



## **2008 ABANDONMENT AND RESTORATION PLAN**

### **ULU MINE NUNAVUT, CANADA**

Prepared for:  
NUNAVUT WATER BOARD  
Former Water License NWB1ULU0008 – Issued July 1, 2000  
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## 1.0 INTRODUCTION

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### 1.1. REQUIREMENT OF AN ABANDONMENT AND RESTORATION PLAN

Echo Bay Mines Ltd., Lupin Operations applied for and received a Water License for the Ulu Project located approximately 150 km north of the Lupin mine site. Given the size and type of project perceived, the water license was obtained only as a contingency in the event that water would be produced within the underground operations and require disposal to surface waters during operation. All other aspects of the project were small in scale and did not trigger any water licensing criteria components.

The License was subsequently renewed, effective July 1, 2000 for a term of eight years under the Nunavut Water License NWB1ULU0008. Within the License, Part I, Item 1 requires that an “Interim Abandonment and Restoration Plan” be submitted for approval within six months of issuance of the License.

During February 2004 Wolfden Resources Inc. purchased the Ulu Project from Kinross Gold Corporation. As a result Wolfden requested the reassignment of the existing Ulu water license to Wolfden Resources Inc.

On June 19, 2007 Wolfden became a wholly owned indirect subsidiary of Zinifex Canada. The existing Ulu water license expires June 30, 2008.

### 1.2. OBJECTIVES OF THE ABANDONMENT AND RESTORATION PLAN

This Abandonment and Restoration (A&R) Plan has been prepared to indicate to the Board the direction and procedures that Zinifex Canada Inc. intends to implement to fulfill obligations with regard to abandonment and restoration at the Ulu Project. The objective of the plan, following the NWT Water Board’s “Guidelines For Abandonment and Restoration Planning for Mines in the Northwest Territories” and Part I, Item 2 of the License, is to comply with current government regulations to ensure once abandonment and restoration has been completed;

- that there is no danger to public health or safety;
- that the requirement for long term maintenance and monitoring



associated with all of the mine facilities is minimized;

- that contaminant loadings to the environment from the closed facilities which may be related to continued leaching of contaminants from tailings/waste rock areas (ore stockpiles), development of acid rock drainage and abandoned areas of chemical/materials storage are minimized or prevented;
- that the cumulative degradation of abandoned areas affected by the mining activities are prevented and to enhance the natural recovery, where appropriate, of disturbed lands, and;
- that the affected areas will be returned to a condition that is compatible with the surrounding, original undisturbed area with respect to its future potential/productivity uses.

The Ulu Project has been estimated to contain approximately 1.6 million tonnes of mineable reserves or the equivalent of 7 years production at 590 tonnes per day. All mine production is scheduled to be transported during the winter months to supplement the proposed High Lake mill in the event of a positive production decision at High Lake. No processing facility is contemplated for the Ulu site. Mine production is anticipated to carry through at the planned rate until reserves are exhausted. With this in mind, the approach taken to restore the site will be put into effect after mine production ceases and the facilities are no longer required.

### 1.3. ULU BACKGROUND

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. Wolfden Resources Inc. subsequently purchased the Ulu Project from Kinross Gold Corporation in February 2004, with Zinifex purchasing Wolfden in 2007.

The Ulu Project is situated in Nunavut, with the underground exploration site at 100E 58' W longitude and 66E 54' N latitude (Ulu location and site Plans are included in **Appendix I**). 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 are brought in by aircraft. 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.

## 1.4. GEOLOGY

The Ulu deposit is in an Archaean epigenetic lode-gold occurrence located within the High Lake greenstone belt of the north-central Slave Province. Gold mineralization is hosted by discordant quartz veins in mafic metavolcanics and, less commonly in metagabro and metasediments.

The Flood Zone can be traced on surface for 400 metres in a northwest direction near the core of the anticline. The two to five metre thick mineralized zone dips steeply at 70E to 80E to the southwest and has been intersected by diamond drilling to depths of about 600 metres. Areas of local thickening up to 10 metres correspond to flexure points along the roughly tabular body. Mineralization is comprised of an intensely silicified zone with arsenopyrite contained in fractures and dilatancies within basalts.

## 1.5. SITE FACILITIES

The facilities at the Ulu Project consist of consist of a 60 man “Weatherhaven” camp with sleeping, dining and recreation quarters, a vehicle repair shop, power house, warehouse, cold storage, office and change rooms. Also at the site are a fuel storage tank farm, fresh water and sewage systems, garbage incinerator and an ore storage area (site photos included in **Appendix II**). The main fuel staging area and explosives magazines are located approximately 12 km away near Camp 3.



## 2.0 ABANDONMENT STRATEGIES

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The decision for closure or abandonment of the Project area is influenced by several factors, most of which are out of the operators control. These may include, but are not limited to 1) the presence (or of lack) of economic ore reserves; 2) the market value of the final product (gold); 3) the costs of producing the product (changing with costs of operation i.e: fuel/supplies), and 4) the success of any ongoing exploration programs of both the owner/operator as well as that of other organizations working within a reasonable range of the current operation.

