
ExpoLowOdorMarkers_80001
ExpoOriginalMarkersB_83001
ExxonMobil_Arox EP100
Falcon signal HORNS
Fantastic all purpose with bleach
Fantastik_All_Purpose_Cleaner_with_Bleach
Fantastik_Antibacterial_Heavy_Duty_All_Pur...
Fantastik_Antibacterial_Heavy_Duty_All_Pur...
Fantastik_Clean_&_Shine
Flag Fire_PyroChem ABC Multipurp...
How to Read a Material Safety Dat...
Husky FurnaceOil(Light,Seasonal,Dyed,...
Jet A
Jet B
Kleen-Flo Fuel Stab.
konk_409
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Lysol Disenfecting WIpes
Maxibor Sealant - Dow Corning 1...
Mold Control
MSDS fiberglass - from 2009 fire
MSDS Kidde 55 MultiPurpose Dry Ch...
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MSDS-emzone-P7-47020-Air-Duster
msds-HCl
MSDS-PD133-X - Poly Drill
MSDS-PD1330-W - Poly Drill
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RINSE DRY
Sharpie_3000
SharpiePen_071408
SharpiePro_34801
Solarcaine (Aerosol or spray)
UBDeluxe_60052
UBOnyx_60040
UBRoller_60101
WD 40 aerosol
Windex_Glass_Cleaner_with_Ammonia-D_M...
Windex_Original_Glass_Cleaner
Windex_Original_Streak-Free_Glass_Cleaner
Wolo Handy Air Horn

Appendix C Fuel Management Plan

1. Preamble

This is the initial fuel management plan, for GlencoreXstrata 's Hackett River Project. This plan will be revised each year, and submitted with the revised Spill Contingency Plan (SCP), of which this will be an appendix to, and the Abandonment and Restoration Plan.

2. Introduction

GlencoreXstrata (Xstrata) will store all fuels and hydrocarbons at its Hackett River site appropriately to ensure all personnel and contractors remain safe and the environment is protected. Any personnel involved in the handling, transfer or storage of any fuel will receive adequate training, including operations, monitoring and inspections, maintenance and Spill Response actions.

3. Storage and Containment

Diesel, gasoline and aviation fuel (Jet A and B) will be stored in 205 litre drums, and diesel will also be transferred to double walled bulk (>2200 L) and day use (400 - 900 L double walled) tanks for use in camp and at the diamond drills. All of the drummed and bulk petroleum products are stored in Arctic Grade, secondary containment berms, ranging from 4' x 4' to 15' x 40'. A total of 33 berms are in use on site, including at the generators (2 at each), incinerator (2), and at all fuel transfer points. These berms are chemical and fire resistant. Empty drums, awaiting transport to Yellowknife are also stored in secondary containment berms. The total number includes some not currently in use.

Topographic and other ground conditions dictate the location of nearly every structure on site, from large common buildings, to core rack to the storage berms. The site, which is long and narrow, is about 30% sandy, esker-like material, 10% marshy tundra and 60% bedrock or coarse, boulder-rich till. This restricts the choice of locations for the berms, as the ground is either too uneven and rough, or soft and wet. Due to this, there are 3 main bermed fuel storage areas, located such that they are accessible, relatively flat and also away from living quarters for safety and environmental reasons. For this same reason, and due to the temporary nature of the camp site, as well as transportation challenges at site, drummed fuel continues to be the primary choice over bulk fuel.

During the period from Oct 1 to Feb 20, the berms containing full fuel drums are covered with arctic grade berm covers, supplied by the same manufacturer as the berms. Each berm, and any other fuel caches are located a minimum of 31 metres away from the normal high water mark to prevent spills or seepage from entering any body of water. The drums will be stored within the berms in orderly rows with their bungs checked for tightness, and, where possible, facing outwards. Each

berm, and its contents will be monitored daily, and a record kept of the results, and any findings, as well as any actions taken.

Drums of diesel fuel used for heating tents are contained in fuel caddy-type secondary containment. During normal opening/closing of camp these fuel and storage systems are installed and monitored to ensure safe operation and storage. If deficient they are immediately replaced.

All berms, tanks and drums will be monitored, daily to weekly, and if any drums are found to be damaged and/or leaking, the proper spill response measures, as per the Spill Contingency Plan, will be implemented immediately.

Up to 3600 drums of diesel, 1900 drums of Jet fuel, 120 drums of gasoline and 3 drums of AvGas may be on site at any one time. Up to 75, 100 lb. tanks of propane (and 2 - 3 20 lb. tanks) may be present at any one time. Fuel is flown to site between March 1 and May 30, and the total number of full drums on site, at any one time, is less than 5,625.

Propane is flown to site in 20 and 100 lb. tanks to be used for water heating primarily, but also for heating at the drills. These tanks are stored in an upright, secured position in open, walled storage areas, and moved to where they'll be used as needed.

