In the event of a **AMMONIUM NITRATE/FUEL OIL** (ANFO) spill or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130
INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** the spill of ANFO at the source if possible;
- evacuate all non-essential personnel from the area and ensure the health and safety of those remaining;
- **ELIMINATE** all possible sources of ignition;
- **PREVENT** ANFO from contacting water;
- if ANFO does contact water, **CONTAIN** solution to as small an area as possible. Consider dyking with sand or snow to minimize travel;
- **ISOLATE** area of spill preferably by roping off affected area.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- may explode under confinement or high temperatures and friction;
- avoid contact with strong oxidizers (ie: Lead Nitrate)
- flammable;
- combustion products are toxic and may include hydrocarbons, oxides of carbon and nitrogen;
- low toxicity.

ACTION FOR FIRE

- for fires involving large quantities of ANFO, evacuate and **Do Not Attempt** to fight fires;
- for fires involving small quantities of ANFO, use large amounts of water to extinguish, control runoff;
- ANFO may detonate in fire, under severe impact or confinement.

RECOVERY

- spills of ANFO on dry surfaces can simply be shoveled into containers;
- spills of ANFO on wet surfaces or exposed to rain should be shoveled into waterproof containers as soon as possible to minimize the quantity of ammonium nitrate being dissolved;
- ANFO, or a resulting ammonium nitrate solution, **must not be allowed** access to any flowing stream;
- absorbents such as peat moss, Conwed or Graboil should be used to recover any oil emanating from the ANFO spill; snow may be used during the winter months under freezing conditions.
- soil heavily contaminated with ammonium nitrate should be excavated for incineration if the affected groundwater threatens to travel to an adjacent flowing stream.

DISPOSAL

- ANFO recovered from a spill may be used in the mine;

- ammonium nitrate solutions and soil containing ammonium nitrate should be disposed of within the mill tailings system or directly in the tailings pond;
- absorbents used to recover the oil may be incinerated under controlled conditions or buried at an approved site;
- ANFO can be disposed of by detonation or incineration under knowledgeable supervision.

PROPERTIES

- comprised of 94% prilled ammonium nitrate (NH_4NO_3) and 6% No.2 fuel oil, trade name: Amex II
- small porous pellets coated with oil, may be dyed with bright colours (yellow), odour of fuel oil;
- ammonium nitrate is Very Soluble in water; the oil is not soluble and will float;
- strong oxidizing agent;
- flammable.

ENVIRONMENTAL CONCERNS

- ammonium nitrate is moderately toxic to fish and other aquatic organisms at low concentrations. Toxicity increases with increased pH and temperature of the water.
- being very water soluble, the ammonium nitrate in the ANFO can readily dissolve and enter the natural surface or ground water streams.

CONTAINERS

- ANFO is transported and stored in 25 kg polyethylene bags at the main explosives magazine.

SUPPLIER

- Explosives Limited (Calgary, Alberta)
- CIL
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

In the event of a **LEAD NITRATE** spill or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** spill of Lead Nitrate solid/solution at source if possible;
- **PREVENT** solid lead nitrate from contacting water, to facilitate clean-up;
- use proper PPE for respiratory protection and body (coveralls, face shield, rubber gloves) when dust is anticipated as a hazard;
- if lead nitrate does contact water, **CONTAIN** solution to as small an area as possible;
- **Do Not Allow** material to reach water sources.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- stable, promotes combustion of inflammables and easily oxidizable materials; - will liberate toxic oxides of nitrogen during decomposition;
- material contains lead which is a cumulative poison, avoid dust inhalation/ingestion;
- avoid skin contact, resulting in irritation and lead absorption;
- avoid high temperatures;
- lead and lead compounds are listed as a possible carcinogen;

ACTION FOR FIRE

- promotes combustion of inflammables;
- under decomposition releases toxic oxides of nitrogen;
- use flooding amounts of water to extinguish the fire.

RECOVERY

- spills of lead nitrate on dry surfaces can be shoveled into containers;
- spills on wet surfaces or exposed to rain should be shoveled into waterproof containers as soon as possible to minimize the quantity of material being dissolved;
- collected liquids should be pumped into containers for disposal, and use absorbents to contain and recover residual spilled solutions.

DISPOSAL

- lead nitrate recovered from a spill may be used in the mill if it is of acceptable quality;
- lead nitrate solid and solutions (where use is inappropriate) should be disposed of in the mill tailings sump, or directly to the tailings pond (contaminated material disposal).