The closure, abandonment and restoration of a site is the final stage in the life cycle of a viable mining operation and the decision for final closure comes after careful consideration of all other options available. The costs associated with the removal of equipment and materials and restoration of the area is most often considerably greater than that for initial construction.

Three scenarios are suggested by the *guidelines* and are contingent on the circumstances of the shutdown. They range from short term/temporary abandonment to final abandonment of the site and are described below.

### 2.1. PLANNED SHUTDOWN

A planned shutdown is considered a short term event and the result of economic, operational or regulatory requirements. It is expected that in this type of situation the time frame is temporary and there is every intention to resume the operations in the near future. In this situation, all facilities would be maintained through a planned care and maintenance program whereby equipment and materials are stored appropriately. Monitoring and administrative activities would continue with regard to maintenance of all leases, licenses and permits where applicable.

### 2.2. LONG TERM SHUTDOWN

A long term shutdown would take place when, for a number of reasons, the mining of the Ulu deposit is not considered economic or even possible. Lower ore grades than expected or temporary shutdown of the supporting mine are two circumstances which would result in a long term shut down of the project. Moving into the final abandonment stage is not considered due to the possibility of utilizing the infrastructure/camp facilities for third party use or possible sale.



The facilities would be placed in a state of suspended operation whereby all potential hazards are removed. Most supplies (explosives and petroleum products) inventories would be brought to a minimum through scheduled use, reducing the risk of long term storage at the site. A salvage program may be initiated, where appropriate, to begin the process of restoration that would normally occur during the final abandonment stage.

A modified monitoring program would be recommended for maintenance of the Water License as discharges from the facility would cease. Due to the relatively small footprint of the Ulu Project, very little progressive reclamation is possible. Minor reclamation work would commence in any area not previously restored and not in use. Administrative duties would continue with regard to applicable leases, licenses and permits.

The Ulu Project is currently in a state of “care and maintenance” for an indefinite period while other mining and economic options are being assessed. As the Project was “temporarily” shut down in 1998, prior to the actual issuance of a water license, there were no defined monitoring processes in place. Monitoring for background data purposes had taken place and was completed prior to the shutdown of exploration activities.

### **2.3. FINAL ABANDONMENT**

Final abandonment would proceed in the event that the project has been completed, economic ore reserves have been exhausted or a decision has been made to abandon the project. A formal notice of abandonment would be filed during the final stages of mining, or in the event of a long term shut down, once a decision for final abandonment had been made.

Decommissioning of the site would take place during the next available construction season with removal of camp components and equipment during the following winter's ice and snow road. The entire Ulu complex (with the exception of constructed pads, roads and runway) is considered a component type system whereby removal from site for sale or re-use is practical.

Post closure monitoring during the reclamation activities would be followed by approximately three years of specific monitoring with regard to the ore storage pad and the potential for acid rock drainage from the materials.

The detailed specific abandonment and restoration activities for the Ulu Project are discussed in the following section which describes the facility, areas of concern and the appropriate action that would be undertaken in the event of final closure.





### 3.0 ABANDONMENT AND RESTORATION PLANNED ACTIVITIES

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The facilities and specific disturbed areas of concern with regard to the Ulu Project that require abandonment/restoration activities are covered in the following section. The goal of specific restoration practices is to minimize or preferably eliminate further degradation of disturbed areas and to initiate, encourage and accelerate the natural recovery of the area.

Conducting reclamation activities concurrent with the mining operations is not practical (or possible) in most areas at Ulu due to the limited amount of disturbance at the site and the continued use of all areas (camp, roads, airstrip, ore storage) during the mining period. An area that is addressed on a continual basis is the quarry site where road fill materials are obtained. This area is continually re-contoured after quarry operations are complete to minimize erosion and further disturbance of the esker. As there is no operating land-fill at the Ulu Project, all non-burnable refuse and materials is expected to be transported to an approved landfill site for disposal or re-use/recycling.

No additional quarry materials are expected to be required during closure activities as process or infilling requirements can be met through excavation of roads/pads already present.

#### 3.1. BUILDINGS AND CONTENTS

All buildings at the permanent Ulu Project camp are considered collapsible and are designed to be dismantled at closure and removed for use at another site or sale. These structures include the main Ulu camp and vehicle repair shop. All other buildings, if not salvaged or sold, having their contents removed will be taken from surface and hauled to the underground workings for disposal prior to sealing off the access.

#### 3.2. INFRASTRUCTURE SUPPORT

The Ulu Project relies on other infrastructure support for its day to day operations which include freshwater intake and associated piping; camp sewage treatment and effluent discharge piping; Ulu fuel tank farm (5 x 14,000 USGal) containing both P40 and P50 fuel; associated all weather roads, a 1,200 metre airstrip; main fuel tank farm at Reno Lake esker (2 x 350,000 USGal and 6 x 14,000 USGal); explosives magazine and detonator magazine.



