

# **Appendix C**

## **Spill Contingency Plan**



# **SPILL CONTINGENCY PLAN**

PREPARED FOR THE NUNAVUT WATER BOARD

WATER LICENCE NWB1ULU0008 ISSUED MARCH 23, 2004

**WOLFDEN RESOURCES INC.**

**ULU EXPLORATION PROJECT**

**NUNAVUT**

April 2004

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## RECORD OF REVISIONS - COPY #

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NOTE: After completing the revision entries and replacing the appropriate sections, the Record of Revisions should be signed by the user.

## **1.0 GENERAL**

### **1.1 Preamble**

This Spill Contingency Plan has been compiled with respect to the requirements within Water Licence NWB1ULU0008, Part E, Item 1 which was reassigned to Wolfden Resources Inc. from Echo Bay Mines Inc. on March 23, 2004. This Plan is Wolfden's first submission under the Licence following its purchase of the Ulu Project from Kinross Gold Corporation in February 2004. The previous requirement for a Spill Contingency Plan was waived upon Echo Bay Mines Ltd's suspension of activities at the site. An annual review of the Plan takes place and revisions are usually submitted as necessary with the annual report.

The Ulu Exploration Project Spill Contingency Plan, upon approval by the Board, is to be distributed to all appropriate contacts on the distribution list (Sec. 1.3) and will be used in addition to the Ulu Project Emergency Procedures Policy Manual upon resuming activities at the site.

The Guidelines For Spill Contingency Planning, Northwest Territories Water Board, 1987", have been utilized as the guide to the requirements of the manual as per Item 1, Part E. The Plan has been expanded beyond these guidelines where appropriate and as described in Part E.

### **1.2 Contact**

Additional copies of this plan may be obtained by writing to:

Wolfden Resources Inc.  
309 Court Street South  
Thunder Bay, Ontario  
P7J 1H1  
Attn: Mr. Ewan Downie, President

or at

Tel: (807) 346-1668  
Fax: (807) 345-0284  
E-mail: [wolfden@baynet.net](mailto:wolfden@baynet.net)

### 1.3 Distribution List

Affiliation	Position	Name	Copy #
Wolfden Resources Inc.	President	Ewan Downie	1
Wolfden Resources Inc.	Vice President, Operations	John Knapp	2
Wolfden Resources Inc.	Project Manager	David Stevenson	3
Wolfden Resources Inc.	Senior Geologist	TBA	4
Wolfden Resources Inc.	Senior Engineer	TBA	5
Wolfden Resources Inc.	Building and Maint. Supervisor	Wayne Kirkham	6
Wolfden Resources Inc.	Environmental Coordinator	John Cook	7
DIAND	Water Resources Manager	David Milburn	8
Environment Canada	Environmental Protection	Dave Tilden	9
Nunavut Water Board	Executive Director	Philippe di Pizzo	10
Inactive			11

### 1.4 Purpose

This Spill Contingency Plan is designed to provide the necessary background information and plans of action in the event of a failure at the facility or an incident within the Ulu Exploration Project resulting in a spill of fluids (fuel, oil, sewage line) or of explosives. It is intended to outline the means for responding to failures and material spills within these systems in a way that will minimize potential health hazards, environmental damage and clean up costs.

The objectives of the Plan are to:

- Define the reporting procedures and communication network to be used in the event of a system failure or material spill.
- Define procedures for the safe and effective containment and cleanup/disposal of a system failure or material spill.

Define specific individuals and their responsibilities.

This site plan is limited to the Ulu Exploration Project and is not intended to cover, but may assist, the response action plans for winter road transportation between Ulu and High Lake.

## **1.5 Policy**

### **Environmental Policy**

The Board of Directors of Wolfden has established a corporate environmental policy that guides the actions of the firm and is followed and promoted by employees and contractors hired by the firm. This policy is considered to be a part of the overall corporate governance policy. It will be regularly monitored for compliance with the appropriate performance review to ensure effective implementation.