PROPERTIES

- chemical formula $Pb(NO_3)_2$; soluble in water;

- solid white semi-transparent, crystalline powder, odorless.

ENVIRONMENTAL CONCERNS

- possibly toxic to fish and other aquatic systems through accumulation in the ecosystem and may become hazardous to man through this route.
- containers, even those that have been emptied, may contain residues and should be disposed of accordingly in approved disposal sites. (NOT LANDFILLED).

CONTAINERS

- shipped/transported and stored 25 kg plastic lined metal pails which are palletized and double stretch wrapped. Also available in plastic lined 1.4 tonne tote bag.

SUPPLIER

- Van Waters & Rogers
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

In the event of a **FERRIC SULPHATE** spill (either solid or liquid) or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** spill of ferric sulphate solid/solution at source if possible;
- **PREVENT** solid ferric sulphate from contacting water, to facilitate clean-up;
- if working in a confined area, ventilate and use proper PPE for respiratory protection and body (full facepiece/respirator or self-contained breathing apparatus, coveralls, rubber gloves) as dusts and mist will be a hazard;
- if ferric sulphate does contact water, **CONTAIN** solution to as small an area as possible by dyking with sand or other non-reactive material and slowly neutralize with lime;
- **Do Not Allow** material to reach water sources.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- stable, reacts with lime and other basic materials to form iron salts;
- corrosive to mild steel, copper alloys, galvanized steel, paints, enamels and concrete
- high temp. (+600° C) decomposition releases toxic iron oxide and sulphur trioxide;
- **Do Not Get in Eyes**, on skin and clothing, wash thoroughly after handling; contact with the mists can severely damage the eyes to the extent of permanent injury;
- dusts will lead to the same hazards when allowed to contact moist areas such as eyes, nose, throat and lungs; contact with skin/sweating can have the same affect.

ACTION FOR FIRE

- this material is non-combustible;
- requires self-contained breathing apparatus and full protective clothing;
- use extinguishing media compatible with the surrounding combustible materials.

RECOVERY

- spills of ferric sulphate on dry surfaces can be shovelled into containers;
- spills on wet surfaces or exposed to rain should be shovelled into waterproof containers as soon as possible to minimize the quantity of material being dissolved;
- collected liquids should be pumped into containers for disposal; use sorbents to contain and recover residual spilled solutions.

DISPOSAL

- ferric sulphate recovered from a spill may be used as per tailings treatment requirements if of acceptable quality (has not been wetted);
- ferric sulphate solid and solutions (where use is inappropriate) should be disposed of directly to the tailings pond (contaminated material disposal).

PROPERTIES

- chemical formula $Fe_2(SO_4)_3$; soluble in water approximately 55% weight;
- may contain up to 3% sulphuric acid;
- dry powder is reddish brown, liquid is clear red, odourless.

ENVIRONMENTAL CONCERNS

- possibly toxic to fish and other aquatic systems through accumulation in the ecosystem and may become hazardous to man through this route.
- containers, even those that have been emptied, may contain residues and should be disposed of accordingly in approved disposal sites. (NOT LANDFILLED).

CONTAINERS

- shipped/transported in 1 ton, plastic lined tote bags; store in cool, dry well ventilated area.

SUPPLIER

- Van Waters & Rogers
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

APPENDIX I

APPENDIX I

TELEPHONE LISTING

LUPIN MINE, NUNAVUT

24 Hour Emergency Powerhouse (Paging for fire crew and mine rescue)	Bus.	Extension 8129
Operations Manager Mr. Bruce Bried	Bus.	(780) 890-8777
Maintenance Superintendent Mr. Rick O'Neill	Bus.	(780) 890-8763
Mill Superintendent Mr. Bill McCrank	Bus.	(789) 890-8753
Superintendent, Loss Control Mr. Wayne Grudzinski	Bus.	(780) 890-8779
Reclamation Manager Mr. Mike Tansey	Bus.	(780) 890-8797
Weather Station	Bus.	(780) 890-8764

It shall be the responsibility of the Operations Manager or his designate to notify:

Kinross - VP & General Manager, Reclamation Operations Mr. Bill Goodhard	Bus.	(775) 823-8525
Kinross - VP, Environmental Affairs Mr. Jerry Danni	Bus.	(416) 365-5648