### *3.2.1. FRESH WATER INTAKE*

West Lake is the fresh water source for the camp and exploration operations. A seven horsepower submersible electric pump, installed on a floating dock supplies water to the camp via an insulated two inch pipeline approximately 680 metres in length. Two storage tanks are present at the site; a 27,000 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.

During a temporary or short term shut down scenario, all water lines supplying the camp and underground will be disconnected and drained to prevent freezing and then left in place. The electric pump at the lake is to be removed for storage until needed and the floating dock system will remain.

Upon closure, the floating dock, all pumps, piping and associated support structures will be removed for shipment for use or salvage/disposal. Any non-salvage, burnable material (timber cribbing) will be disposed of at site through burning.

### *3.2.2. SEWAGE DISPOSAL FACILITIES*

Sanitary sewage and camp greywater is treated prior to release to the environment. Treatment is carried out with a package facility employing a rotating biological contactor (RBC). Once treated, the effluent is released to East Lake via a 550 metre, insulated two inch pipeline. Sludge is removed from the treatment plant on a semi-annual basis and will be disposed of by placement within a shallow sump at the site disturbance area and capped with waste rock.

During a temporary or short term shut down scenario, all associated piping to the treatment plant and through to the discharge point will be disconnected and drained to prevent freezing. The treatment plant will have the solids removed for disposal and the tank drained and flushed clean.

Upon closure, the treatment plant, piping and all associated support structures will be removed for shipment to High Lake for use or salvage/disposal. Any non-salvage, burnable material (timber cribbing) will be disposed of at site through burning.

### *3.2.3. ROADS AND AIRSTRIP*

There is approximately 14 kilometres of roads (including the airstrip) at the Ulu Project. These connect the Ulu Camp with other ancillary locations in the area including the Camp 3 fuel tank farm, the explosives magazine, the detonator magazine, esker quarry, the fresh water pump dock, the camp accesses including shops, seacan storage, Ulu fuel tank farm and the underground access ramp.

The roadways and the combined airstrip make up the most prominent land disturbance feature aside from the pad for the camp and the ore storage pad



(incomplete). The roads utilize culverts to provide unrestricted flow to the drainage courses during spring melt and precipitation events. There also site runoff collection located between areas of the camp pad which collect water and provide controlled drainage via overflow culverts from the site.

During a temporary or short term shut down scenario, the roads, airstrip along with associated culvert installations would be left in place and monitored for erosion or ponding after spring melt has subsided. Inspections would take place again prior to freeze up to ensure free flow through the culverts.

Upon closure, all roads (and the airstrip) would be re-graded with the shoulder slopes flattened to reduce erosion. All culverts would be removed and the drainage opened up to allow natural flow through the crossing. In order to promote natural ingrowth of vegetation, the road and airstrip surfaces would be ripped/graded/scarified to conform to the natural topography in order to provide the needed microclimate sites for seed deposition.

#### *3.2.4. FUEL STORAGE*

Fuel storage for the Ulu Project is operated through two individual tank farms. The tank farm at Camp 3 or main staging area, consists of two 350k USGal. tanks and six 14,000 USGal. tanks. At the Ulu site, fuel is stored in five 14,000 USGal. tanks. Both tank farms store P40 and P50 grade fuels. The 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. Both tank farms are constructed within dyked areas and are designed to hold 110% of the largest tank. A high density polyethylene liner is installed within each tank farm to prevent release of any spilled material through exfiltration. There is also liner material placed alongside the tank farm at the loading/unloading aprons to prevent any spillage from entering the ground and potentially contaminating the water supplies.

During a temporary or short term shut down scenario, fuel tanks would remain in place and all piping/valves locked out. Regular inspections would ensure that the components were all in good condition and there was no risk of fuel spillage.

Upon closure, it is expected that the fuel inventory would be depleted during normal operations with a single 14,000 USGal. tank remaining in service to provide fuel for completion of all necessary decommissioning and reclamation work. Any remaining fuel will be transferred to smaller (500USGal.) tanks for use in the hauling of remaining materials off site. Larger quantities of fuel may require aircraft transfer to High Lake for general consumption. Fuel tanks would be removed from service as they are emptied and prepared for removal off site.

The bermed containment area of each tank farm is expected to contain some fuel contaminated ground (esker sand) from normal transfer procedures. If timing permits, this material will be subjected to in-situ land farming to facilitate the removal of residual hydrocarbons. Any richly laden soils may be ignited prior to disposal. The final disposal of the soils from the tank farms will be in the form of



back fill within the mine or ramp/portal area or used for general site grading. The HDPE liner material used in the tank farm and loading apron areas will either be disposed of within the underground workings prior to backfilling, or if practical packaged up and removed from the site for disposal.