Wolfden is fully committed to sustainable development and will ensure that all phases of its projects will follow this approach to resource development. In the context of the Ulu Project, Wolfden will:

- Ensure that responsible and effective environmental management planning is carried out for all aspects of the Project.
- Ensure that Inuit traditional knowledge is incorporated into environmental management plans for the Ulu Project.
- Ensure that an integrated approach is followed through all phases of development across all aspects of the organization.
- Monitor all activities through all phases of development of the Project for environmental compliance and management programs with a commitment to follow up in a timely and highly effective manner.
- Continually improve in regards to environmental performance as a cornerstone of the corporate environmental management plan.
- Develop, design and operate facilities that are based upon the efficient use of energy, resources and materials.
- Identify, assess and manage environmental risks.
- Develop, maintain and test emergency preparedness plans to ensure protection of the environment, workers and northern communities.
- Require contractors and consultants to comply with corporate environmental requirements and to monitor their environmental

performance.

- Ensure there is adequate environmental training for all staff and contractors and to encourage dialogue and understanding of environmental and community concerns through all phases of the Project.
- Ensure that closure and reclamation planning is integrated into mine feasibility planning and that there are adequate resources available to deal with closure at all phases of the Project.

## 2.0 REPORTING PROCEDURES

### 2.1 Initial Reporting/Action

Upon encountering a failure within a disposal system (sewage or mine sump) or a petroleum/chemical spill, every Wolfden employee/contractor is responsible for **immediately reporting** the situation to their supervisor, or if unavailable, report directly to the Project Manager. A telephone listing of department management is included in Appendix I.

An assessment of the spill or potential spill should be made, regarding identification of material, risk to personnel safety and the environment, cessation, control and containment. If you are **SURE it is SAFE** to do so, an attempt should be made to control the spill. Otherwise, after reporting the incident to a supervisor, you should **REMAIN CLEAR** and prevent others from accidentally entering the area.

### 2.2 Internal Reporting

Once the incident has been reported to the supervisor and an assessment has been made, the spill reporting will be handled as an incident by the Project Manager. Upon proper notification of the personnel in the "Response Team Flowsheet" (Figure 1), remedial action can commence in accordance with the corresponding response plan. The immediate reporting of the spill to the **N.W.T. Spill Line (1-867-920-8130)** will be carried out by either the Project Manager, or if unavailable, the appropriate Department Head or designate at the Ulu Mine.

### 2.3 External Reporting

The Project Manager (or designate), upon receiving a report, will immediately notify the Response Team.

The Response Team shall then:

- Proceed to the failure/spill location and assess the situation;

