Nunavummi Qaujisaqtulirijikkut /Nunavut Research Institute
Box 1720, Iqaluit, NT XOA OHO phone: (819) 979-4108 fax: (819) 979-4681 email: slcnri@nunanet.com

Reviewer Recommendation Form: Land &/or Water Based Research

NWB2HIG

Applicant Name:	**Glenda Fratton**
Project Name:	**Baseline Study Programs for the High Lake Project**

Review Panel Name:	**Executive Director,NWB**
Region:	**Kugluktuk, Gjoa Haven, Cambridge Bay**

Research Discipline:

Panel Comments:

Requested Terms or Conditions:

Recommend Approve ☐ Recommend Reject ☐	Annual ☐ or Multi-year ☐	Signature	Title:	Date

5/17/2004

DISTRIBUTION

Please find enclosed a copy of an application for a *Science Research License* from **Glenda Fratton, Gartner Lee.**

Glenda Fratton's research is titled ***"Baseline Study Programs for the High Lake Project"*** and is proposed to take place from July 2004 to December 2004.

As per the **Scientists' Act** of Nunavut, community consultation is required before a Science Research Licence can be issued. The documentation is provided for your information and review. A ***Reviewer Recommendation Form*** is enclosed for your response by July 1, 2004.

Thank you for your continued assistance. Please contact our office if you have any questions or concerns regarding the above.

Renée Malcom

per Mary Ellen Thomas
Manager, Research Liaison

INTERNAL
PC dp

encl.

Central

cc: Environmental Assessment Screener,NIRB
Lands Administrator QIA
Lands Manager KIV.IA
Lands Manager
Executive Director,NWB
Director of Wildlife Management NWMB
Mayor SAO Kugluktuk
Chairperson HTO Kugluktuk
Mayor SAO Gjoa Haven
Chairperson HTO Gjoa Haven
Mayor SAO Cambridge Bay
Chairperson HTO Cambridge Bay
Area Manager DFO
Executive Director NPC

EXT. file

Instructions: This is the printable version of the Land, Freshwater and Marine Based Research application form. Print off these pages, print your answers clearly, then fax or mail to the address below. For faster processing, we recommend you fill in our online form, and use this copy as a back-up of your online submission www.nunanet.com/~research/Landform2.html. Some questions may require you to send or fax additional information to Nunavut Research Institute (NRI).

Nunavut Research Institute
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SCIENTIFIC RESEARCH LICENCE APPLICATION

Land, Freshwater and Marine Based Research
This application fulfils the requirements for NIRB environmental screening

SECTION 1: APPLICANT INFORMATION

1. Applicant's full name and mailing address:

Discipline Lead (DL)
Glenda Fratton

Gartner Lee Limited
840-7th Avenue SW, Suite 1605, Calgary, Alberta, T2P 3G2

Fax: 403-264-8412
Phone: 403-262-4299 ext. 121

E-mail: gfratton@gartnerlee.com

2. Field Supervisor (address, if different from above):

Field Program Lead for all teams
Charlotte Mougeot
Gartner Lee Limited
840-7th Avenue SW, Suite 1605, Calgary, Alberta, T2P 3G2

Phone: 403-262-4299 ext. 124

3. Other Personnel list (name and position):

See Attachment A Field Program Personnel - High Lake. This list may change slightly depending on staff availability.

Total # of personnel: 18 *Total # of person days: 100*

SECTION 2: AUTHORIZATION NEEDED

4. List the organizations you will contact for necessary authorizations associated with the project. (See Appendix A and B):

- Kitikmeot Inuit Association for Land Use Application for access to Inuit Owned Land and letters of support
- Department of Sustainable Development, Nunavut Government for Wildlife Research Permit
- Department of Culture , Language, Elders and Youth for Archaeologists 'Permit
- Department of Fisheries and Oceans, Government of Canada, Iqualuit, for Marine Mammals Transportation License and for License for Fish for Scientific Purpose

5. List the active permits, licenses, or rights related to the project and their expiry date:

- High Lake Project : Nunavut Water Board Water License NWB2HIG0103, for water use and waste disposal associated with the camp and exploration activities all personnel involved with the baseline program will be staying at this camp and using transportation provided by Wolfden from that location. Expiry date: September 2005
- Department of Indian Affairs and Northern Development Land Use Permit : N2001C0017 Class A. Expiry date: May 30, 2005
- Inuit Owned land Use License Kitikmeot Inuit Association License No. KTL 303C006- and KTL 303C006-amended . Expiry Date: April 29 2005.