#### *3.2.5. EXPLOSIVES MAGAZINE*

The explosive and detonator magazines are located to the southwest of the Ulu Camp, west of the Reno Lake esker. These magazines consist of seacan storage containers enclosed by a chain link fence. During a short term suspension of operations the explosives will remain on site securely locked. For an indefinite temporary shut down or permanent closure, the remaining inventory will be shipped off site by winter road or via air, depending on the timing of closure.

Upon closure, fencing will be removed and the sea containers utilized for shipment of materials to High Lake.

#### *3.2.6. QUARRY USE*

The quarry used for the road, airstrip and final grade on the camp pad is located near Camp 3 at Reno Lake. A number of conditions and clauses were contained within the quarry permit which restrict the areas and use of the esker borrow. As a result, the alteration to the esker is kept to a minimum and the resulting erosion and silting within the run off is minimized. Silt fences were also strategically placed to control erosion as transport of fines until conditions on the excavated areas stabilized.

General standard practice at the esker quarry includes the contouring of disturbed areas as soon as possible after completion of quarry activities. A final inspection is completed at the end of the summer construction season and any final grading is completed at that time. There should not be any additional work to be carried out at this site upon short term shut down or long term closure. Prior to final closure and abandonment, it is expected that a final inspection by regulatory authorities followed by recommendations for additional work, if any, would be completed at that time.

Wolfden intends to apply for a new quarry permit since the original permit has expired.

### **3.3. UNDERGROUND DEVELOPMENT**

The Ulu Project underground exploration program has been developed via a portal and ramp to a depth of 155 metres over a distance of approximately 1,762 metres. Ore accesses are currently developed on the 25, 50, 75, 95, 115 and 135 metre levels. A fresh air vent raise is present for ventilation of the underground workings. No permanent equipment or facilities are present underground. There is, however a mine sump system to remove excess water to



the lined, surface sump located outside the portal. All repairs and regular maintenance are completed at the surface shop.

During a temporary or short term shut down scenario, all equipment/materials will be removed from the underground and placed into storage on surface, either in the maintenance shop or within the numerous sea-containers. The ventilation raise and the portal will have access restricted by installing bulk heads and placement of berms or fencing. These will only be of a temporary nature (timbers) to facilitate an efficient start up. The main receiving sump on surface, outside the portal, will be left in tact and available for pumping of mine water during start-up and subsequent continued exploration activity.

Upon closure, all equipment and materials will be moved from the underground and salvaged where possible. The combustible, non-salvage materials will be burned on site. All equipment will be transported to High Lake for later use or salvage. As a final measure (after disposal of any accumulated potentially acid generating materials) the portal, fresh air raise and any other entrances to the underground mine will be sealed using engineered concrete plugs and caps to prevent future access. The area immediately in front of the portal will be re-contoured to approximate grade and covered with esker material. The mine ventilation raises will be covered with esker material to meet the adjacent topography.

### 3.4. WASTE ROCK

Waste rock is produced during the initial development of the decline at the portal and ramp access and during the decline advance. The rock produced from the initial portal excavation ramping was used to prepare a level pad area for construction of the camp facilities at the site. From there, waste rock produced was then placed in the location of the proposed ore storage pad for grading. Once completed, these pads are capped with a thin layer of esker material to provide final base for construction/laydown. After completion of these two areas, waste rock production from underground development would be either placed on surface for storage (waste rock dump) or used underground as backfill in mined out areas.

Acid rock drainage potential of all rock types from the Ulu exploration site had been investigated prior to the property purchase. In 1996, additional investigation work was completed to specifically address the ARD characteristics of the ore and waste rock. Findings indicated that the samples as a group have a relatively uniform paste pH and NP, very low sulphate-S and low to very low carbonate-NP contents. The acid generation potential (AP) of a sample was calculated as attributable to the sulphide present (total sulphur minus the sulphate-sulphur) or SAP.



Most of the NP in these samples is due to non-carbonated minerals. Because of the low carbonate in the samples, the sulphide content becomes the most important parameter determining the outcome of the NNP (net neutralizing potential) and the Neutralizing Potential Ratio, or NPR (NP/AP ratio) of a sample. Variable results were obtained with the 1996 study and indicated that a threshold of 0.9 weight percent sulphur should be used as a discriminator (any rock containing more than approximately 2.5% pyrrhotite or 2.0% pyrite or 4.5% arsenopyrite by volume or their combined equivalents) when defining PAG (potentially acid generating) or non PAG material.

Samples collected during the most recent testwork indicate that some PAG material was present at the north ramp. In volume however, this PAG rock constitutes only a small proportion of the total material present as a composite sample gave a NPR of 10.6. The overall paucity of PAG-material along with the slow weathering process associated with the region suggest that, with well mixed materials, acid drainage is not expected to be generated from the waste stockpile and waste rock used as construction materials. Kinetic testwork began during the initial exploration work in 1996-97 has been put on hold and will continue upon resumption of activity to further define the extent of PAG of the waste rock and ore generated at the Ulu Project.