# RESPONSE TEAM FLOWSHEET PETROLEUM/CHEMICAL SPILL PROCEDURE - ULU

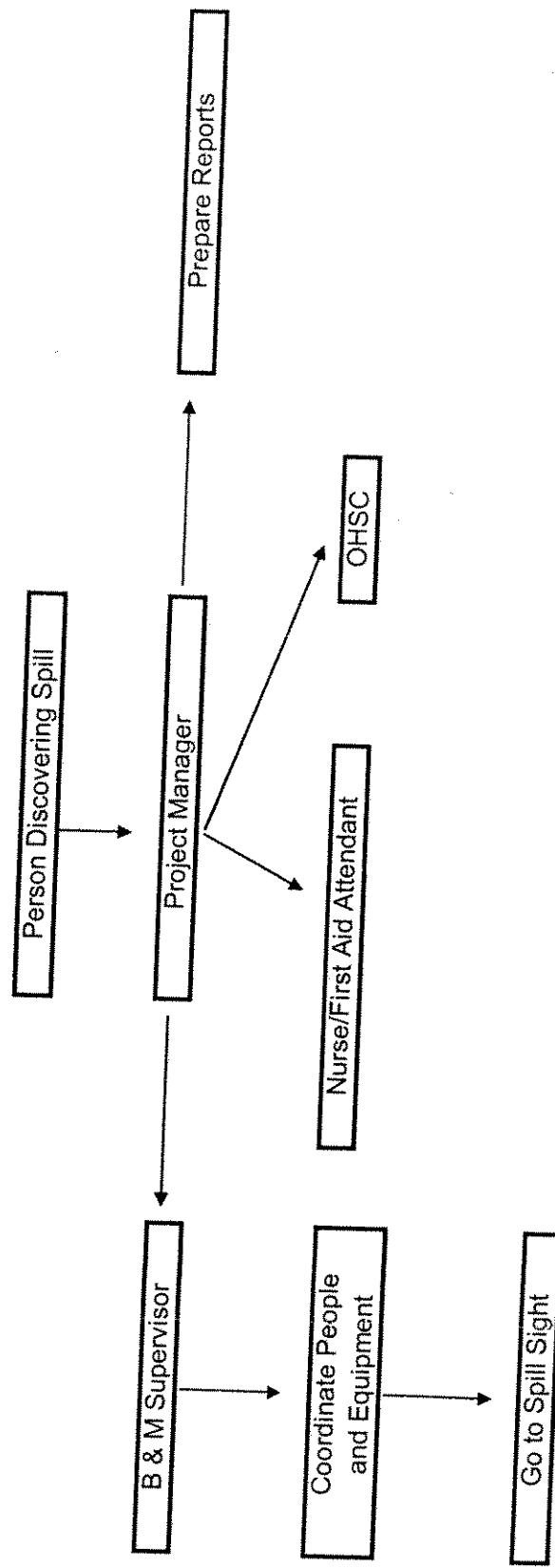


Figure 1

- **DO NOT TAKE ANY UNNECESSARY RISKS;**
- make arrangements for first-aid and removal of injured personnel;
- co-ordinate equipment support and mobilize to location;
- liaison with Emergency Response personnel regarding containment, clean up and disposal procedures.
- when an unauthorized discharge of waste occurs or *where there is a reasonable likelihood* of a spill, **REGARDLESS OF QUANTITY**, fill out as complete as possible, a formal Spill Report Form (Figure 2 and Appendix I) and contact the **24 HOUR SPILL REPORT LINE immediately at (867) 920-8130**, giving notification of the spill.
- retain the original and deliver one copy to:

President – Ewan Downie  
 Vice President, Operations – John Knapp  
 Project Manager – David Stevenson  
 Environmental Coordinator – John Cook

- The Environmental Coordinator or designate shall complete a **Detailed Spill Report** and submit to an Inspector no later than 30 days after the initial report of the spill. Submit to:

Water Resources Officer  
 DIAND, Nunavut District, NU  
 Baffin Region  
 P.O. Box 100  
 Iqaluit, NU  
 X0A 0H0

Several Government departments are available with expert advice to assist in decision making where there are environmental concerns. A telephone listing of these departments is also included in the Appendix I.

Where there is a concern for the general health and safety of the public, every effort should be made to contact local communities and hunters and trappers associations. See the Appendix I for current contacts and phone numbers.

## **2.4 Response Team Organization**

The response team organization has been summarized in the Response Team Flow Sheet (Figure 1). Within this team there are key personnel which will respond to all spills and assist in the implementation and coordination of the respective response plans. The titles and roles of these individuals include, but