REVISED February 29, 2004

APPENDIX I

TELEPHONE LISTING

GOVERNMENT AGENCIES	TELEPHONE	FACSIMILE
24 HOUR SPILL REPORT LINE GNWT - Dept. of Renewable Resources	**(867) 920-8130**	**(867) 873-6924**
NUNAVUT WATER BOARD	(867) 360-6338	(867) 360-6369
GOVERNMENT NWT - Department of Renewable Resources		
Environmental Protection Division		
Mr. Ken Hall: Manager Env. Prot.	(867) 920-6476	(867) 873-0221
Mr. Harvey Gaukel: Hazmat Specialist	(867) 873-7654	
Wildlife Management Division		
Wildlife Biologist	(867) 920-6190	(867) 873-0293
GOVERNMENT OF CANADA		
Indian and Northern Affairs Canada **Land Use and Water Use**		
Regulatory Approvals, Water Resources	(867) 669-2650	(867) 669-2716
Land Use; Reg. Manager, Land	(867) 669-2763	(867) 669-2731
NUNAVUT District Office; Iqaluit (Water)	(867) 979-4407	(867) 979-6445
Environment Canada Environmental Protection Branch	(867) 669-4728	(867) 873-8185
DFO Fisheries Habitat Biologist (Iqaluit)	(867) 979-8007	(867) 979-8039
OTHERS		
Kitikmeot Inuit Association, Kugluktuk	(867) 982-3310	(867) 982-3311
Kugluktuk Hunters and Trappers Assoc.	(867) 982-4908	(867) 982-4047

REVISED February 29, 2004

APPENDIX I

ADDITIONAL COMMUNICATIONS

Lupin

Lupin can be contacted by:

Weather Station:

Telephone	(780) 890-8764
Fax	(780) 890-8813
H.F.Radio	4765.0 or 4441.0 MHz

Winter Road Camps & Vehicles:

HF	4765.0 or 4441.0 Mhz
CB	Channel 19
Lac de Gras	(780) 988-0683
Lockhart Lake	(780) 988-2946
Dome Lake	(780) 988-1516

Winter Road Operations (Nuna)

Safety Manager (Mike Horne)	(780) 408-2898
Operations Manager (Pat McHale)	(780) 434-9434

EMERGENCY CONTACTS

Dupont	(905) 821-5660
EMERGENCY RESPONSE CENTRE (24 HOUR)	1-800-387-2122
Chemtrec	1-800-424-9300

Absorbents

Conweb & Oil Snare Canadian Industries Ltd .	(780) 465-0221
Alberta Oil Spill Consultants (Booms, absorbents, skimmers)	(780) 451-0585

APPENDIX I

PETROLEUM AND CHEMICAL PRODUCTS INVENTORY
MAJOR COMPONENTS

PRODUCT	QUANTITY* (31-Jan-04)	STORAGE UNITS	# OF UNITS SOH (WRRS)	STORAGE LOCATION
P40 FUEL	1,886,473 IG	350,000 IG 360,000 IG	9 2	Main Tank Farm Main Tank Farm
P50 FUEL	286,520 IG	187,000 IG 18,000 IG	3 3	Main Tank Farm Main Tank Farm
GASOLINE	3,153 IG	3,500 IG	2	Satellite Tank Farm
JET A	55,676 IG	360,000 IG	1	Main Tank Farm
RALUBE 40	55,417 L	1,400 L, Cubes & Bulk	21 cube + bulk	Main Tank Farm
W30 LUBE OIL	136,965 L	1,400 L, Cubes & Bulk	37 cube + bulk	Main Tank Farm
CYANIDE	241 mt	1.36 Tonne Bin	177	Cold Storage 3
LIME (PEBBLE)	49 mt	1.4 Tonne Bag	35	Cold Storage 2,3
HYDRATED LIME	326.9 mt	20 kg Bag	16,344	Cold Storage 2,3
LEAD NITRATE	169 mt	1. tonne bag	169	Cold Storage 3
HYDROCHLORIC ACID	3,100 L	20 L Jug	155	Cold Storage 2
ZINC DUST	10670 kg	45.4 kg Pail	235	Cold Storage 2
FERRIC SULPHATE	66 mt	1 tonne Bag (various)	66	Tailings Building
ANFO (AMEX)	516 mt	25 kg Bag	20,650	Main Magazine
PORTLAND TYPE 10	4482 mt	1.8 tonne Bag	2489	Millos
Magnafrac	123.8 mt	25 kg Case	4,952	Main Magazine
SODIUM NITRATE *	2523 kg	22.7 kg Bag	111.24	Cold Storage 3
SODA ASH *	749 kg	22.8 kg Bag	33	Cold Storage 2
SILICA *	545.4 kg	22.7 kg Bag	24	Refinery
BORAX *	635 kg	22.7 kg Bag	28	Cold Storage 3
FLUORSPAR *	567 kg	22.7 kg Bag	25	Cold Storage 3
FLOCCULANT	3,100 kg	25 kg Bag	124	Cold Storage 3
BATTERY ACID	1,400 L	20 L Container	70	Cold Storage 2
NITRIC ACID	108L	2.25 L BOTTLES	48	Cold Storage 2
MURIACTIC	460 IG	5 GAL. PAILS	92	Cold Storage 2