4. Spill and Leak Prevention

Leaks most often occur during handling of the fuel but may also develop slowly over time. All berms, tanks and drums will be monitored, daily to weekly, and if any drums are found to be damaged and/or leaking, the proper spill response measures, as per the Spill Contingency Plan, will be implemented immediately.

Prevention includes training of all staff at the start of employment (or arrival to site each year) to ensure awareness of proper techniques and methods are used in the handling and transfer of materials. Adequate worker training and supervision is required to avoid puncturing the fuel drums during handling. Workers will also be trained in refueling techniques to prevent the spillage of fuel during transfer. This training will include normal standard operating conditions and emergency situations. Copies of the action plan in case of spill or leaks are posted throughout camp.

In addition to training, prevention of spills is also managed through the proper storage and handling of fuel, chemicals and waste materials. Impermeable geo-membrane, arctic grade, secondary containment berms are used to store drums at fuel caches. Fuel drum storage locations will be inspected for, and cleared of, puncture or tipping hazards, standing water, and leaking or damaged drums. Each fuel berm is equipped with a “Rain Drain” brand berm filtration system, supplied by the manufacturer, allowing gravitational filtering of any hydrocarbon spill contaminates from rainwater or other accumulations in the berms.

This rain drain filter allows continuous drainage of secondary containment berms that will cease all liquid discharge once the filter is full. Coupled with inspections, this ensures each secondary containment berm will have enough capacity to contain any primary container leak because there will be no rainwater contained in the berm.

The rain drain filters are removed from the berms, safely drained and capped during the winter months, when freezing conditions could cause the filter elements or casing to crack, rendering the drain assemblage ineffective. The entire drain assemblages are checked before re-installation, including the filters, which are replaceable in some units. The drains are re-installed in such a manner as to prevent damage from mobile equipment such as snowmobiles, skid steer loaders and ATV's.

As of October, 2012, the prevention of standing water build up was supported by the installation of 5 berm covers to prevent snow and ice build ups in the berms over the winter. 4 more covers were ordered to be on site for the spring re-supply.

Propane, oxygen and acetylene tanks will be stored securely upright to prevent tipping and possible breakage of gas fittings. Those tanks that are in use are also covered, to keep snow, ice and water away from the valves and to allow for better access and inspection.

Weekly inspections will be conducted to ensure that there are no leaks or that there are no conditions of the area could result in a leak. These inspections will include the fuel drums and storage containers, secondary containment sumps and associated spill containment devices, any pumps and product-handling equipment, and overfill protection devices. These inspections will be recorded to include who completed the inspections, areas included in the visual inspection and any deficiencies noted. Inspections of all mobile equipment will also be performed, and any leaks noted and fixed, and the repair recorded in weekly reconciliation reports. Mobile equipment that is being worked on, or stored for any period longer than 5 days will be placed over blue, absorbent matting, to catch any drips or melting snow, which may contain hydrocarbons. Seasonal equipment storage facilities (Quonset hut) and the Major shop were modified to include liners in 2012 to prevent any fuel from soaking into the ground beneath the structures. The main camp workshop will have a liner installed under the floor in mid-2013.

Any spills will be reported to the 24 hour spill line, and the Spill Contingency Plan implemented immediately.

5. Fuel Transfer Areas and Transportation

All Fuel transfer stations will contained within berms.

Fuel transfer consists primarily of fuelling larger tanks, from 205L drums, using an electric fuel pump. These pumps are either portable, or affixed to a wall, where they are above a secondary containment berm.

Figure 1: *Bulk fuel tank, fuel transfer pump and drummed fuel at main generator, Hackett River Camp. (09/23/2012)*

Days use tanks (400 – 600 L), used in diamond drilling operations are stored, and filled, within a large berm, and fuel transfer at all other bulk tanks also occurs from bermed 205 L drums to the larger tanks. Mobile equipment fuelling stations are also contained within berms.

Drums of fuel are flown to site during the winter re-supply period (March to May), in approved containers and they are then transported to fuel storage berms. Empty drums are flown out to Yellowknife for recycling or crushing. Empty drums are flown out primarily in the winter, and stockpiled the rest of the year, in berms, to be flown out the following winter. Day tanks remain on site, stored in berms.

All empty drums are completely drained, within the fuel transfer berms, and the used fuel from these empty drums becomes the burn fuel for the incinerator. Empty propane cylinders are flown back to Yellowknife for re-filling, and returned to site.

6. Signs, Labels and Inspections

All drummed fuel will be clearly labeled and include the type of fuel, the company name and the date of filling. 'No Smoking' signs will be posted at each fuel cache and the fuel storage area. Any fuel cache with more than 19 drums of fuel will be monitored daily and any secondary containment structures will be reviewed daily to check for signs of punctures or failures, as well as monitoring the water level within the berms. A record of these inspections will be kept in the office and be available upon request and records will be appended in the annual report.