**Figure 2 SPILL REPORT FORM**

N.W.T. SPILL REPORT (Oil, Gas, Hazardous Chemicals or other Materials)		24-Hour Report Line	
<p><b>A</b> Report date and time            2000/01/15 10:00 AM</p>		<p><b>B</b> Date and time of spill (if known)            2000/01/15 10:00 AM</p>	
<p><b>D</b> Location and map coordinates (if known) and direction (if moving)            60° 45' N, 130° 30' W</p>		<p><b>C</b> <input type="checkbox"/> Original report  <input type="checkbox"/> Update no. _____</p>	
<p><b>E</b> Party responsible for spill            P/N 123456</p>		<p><b>F</b> Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)            100 L of Gasoline</p>	
<p><b>G</b> Cause of spill            P/N 123456</p>		<p><b>H</b> Is spill terminated?  <input type="checkbox"/> yes / <input type="checkbox"/> no</p>	
<p><b>I</b> If spill is continuing, give estimated rate            10 L/min</p>		<p><b>J</b> Is further spillage possible?  <input type="checkbox"/> yes / <input type="checkbox"/> no</p>	
<p><b>L</b> Factors affecting spill or recovery (weather conditions, terrain, snow cover, etc.)            Windy, cold, snow cover</p>		<p><b>K</b> Extent of contaminated area (in square metres if possible)            1000 m²</p>	
<p><b>M</b> Containment (natural depression, dykes, etc.)            None</p>		<p><b>N</b> Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials            Clean up with absorbent material</p>	
<p><b>O</b> Do you require assistance?  <input type="checkbox"/> no / <input type="checkbox"/> yes, describe: _____</p>		<p><b>P</b> Possible hazards to persons, property, or environment; eg: fire, drinking water, fish or wildlife            None</p>	
<p><b>Q</b> Comments and/or recommendations            None</p>		<p><b>FOR SPILL LINE USE ONLY</b>            Lead Agency: _____            Spill significance: _____            Lead Agency contact and time: _____            Is this file now closed? <input type="checkbox"/> Yes / <input type="checkbox"/> No</p>	
<p><b>Reported by</b>            P/N 123456</p>	<p><b>Position, Employer, Location</b>            Supervisor, XYZ Corp, Yellowknife</p>	<p><b>Telephone</b>            867-123-4567</p>	
<p><b>Reported to</b>            P/N 123456</p>	<p><b>Position, Employer, Location</b>            Supervisor, XYZ Corp, Yellowknife</p>	<p><b>Telephone</b>            867-123-4567</p>	

are not limited to those outlined below. Due to the rotational schedule of many individuals, there is the possibility of one or more being off site at any one time. The alternate person(s) responsible for the specific role will be the designate identified below.

#### **Vice President, Operations (during suspended program)**

Through the Company's Policies and the Emergency Procedures Manual, ensure that the Plan is properly distributed to those supervisory personnel most likely to encounter a spill or unauthorized release during normal operations.

Ensure that all personnel are adequately trained in the safe working procedures and have access to the proper personal protection for handling hazardous material spills PRIOR TO an incident occurring.

Ensure that all equipment is properly designed and maintained, and is available for an emergency situation to minimize the risk during response.

All Media Relations should be carried out by the General Manager or his designate.

ALTERNATE; Project Manager, or other as designated from time to time.

#### **Project Manager**

Responsible for ensuring that adequate precautions are taken during normal operations in association with the Advanced Exploration Project.

Provide all necessary personnel and equipment to contain, mitigate and clean-up the spill as required. If additional supplies are required, initiate the relocation of the "Emergency Spill Response Trailer" to the spill location for immediate access.

ALTERNATE; Building & Maintenance Supervisor, Mine Captain, Senior Engineer, Senior Geologist, or other as designated from time to time.

#### **Safety Officer**

Provide technical support and advice on personnel safety during control and clean-up operations. Ensure all safety practices are in place and that the activity is performed according to standard safety procedures.

Ensure through regular training programs that all personnel involved in the response are capable of dealing with the identified spills as provided in the contingency manual. As well, that they are fully aware of their responsibilities in

preserving the health, safety and the environment with regard to equipment/component failures and spills.

In the event of a petroleum spill, mobilize the Fire Crew to stand-by as there may also be a need for controlled burning.

ALTERNATE; Project Manager, Building & Maintenance Supervisor, Mine Captain, Senior Engineer, Senior Geologist, or other as designated from time to time.

### **Environmental Coordinator**

Through evaluating the initial report and assessing the magnitude/potential impacts of the incident, provide direction and technical advice on the containment, clean-up and disposal procedures activated through the Plan.

Liaison with Company Management and Government Agencies.

Submit the spill report via the 24 hour Emergency Spill Line and follow-up with the formal written "Detailed Spill Report".

ALTERNATE; In the absence of environmental staff, spill reporting shall be the responsibility of the Project Manager (or alternate) responsible for initial spill discovery and response.