* Quantity figures indicate the on-site quantity on January 31, 2004

TABLE 1

APPENDIX I

HEAVY EQUIPMENT INVENTORY
ECHO BAY MINES LTD.
LUPIN MINE, NUNAVUT

No.	Description
2	Komatsu WA250 Loader
1	Cat 966G Wheel Loader
1	Cat 14H Grader
1	Badger Crane
1	Grove Crane
2	Volvo Haul Truck (20t)
1	Ford 9000 Truck
1	Flat Deck Truck
2	Euclid Haul Truck (28t)
1	D8K Cat Dozer
1	Cat 140G Grader
5	Pickup Truck

TABLE 2

APPENDIX I

SPILL CONTAINMENT/RECOVERY MATERIALS

Spill containment/recovery materials located at Lupin within the "Emergency Spill Response Van" container, centrally located adjacent to the fuel tank farm receiving station (see Fig. 7) contains the following inventory:

3	Shovels;
2	Roll Poly; 4mL, 500 ft.;
1	Crate of floordry; (50) 20kg bags;
4	booms, 11 ft.;
1	Pump; 2" Honda;
2	Safety approved 2 gallon gas container;
2	20 ft. 2" hoses;
10	45 gallon drums (no lids) for collection of contaminated materials;
1	100 ft. rope;
2	fire extinguishers;
1	4 lb sledge;
1	Box, dust masks
1	Chainsaw
1	Gas ice auger

In addition to the above, the on-site Lupin warehouse maintains a supply of the smaller items such as floordry, absorbent pads, shovels, dust masks. If additional equipment is required during a clean-up procedure warehouse issues are readily available.

TABLE 3

ADDITIONAL NWT SPILL FORM

Northwest Territories

NWT SPILL REPORT

(Oil, Gas, Hazardous Chemicals or other Materials)

24 – Hour Report Line
Phone: (867) 920-8130
Fax: (867) 873-6924

A Report Date and Time	B Date and Time of spill (if known)	C ☐ Original Report ☐ Update no._____	Spill Number

D Location and map coordinates (if known) and direction (if moving)

E Partly responsible for spill

F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)

G Cause of spill

H Is spill terminated? ☐ yes ☐ no	I If spill is continuing, give estimated rate	J Is further spillage possible? ☐ yes ☐ no	K Extent of contaminated area (in square meters if possible)

L Factors effecting spill or recovery (weather conditions, terrain, snow cover, etc.)	M Containment (natural depression, dikes, etc.)

N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials

O Do you require assistance? ☐ no ☐ yes, describe:	P Possible hazards to person, property, or environment; eg: fire, drink water, fish or wildlife

Q Comments or recommendations

FOR SPILL LINE USE ONLY

Lead agency

Spill significance

Lead Agency contact and time

Is this file now closed? ☐ yes ☐ no

Reported by	Position. Employer, Location	Telephone
Reported to	Position. Employer, Location	Telephone

APPENDIX I

REFERENCES

- Guidelines For Contingency Planning
  Northwest Territories Water Board, 1987

- Contingency Planning And Spill Reporting In The NWT
  A Guide To The New Regulations; unauthored, GNWT

- Guidelines For The Preparation of Hazardous Material Spill Contingency Plans;
  Environmental Protection, W&N Region, Report No. CP(EP) ENR90-91-4
  March 1990