Bulk tanks are identified with Environment Canada, under the The Federal Identification Registry for Storage Tank Systems (FIRSTS), and subject to the *Storage Tank for Petroleum Products and Allied Petroleum Products Regulations*. The four bulk tanks located on site are summarized in the table below:

Description	EC Tank Registry #	Quantity of fuel	Type of fuel	Date of Mfg	Date of Install
Incinerator Fuel	00026509	2200 L	Diesel, some mixed	2008	2008
Main Generator	00026544	2270 L	Diesel	2008	2008
Secondary Gen	00026546	2290 L	Diesel	2010	2011
Waste Oil - incin	00026547	1100 L	Used Oil	2011	2012

7. Spill Kits

Every fuel cache, storage area and refueling station will have a fire extinguisher and spill kit, appropriate to the type and volume of fuel contained.

8. Applicable Legislation and Guidelines

Acts, Regulations, and Legislation that may apply to the storage, handling and transport of fuel are presented in:

Federal:

- Storage Tank Systems For Petroleum Products and Allied Petroleum Products Regulations
- Federal Aboveground Storage Tank Technical Guidelines
- CCME Environmental Codes of Practice for Underground and Aboveground Storage Tank Systems
- Transport of Dangerous Goods Act
- The Workplace Hazardous Materials Information System (WHMIS)
- Worker's Compensation Board
- National Fire Code of Canada

- Fisheries Act
- Guidelines for Spill Contingency Planning, Indian and Northern Affairs Canada
- Draft Fuel Storage and Handling Guidelines, April 2008, Indian and Northern Affairs Canada

Territorial:

- Fire Prevention Act
- Nunavut Waters Act
- Nunavut "Guideline for the General Management of Hazardous Waste"
- The Mine, Health and Safety Act and Regulations (NT / NU)
- The NT and NU Safety Act, the Occupational Health and Safety Regulations

Appendix D Fire Action Plan

Action plan in the event of a petroleum fire:

- Raise the alarm! Warn others and call for assistance.
- Personal safety comes first; make sure you and others nearby are safe. Evacuate if necessary and account for everyone. The main muster station is the kitchen and the secondary muster station is the main office.
- If necessary, provide first aid and locate any missing workers. Remove any injured people to a safe site, generally upwind from the fire.
- If a person, who is splashed with fuel, catches fire, wrap him in a blanket or roll him on the ground to remove oxygen and extinguish the fire. If this doesn't work, use an ABC, dry chemical, fire extinguisher to put out the fire
- If there is a danger of explosion get away!
- Where possible, and if there is no danger, stop the flow of fuel feeding the fire.
- Remove on-going sources of ignition i.e., shut off the electricity.
- Attempt to extinguish flames using approved equipment. Remember, diesel fuel and gasoline float. Don't wash flames to an area of higher danger.
- Remember the order of priority, human safety comes first, then property. Don't risk your life for possessions.
- Notify the Camp Manager or Site Manager who will implement the Action Plan for Leaks or Spills once the fire is out and who will also notify authorities, if required. Site Manager will also notify head office and fill our incident form(s).
- Conduct follow-up monitoring, if required.
- Clean-up the site when allowed to do so.
- Review the incident with others in camp and discuss ways to prevent similar fires in the future.

Appendix E Spill Report Forms

This form is to be used for internal documentation of spills of any petroleum product, chemical, ethylene glycol (antifreeze), or other hazardous material in quantities of less than 25L. For quantities in excess of 25L, spills MUST be reported to the NWT/NU 24-hour spill reporting line (867-920-8130), and the appropriate form filled in. ALL spills (regardless of quantity) into a water body must be reported to the spill reporting line.

***Report Date and Time*:**	***Spill Date and Time*:** ☐ Spill occurred ☐ Spill observed
***Spill Location*:** ☐ Hackett Camp ☐ Hackett Drills ☐ Wishbone Claims ☐ Other	***Describe Location*:**
***Coordinates (Lat/Long or UTM)*:**	

***Product(s) Spilled*:**	Jet fuel (A or B)	Diesel (P50)	Gasoline	AvGas	Oil (type)	Antifreeze	Other (describe)
***Quantity (L or kg)*:**							

Personnel Involved:	☐ Employee	☐ Contractor	☐ Visitor	☐ Other

***Cause of Spill*:**
***Containment/Cleanup Measures Taken*:**
***Factors Affecting Spill or Recovery (weather, snow, ground conditions, etc.)*:**
***Additional Action Required*:**
***Additional Comments*:**

	Name	***Employer***	***Signature***
***Reported by*:**			
***Reported to*:**			

Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS			

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

PAGE 1 OF _____