### **2.5 Response Team Role**

Following consultation between the Project Manager, Building and Maintenance Supervisor and other necessary Ulu personnel; the role of the Team(s) upon arrival at a failure, petroleum or chemical spill are as follows:

- a) assemble the necessary personnel and equipment required to contain the spill;
- b) proceed to the scene with the Response Team and co-ordinate the overall containment/clean up and/or repairs;
- c) assess the possibilities of any danger to life, property or equipment;
- d) determine if any product is escaping;
- e) take necessary action required to stop/reduce/contain any further product from escaping;
- f) attempt to determine the extent of the damage and if it extends beyond an original containment area;
- g) if contained within a berm (fuel/oil), pump out that which is recoverable, then remove and replace the soil within the berm (contaminated soil to be removed to the disposal site and burned);

- h) if outside the berm (fuel/oil) attempt to determine whether the cause is from overflow or a damaged berm/liner. Should the cause be a damaged liner, repair or replace it;
- i) determine whether it would be safe to burn off the spilled fuel or would the surrounding soil have to be removed to a disposal area and burned. Any burning requires prior approval from regulatory authorities.
- j) if chemical, determine extent of spill, whether any material is still escaping and the containment necessary.
- k) All contaminated materials are to be removed and disposed of according to individual response plans, or as directed by appropriate regulatory personnel.

### **3.0 SITE INFORMATION**

#### **3.1 General**

Echo Bay Mines Ltd. purchased the Ulu site lease from BHP in 1995 with plans to develop the property into a satellite mine for additional mill feed to the Lupin mill. An underground development, diamond drilling and bulk sample program was initiated in 1996 to provide infill geological information. Echo Bay temporarily shut down the Ulu Project site in September 1997. Wolfden Resources Inc. purchased the Ulu Project in February 2004.

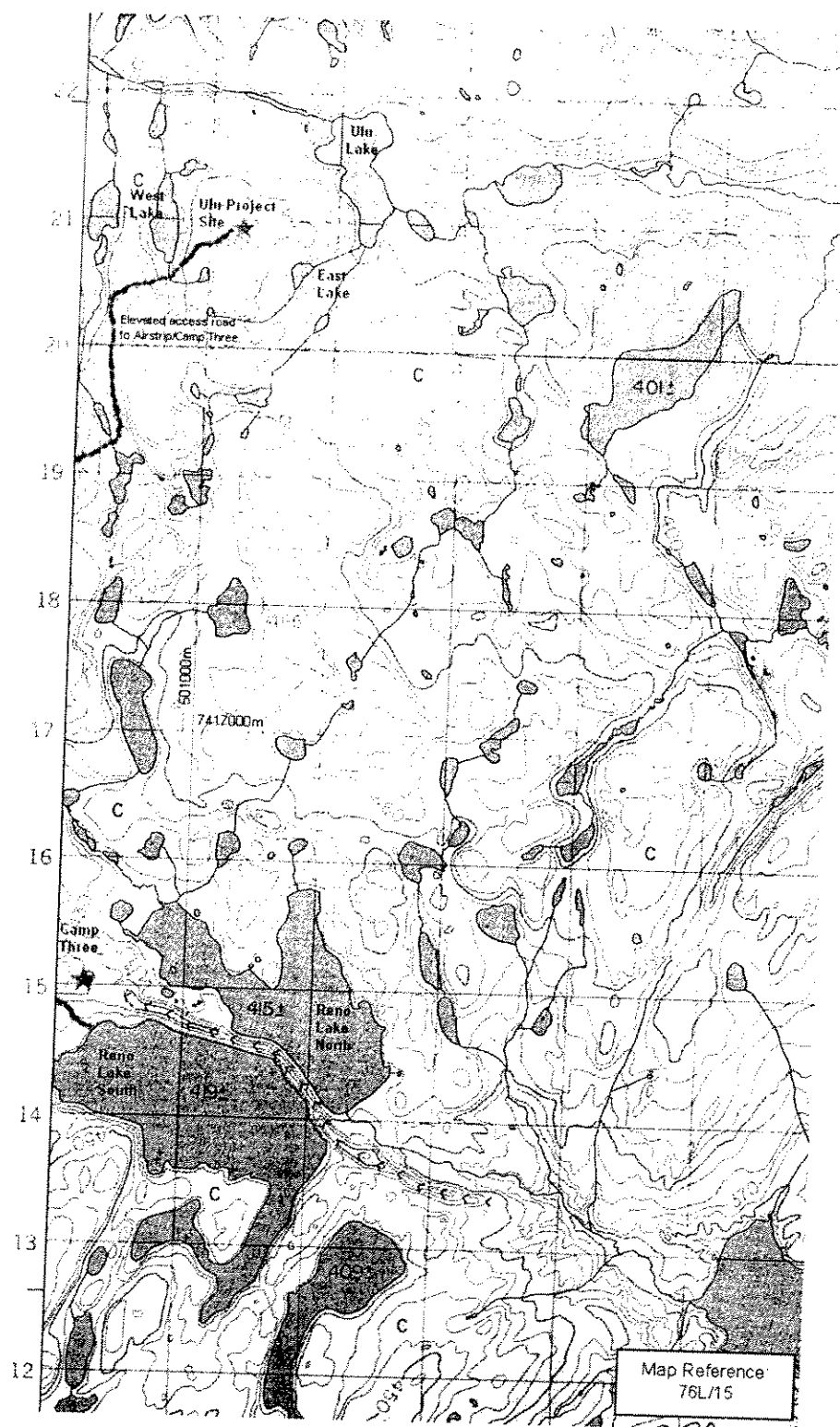
The Ulu Project is situated in Nunavut, with the underground exploration site at 100E 58' W longitude and 66E 54' N latitude (Figure 3). The site is located in the treeless arctic tundra where rock and glacial features dominate the landscape. Located about 12 km north of the Hood River and 150 km north of the Lupin Mine, the site is accessible year round only by aircraft. Bulk items were brought on site via winter road and during exploration activity, day to day supplies are flown to the camp. The area is characterized by severe winter climate and mild summers with an overall temperature range of -50E to +30E Celsius. Permafrost in this area typically extends to several hundred metres.