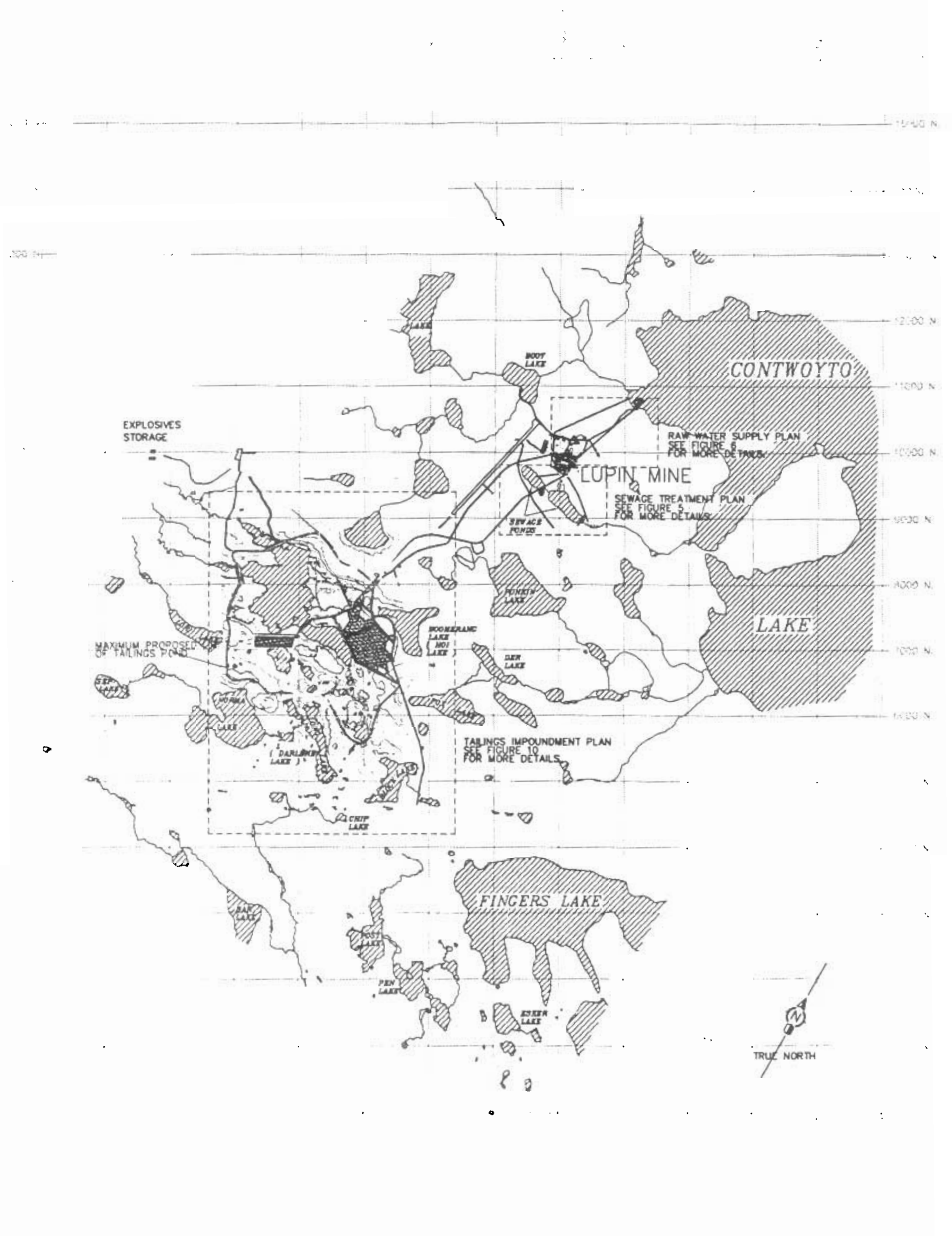
- Oil And Toxic Material Spill Contingency Plan
  Echo Bay Mines Ltd., 1984, updated annually

- Contingency Plan; Echo Bay Mines Ltd.
  November, 1995; Updated annually

- Polaris Operations Contingency Plan;
  Cominco Ltd. Polaris , N.W.T.; June 1994

- Guidelines For Preparing Spill Contingency Plans For Winter Road Operations In The Northwest Territories; E. Paquin, GNWT; D. Stendahl, NAP/INAC; D. Tilden, EPS/DOE; October 1983
- The Environmental Protection Act of The Northwest Territories; Spill Contingency Planning and Reporting Regulations, Registered July 22, 1993

- BHP Ekati™ Diamond Mine Spill and General Contingency Plan, 1999.



NOTE:
THIS DRAWING IS BASED ON DATA DERIVED FROM THE SURVEY OF STEWART WEIR LAND DATA INC. IN AUGUST 1989 AND 1:50000 N.T.S. MAPS.
ORIGINAL SCALE OF THIS DRAWING IS 1:20000. PLOTTING RATIO IS 1=20.

0 250 500 750 1000
METERS

ECHO BAY MINES LTD.

LUPIN MINE
LUPIN SITE PLAN
GENERAL ARRANGEMENT

4/30/90 E.PETERS
LUPIN
ENVIRONMENTAL
LUSIT04.DWG

APPENDIX II

MATERIAL SAFETY DATA SHEETS

SITE PRODUCT LISTING