Upon closure, all high sulphide content waste rock isolated and stockpiled on the ore storage pad will be transferred back within the underground workings for disposal. This will be an ongoing process whereby any material placed in the stockpile will be moved underground when the need for backfill is required, thus removing the PAG material from surface.

### 3.5. ORE STOCKPILE

An ore storage pad, constructed of development waste rock, is located (currently incomplete) adjacent to the Ulu portal. During the operational phase of the Ulu Project, this stockpile will hold the mine production during periods when transport to High Lake is not possible due to transportation restraints (approximately mid-April through to December). At peak production, the stockpile is expected to reach near 165,000 tonnes of ore waiting transport to High Lake.

The ore pad has been designed in such a way that, upon completion, collection ponds will be located at the low points around the perimeter to facilitate accumulation of any precipitation/ spring melt water prior to being released to the local environment. At these locations, water will be tested for pH and TSS prior to being released. If the pH is unexpectedly low, then a provision to add lime for pH adjustment is available prior to release.

Upon closure it is expected that the ore stockpile will be depleted through normal shipping operations of material to High Lake. Any remaining ore on the storage pad is to be recovered and placed in the underground prior to further closure of





the mine facilities. Once all ore has been removed, the ore storage pad (being constructed of waste rock) will be graded to conform more to the natural topography of the area and to lessen the slope on the outer edges in order to allow easier access by local wildlife.

### 3.6. REVEGETATION

The Ulu Project is situated in the treeless arctic tundra where rock and glacial features dominate the landscape. The site is located on a glacially modified bedrock outcrop. The surrounding terrain is rugged, consisting of exposed bedrock, some modification by frost action into blocky, angular boulders, relocated boulders and occasional glacial erratics.

This upland, rocky tundra is dominated by vegetation adapted to the harsh habitat which includes Dwarf Birch, Labrador tea and Heather. In vegetation surveys undertaken in 1996, these species occurred with a frequency of about 5-6.5 % whereas bare ground was also found with a frequency of 6.5 % and rock 51.5%. Willow, Crowberry, Blueberry, Sedge and Cranberry were other notable plant species however, occurring with frequencies of less than 5% each.

Revegetation of disturbed areas at the Ulu Project will focus on the enhancement of the ground surfaces to promote natural re-introduction of native species while reducing the opportunity for erosion.

Scarifying of hard packed surfaces (roads and airstrip) to open up the ground provides the required microclimate for natural plant growth enhancing seed entrapment, moisture retention and wind protection. This will be carried out on all roads, pads and the airstrip. The roads, currently raised above the natural topography, will be reduced in height and contoured prior to scarifying.

In general, the Ulu Project site has been graded with waste rock to provide a level pad for camp construction, materials laydown and ore storage. This grading is only minimally above the fractured rock outcropping and boulders leaving very little flexibility in the final topography. The areas near the natural slopes will be contoured to conform more aesthetically to the natural angle present.

### 3.7. POST CLOSURE MONITORING

Post closure monitoring of the Ulu site will take place in a number of areas, mainly dealing with water quality and soil contamination. The components of concern are the fuel storage areas (Ulu and Camp 3 tank farms), the maintenance areas, the ore and waste rock storage pads and the esker used for construction materials.



### *3.7.1. WATER QUALITY*

Post closure would result in the continued exposure of the camp pad, ore/waste rock storage pad and the laydown area to the harsh environmental elements. Although kinetic acid rock drainage testing has indicated that the waste rock is non-acid generating, it is expected that monitoring of the runoff from these areas would be continued on a seasonal basis for three to five years based on previous data and results of the on-going program.

All run off from the ore storage pad, portal laydown area and main camp pad is naturally directed to a collection point known as East Lake. Effluent from the package sewage treatment plant has also been directed to the small lake during exploration/development activities. This location serves as an ideal sampling point prior to water from the camp entering a major water system, starting with Ulu Lake.

Monitoring of the stability of closed roads, airstrip and the used esker area is to be included in the annual monitoring, checking for areas requiring proper grade control and stability. As very little material would be required from the esker after the initial construction phase, it is expected that upon closure, all areas of concern with regard to erosion would have been corrected.

Post closure monitoring of the sewage effluent receiving stream should not be required as the only component of the waste that was released is camp grey water. This same water body however, would be monitored under the above planned ore storage pad monitoring as they both are within the same drainage basin.

### *3.7.2. SOIL CONTAMINATION*

All areas of hydrocarbon storage will be tested prior to final closure. If land farming is chosen as an option to disposal, ongoing monitoring will take place to determine the effectiveness of the practice. Monitoring would continue until acceptable levels of hydrocarbons have been achieved.





## 4.0 LIST OF STUDIES UNDERTAKEN

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*Ulu Project: Preliminary Assessment of Acid Rock Drainage Potential*, Klohn-Crippen Consultants Ltd., October 1996.