The Ulu Project site is completely self-contained with the exception of the transportation requirements for materials/supplies and workforce mobilization. There are two main location areas; the Ulu Camp which houses the residential complex consisting of Weatherhaven accommodations, kitchen and recreation area, the ore storage pad and, Camp Three, which is comprised of a maintenance shop and fuel tank farm.

#### **3.2 Site Components (Operations)**

The site components are limited to the Project camp, maintenance shop and fuel storage. Additional components include the water supply pipeline, the sewage treatment plant and associated piping as well as the ore storage pad with runoff collection sumps.

FIGURE 3 SITE LOCATION MAP



### **3.2.1 Mining and Ore Storage**

When production mining begins, ore from underground will be brought to the surface and stored on an above ground constructed pad. This pad is designed to store approximately one years production prior to shipment to the High Lake Mine for processing within the High Lake Mill. This is assuming a positive production decision at High Lake. As there may be runoff from the storage pad during the spring melt and summer precipitation events, lined catchment areas are to be in place to contain the water for testing prior to release. A lined sump is also located at the entrance to the mine workings (portal). This sump was initially constructed for recycling drill water during portal and ramp development but is available for containment and storage of excess water if encountered during exploration and development.

### **3.2.2 Sewage**

All camp wastes (kitchen and sleeping quarters) are collected and treated with a small Rotating Biological Contractor treatment plant. Effluent is then transported via a 550 metre, insulated two inch pipeline to East Lake (Figure 4).

Future proposed plans include a small containment dyke to be constructed at East Lake to provide additional retention along with a contingency holding pond for excess ore storage pad runoff or an unexpected volume of water from the mine development.