SECTION 3: PROJECT PROPOSAL DESCRIPTION

6. Project duration: July 2004 to December 2006
Period of operation: July 2004 to December 2006
Proposed term of permit: July 2004 to December 2005.

Project title : Baseline Study Programs for the High Lake Project.

Wolfden Resources Inc., through its consultant Gartner Lee Limited, will design and undertake preliminary and long-term environmental and socio-economic baseline programs to develop a general understanding of the environmental setting for the High Lake Project. And, to meet environmental assessment and regulatory requirements for developing the High Lake Project. The High Lake Project consists of: the High Lake and Ulu mining properties; transportation corridors from Ulu to High Lake and north to the coast; and a deepwater port facility at Grays Bay on the Coronation Gulf. The High Lake Project is located in the Kitikmeot Region of Nunavut (see Map 1).

An environmental baseline program is required for the proposed High Lake Project. Baseline conditions will be used to prepare an impact assessment of the project on the environment, to select sites and road locations and to prepare environmental protection plans and environmental monitoring programs. A one-year, multi–discipline permit is requested for this

project. The Socio- economic and Traditional Knowledge Program associated with this project is submitting a separate application.

Field work will include feasibility and reconnaissance studies for the engineering design and construction team, and environmental baseline data collection (air, land and water). For all studies, access will be by helicopter, boat or on foot as appropriate; ATVs will also be used near the existing camps where feasible. Sampling methods to be employed involve standard environmental survey techniques and do not involve any new technology. Global Positioning Systems (GPS) and appropriate scale maps and aerial photos will be used for recording point location information and for navigation. Teams studying the various biophysical environment components will work cooperatively for logistical efficiency and to reduce the amount of air traffic in the area. Local assistants will be hired to assist in data collection. All personnel will be staying at and working from the existing camps (e.g., no new camps are anticipated).

A. Feasibility Study for Engineering design and construction

This program will involve small teams of engineers and support personnel performing reconnaissance flights and on the ground investigations to refine route and site selection, identify potential borrow sites, and for on the ground non-intrusive data collection and recording site characteristics. If larger crews and more intrusive investigative methods are planned later this year, a separate application and a Land Use Permit application will be prepared as required. This program for this application does not include extensive investigation or geotechnical drilling, excavation or the need for large surveying crews.

B. Environmental baseline programs

WATER

1. Marine and Freshwater Fish, Fish Habitat and Aquatic Studies

An application will be submitted to DFO to obtain a fish license to Fish for Scientific Purposes. This section provides a general description of the scope of work that will be undertaken:

- Habitat survey and, supplemental spawning habitat and overwintering habitat surveys in the summer, fall and winter of 2004;
- spawning and overwintering habitat surveys undertaken only on those streams having physical features considered suitable for these uses;
- qualitative assessment of potential habitat use and population survey;
- preliminary indication of sensitivity to project-related impacts; and
- identification of watercourses where detailed multi-season assessment may be required

- Work undertaken from a helicopter will identify locations of watercourses which will be confirmed with GPS and photographs taken. Landing will be made at selected watercourses for more detailed observation as required.

- A routine set of observations will be made in the area for each watercourse. These will be recorded on a field sheet that will be kept together with the photographs and other visual observations.
- Activities on the ground will primarily involve photography with some measurements of watercourse features such as depth, flow, slope etc. at selected locations which will be determined at the time of the survey.
- Fish collection is planned for 2004. Appropriate licenses and permits are being applied for and will be in place for these sampling activities.
- Field crew will consist of two fish habitat specialists.
- Access to the lake and shoreline will be by ATV if possible (near existing structures) helicopter and boat.

2. Marine Mammal Studies

This section provides a general description of the scope of work that will be undertaken.Studies will be undertaken to determine the marine mammal use and populations in the area and along proposed shipping routes.

Aerial surveys will be conducted in Coronation Gulf, from east of Gray's Bay to the western end of the Gulf around Kugluktuk. North-south transects will be flown perpendicular to the south shore of Coronation Gulf. In keeping with aerial surveys for ringed seals from other parts of the Arctic, these surveys will be flown at 91 m (298 ft.) above the ice surface and will extend 40 km from shore or until continuous broken pack ice is encountered. Few ringed seals are found in broken pack ice. Although bearded seals may be present in pack ice, they are difficult or impossible to spot. Thus surveying pack ice would be unproductive. Counts of seal holes will be made, if most of the snow has melted off the ice, and it is felt counts and location of seal holes will give a good indication of wintering areas for seals.