*Fisheries Assessment of Streams and Lakes in the Ulu Project Area*, RL&L Environmental Services Ltd., November 1996.

*Notes on Wildlife in the Vicinity of the Echo Bay Mines Ulu Project and Associated Transportation Corridor*, Hubert and Associates and Canamera Geological Ltd., August 1996.

*Wildlife and Wildlife Habitat Assessment*, Canamera Geological Ltd., Environmental Resources Division, November 1996.

*Ulu Mine Project Archaeological Impact Assessment: Phase I, Quaternary Consultants Ltd.*, July 1996.

*Ulu Mine Project Archaeological Impact Assessment: Phase II, Quaternary Consultants Ltd.*, September 1996.

*Land-Cover and Vegetation of the Ulu Site and Ulu/Lupin Winter Road*, Nunavut, Canada, Institute for Advanced Field Education Ltd., January 1998.

*Vegetation and Soils in the Vicinity of the Ulu Mining Project and along the Hood River Riparian Corridor*, Nunavut, Canada, January 1998.

*Kenetic Testing of Sulfide-Rich Material From Ulu*, Klohn-Crippen Consult. Ltd., April 1998.

*Baseline Aquatic Studies Program in the Ulu Project Area*, Nunavut, RL&L Environmental Services Ltd., May 1998.



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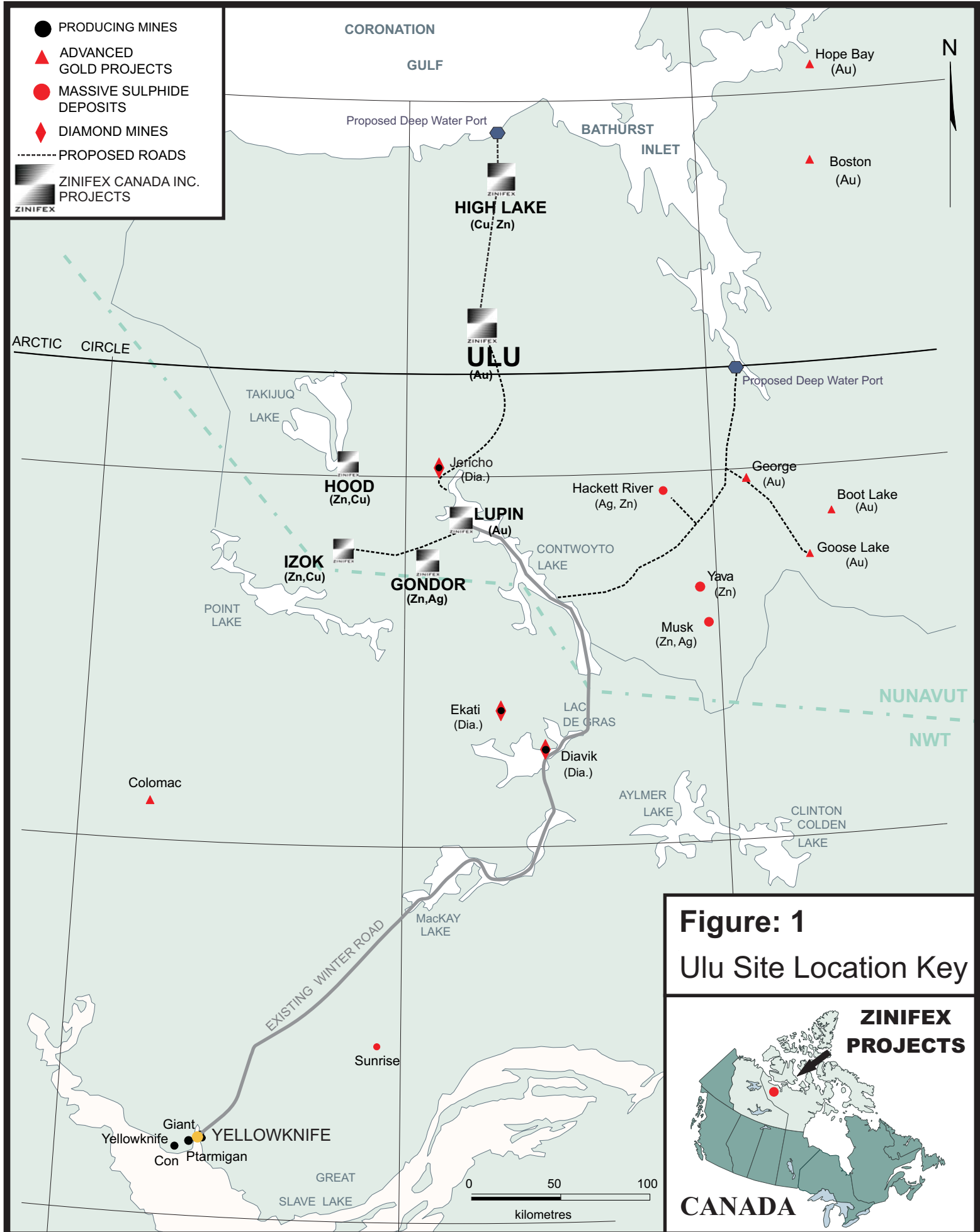
Klohn-Crippen Consultants Ltd., Kinetic Testing of Sulfide-Rich Material From Ulu, April 1998.