### **3.2.3 Mine Water**

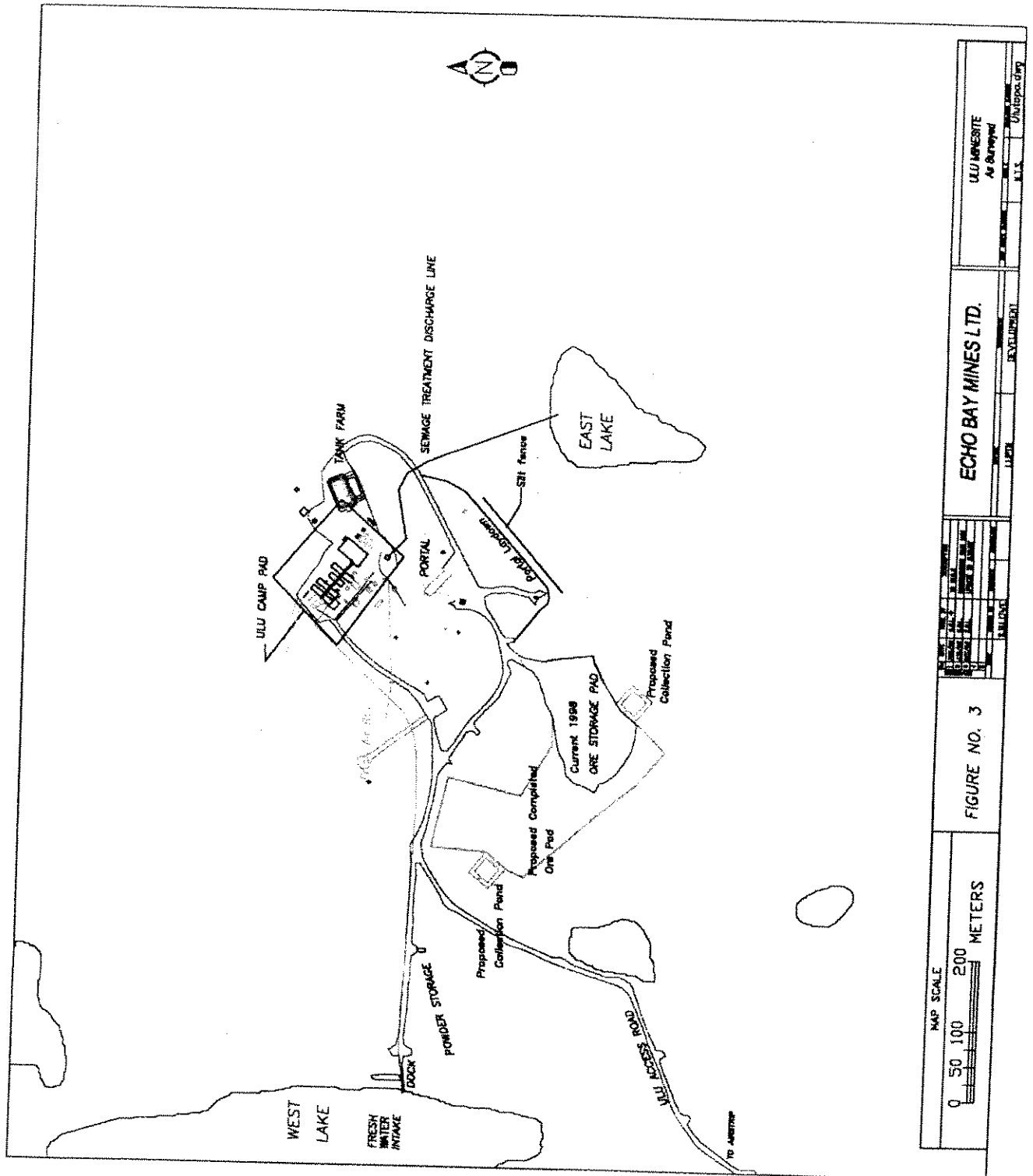
The Ulu Project is located geographically in an area of continuous permafrost resulting in frozen ground to a depth of approximately 350 metres. Due to this feature, there is very little ground water that requires handling from the underground workings.

The day to day underground exploration and development do require some water to be supplied from surface. Recycling of water occurs throughout the development, however some water has been pumped to surface for storage at the portal sump. Accumulated water would be tested for all required constituents prior to any release of water to the East Lake drainage system.

### **3.2.4 Water Source/Supply**

All camp water is obtained from a nearby lake, referred to as West Lake. Water is supplied to the camp via an insulated two inch pipeline approximately 680 metres in length and powered by a seven horsepower submersible electric pump installed on a floating dock. Two storage tanks are present at the site; a 27,000

FIGURE 4 SEWAGE and WATER SUPPLY



litre tank for general water use and a 63,000 litre tank for fire water storage. Water consumption for the camp is expected to be less than 50 m<sup>3</sup>/day.

### **3.3 Storage Facilities (Consumable)**

All consumables are transported to the site via aircraft and stored for use during the next operational year. The items of concern here are the petroleum products (diesel fuel, gasoline, lubricants) and chemicals (explosives) that are stored in above ground facilities.

These may contribute some risk with regard to the protection of water quality within the mine site area.

#### **3.3.1 Petroleum Products**

Fuel storage for the Ulu Project is operated through two individual tank farms. All bulk storage for petroleum products at the Project Site have been provided with secondary containment in the form of constructed tank farm facilities incorporating an impermeable liner and berm as well as off-loading apron. This provides protection against any spillage entering the ground and potentially contaminating the water supplies. The impoundment volume of each facility is sufficient to accommodate 110% volume of the largest single tank volume that is contained.

The tank farm at Camp 3 or main staging area, consists of two 350,000 usg tanks and six 14,000 usg tanks. At the Ulu site, fuel is stored in five 14,000 usg tanks. Both tank farms store P40 and P50 grade fuels. Fuel is stored in the remote tank farm at Camp 3 until required at the Ulu camp at which time it is transferred via tanker.

The products that are located at the site include, in order of quantity; P40 fuel, P50 fuel, Jet A, W30 lube oil, Ralube and Gasoline.

Please refer to the attached Materials Inventory for general location of all materials and storage facilities

#### **3.3.2 Chemical Products**

The major chemical product used at the Ulu Project is an explosive (Ammonium Nitrate Fuel Oil also know as ANFO). The main storage facility is located at Camp 3 with a day use storage at the Ulu Project underground access. *Note: During the suspension of exploration activity, all explosives have been removed from the property.*

### 3.4 Receiving Environment

The Ulu Exploration Project is located in the treeless arctic tundra of Nunavut. The site is located on a glacially modified bedrock outcrop. The terrain is rugged, consisting of exposed bedrock, usually modified by frost action in to blocky, angular boulders, relocated bedrock boulders and occasional glacial erratics. The dominant plant species in these areas was found to be dwarf birch, labrador tea and heather. Two lakes of significance flank the Ulu Project site locally known as West Lake and Ulu Lake. A smaller, shallow body of water referred to as East Lake is immediately adjacent to the site. Sedge tundra occurs along the shorelines of lakes in the vicinity. Drainage from the lakes in the Ulu area follow a flow pattern to Ulu Lake through to Ulu Creek, then into the Frayed Knots River which eventually flows into the Hood River.

Located approximately 7km to the southwest and approximately 5km north of the Hood River is the Ulu Camp 3, which is used for fuel storage and additional heavy equipment. The terrain is not nearly as rugged and hosts smoother topographical glacial features including several eskers and rolling moraines. Considerable more till cover is present and the vegetation cover is respectively more diverse.

Due to the isolated location of the exploration project along with the air only access (with the exception of the winter road haul season), the potential impacts to public access areas are minimal.

Environmentally sensitive areas, in addition to the surrounding tundra include; the East Lake drainage area which will collect all site drainage from the camp including the camp sewage treatment plant effluent, mine portal (sump discharge if needed) and the ore storage pad; West Lake and its close proximity to the access road and Reno Lakes with their relationship to Camp 3 and its fuel and explosives storage. All drainage within the Ulu Project area is within the Hood River watershed. Boulder filled channels at the outlets of the lakes provide for mainly subsurface drainage to the Hood River system after spring freshette.

The larger lakes in the Ulu Project study area are regarded as having fish habitat to some extent. No aquatic biological inventories were carried out at East Lake due to its small size and isolated position which precluded the existence of fish. Potential sources of contaminants in these areas include general runoff from the site facilities (which may include petroleum products, ammonium nitrate explosives) and dust generation from vehicle traffic on nearby roads. Potential vehicle incidents along the access road between the main camp and Camp 3 also need to be considered as a source of contaminants.

### 4.0 OPERATIONS SYSTEM – COMPONENT MALFUNCTION PREVENTION

As a regular daily inspection, the following checks are carried out by the Project