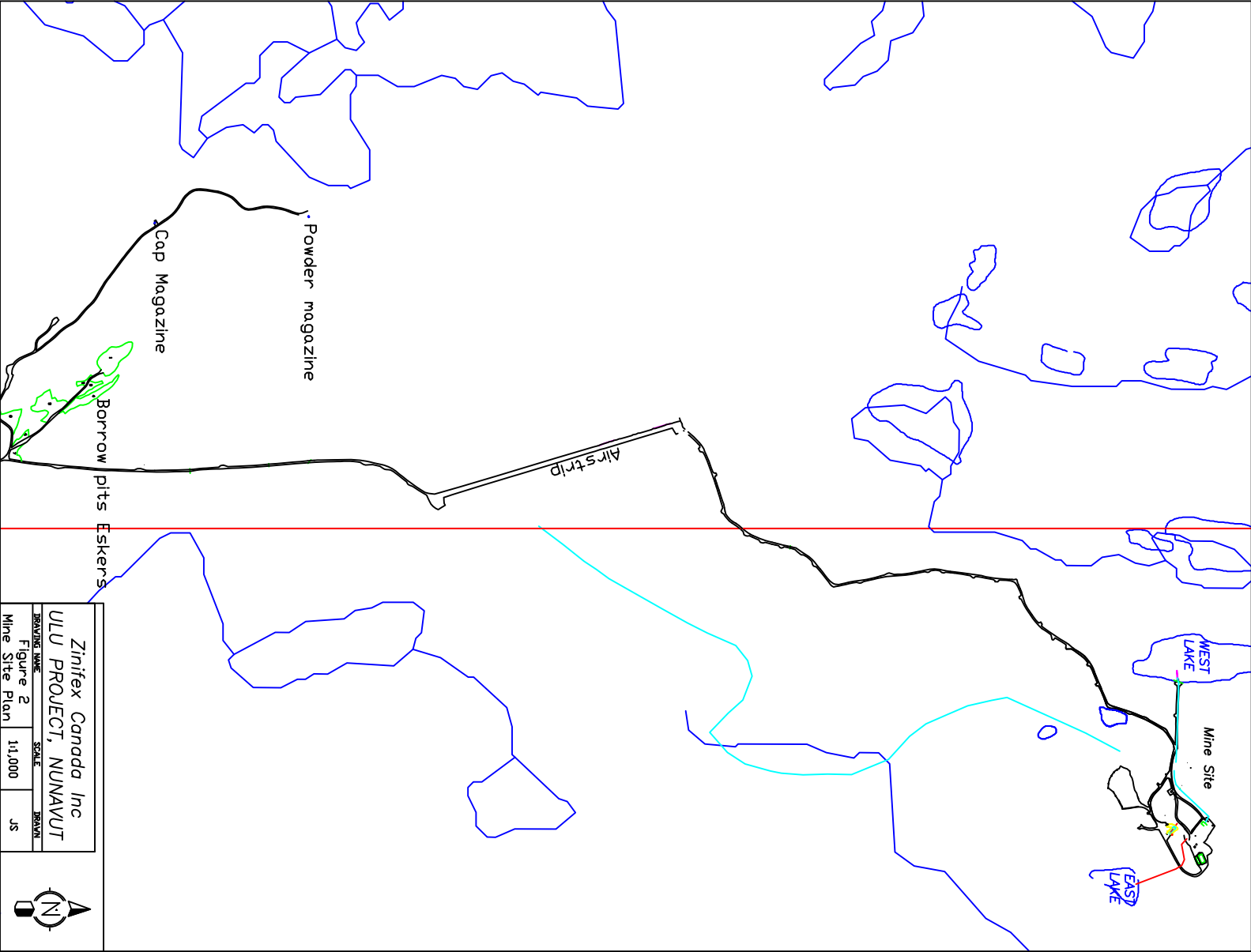
## APPENDIX I

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### *FIGURES*

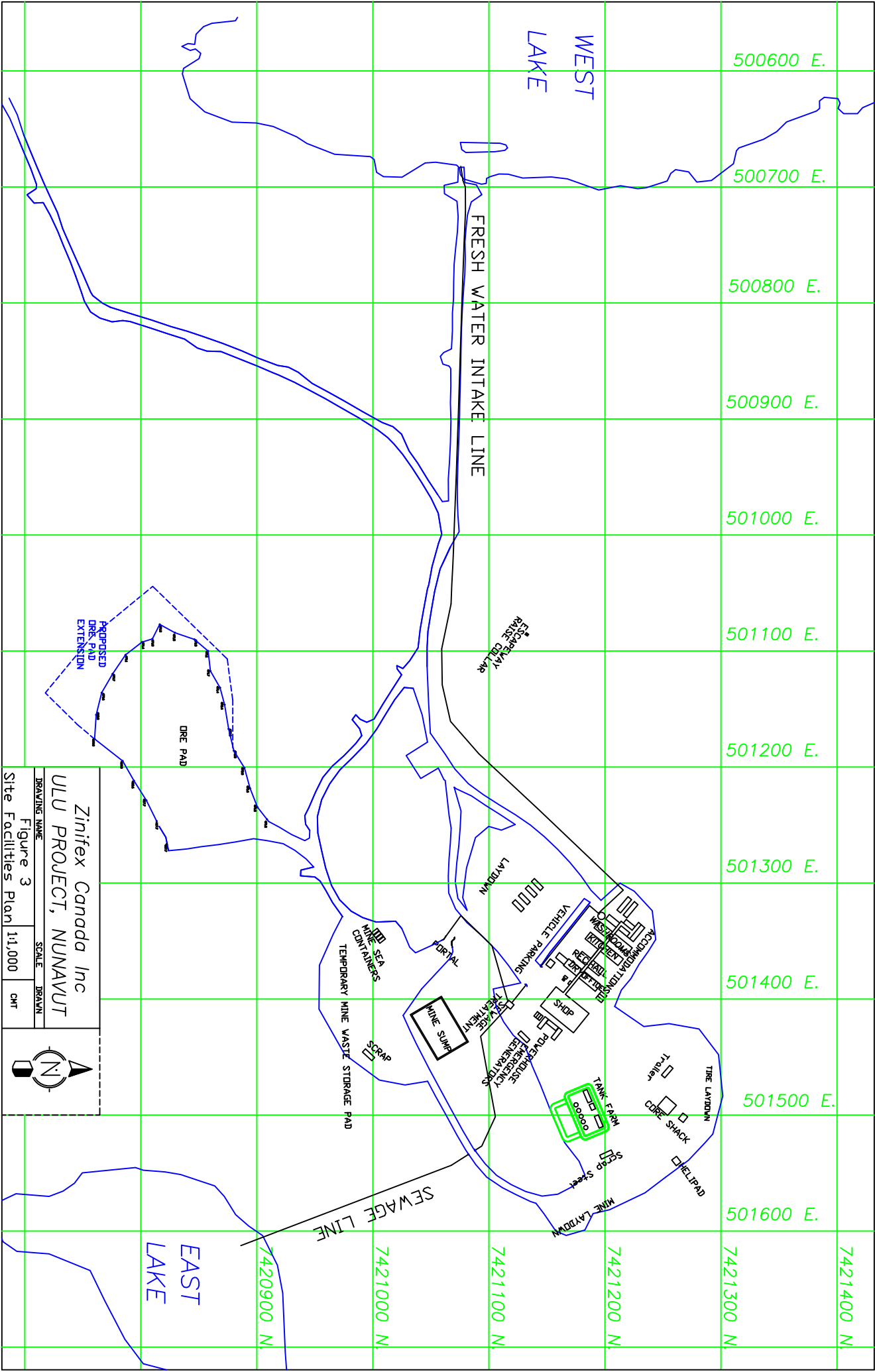


**Figure: 1**  
Ulu Site Location Key



|                      |         |       |
|----------------------|---------|-------|
| Zinifex Canada Inc   |         |       |
| ULU PROJECT, NUNAVUT |         |       |
| DRAWING NAME         | SCALE   | DRAWN |
| Figure 2             | 1:1,000 | JS    |
| Mine Site Plan       |         |       |





Zinifex Canada Inc  
ULU PROJECT, NUNAVUT

| DRAWING NAME |                      |
|--------------|----------------------|
| Figure 3     | Site Facilities Plan |

| SCALE   |     |
|---------|-----|
| 1:1,000 | CMT |

DRAWN





## APPENDIX II

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### *SITE PHOTOS*



**Photo 1:** Ulu Project Camp looking from the northeast. Laydown area in foreground, fuel tank farm on left, underground surface sump - middle left, weatherhaven camp and ore storage pad (center above camp).



**Photo 2:** Ulu Project Camp looking from the south. Incomplete ore storage pad in foreground, weatherhaven shop and camp in centre with Ulu Lake in the background.





**Photo 3:** Ulu Project Camp 3 at Reno Lake looking from the east. Fuel tank farm in foreground. Steel clad shop and equipment storage above. Road accesses to Ulu Camp on right, explosives magazine above right.



**Photo 4:** Ulu Project Camp Fuel tank farm looking from the west. Two 350,000 usg tanks and six 14,000 usg tanks to the left of loading apron in foreground with fuel drum storage.



**Photo 5:** Ulu Project Air Strip; looking north. The Ulu Camp is accessed via the road that takes off from the north end of the airstrip (camp not in view).