Location of hauled-out seals and seal holes will be recorded using the GPS unit in the aircraft. These locations will be plotted in a Geographic Information System (GIS) and will be related to various features (for example water depth) to determine the location of physical features that are correlated with concentrations of seals that may be found. Locations of other animals (for example colonies of nesting birds) will also be plotted. This will help locate areas that are important places for various species.

3. Hydrology

The purpose of the hydrology program is to determine how the project could affect stream and lake chemistry and morphology, provide background hydrological information to the fisheries and water quality groups and provide scour and erosion constraints to the engineers for route selection.

The field program will consist of helicopter access visits to selected watercourse crossing sites. The field program is planned to take place in late summer 2004 and potentially in 2005. The field program will involve a reconnaissance level assessment of channel features.

Measurements taken at each site will include

- Stream dimensions;
- Depth of flow and discharge estimates;
- Bed and bank materials; and
- Scour and lateral erosion characteristics.

4. Marine and Freshwater Sediment and Water Quality

The sediment and water quality program will focus on assessing the potential effects of construction and operation activities on marine and surface water quality as well as sediment. To augment previous water quality programs undertaken in previous years, a field survey of the water quality at various locations will take place in late summer 2004 and will collect information on the following water quality parameters:

- pH
- temperature
- conductivity
- alkalinity
- hardness
- dissolved oxygen
- reactive phosphorus
- arsenic, cadmium and aluminum
- other substances such as heavy metals will also be analyzed.

Samples will be collected at each site and preserved for testing in the laboratory. If time permits, observations will be made of the aquatic ecosystems from which the water is taken to determine the types of aquatic invertebrate organisms present and their relation to water quality. Sediment samples and analyses will also be performed. Grab samples will be collected from a boat or from the shoreline.

5. Lake and Coast Bathymetry

Data for a bathymetric map (of High Lake and at proposed coastal dock location) will be collected using an automated process, where water depths are collected to produce a depth contour map. From the data collected for High Lake, volumetric calculations for the entire lake and for selected layers can be computed. Data collected from the coast will be used to determine depth and bottom contour profiles at potential dock locations. This work is scheduled between July 1 – October 1, 2004.

The data will be collected using a boat, equipped with an outboard motor and kept at a constant speed. UTM positions will be collected with corresponding depths (metres), at one-second intervals throughout the duration of the project resulting in X, Y, and Z points.

The automated data collection unit consists of a Global Positioning System (GPS) with post-processing capabilities, an echo sounder, and a lap-top computer to produce a set of highly accurate data points. Positional data will be corrected using information purchased from a nearby "Community Base Station".

LAND

1. Wildlife

Wildlife Research Permit and permission to research migratory birds are being applied for. This section provides a brief description of the program to be performed this year. Wildlife surveys will be structured to collect information for habitat evaluation and to support habitat use indices. Methods will include both ground and aerial surveys as appropriate. All other teams working in the study area will also record incidental wildlife observations. Additional surveys (e.g., winter track counts) have also been included in this application pending further planning and discussions with regulators and community organizations.

- Ground surveys for 2004 include wildlife sign and habitat surveys (July-August). Waterfowl, songbirds, raptors, canids , muskox, caribou, grizzlies and marine mammals will be the species of particular interest but observations on other species will also be made to document biodiversty and support the sustainable development approach of the project.

- Wildlife sign and habitat surveys will be conducted in conjunction with the vegetation and terrain surveys. These surveys will be conducted by two linked teams of three or four-person multi-disciplinary, which will be ferried in "leap-frog" fashion by helicopter between sample areas. A wildlife specialist will be on each team. Information collected will include wildlife conditions and wildlife observations and sign (e.g., pellets, scat, tracks). The sites will be stratified to cover representative terrain and vegetation types. Any den sites observed would be measured and documented and potential denning habitat will also be identified.

- Aerial surveys may be conducted using helicopter and fixed wing aircraft. These programs may include aerial reconnaissance (late July, August, September). Surveys will be within the study corridor. Agency recommended height minimums will be followed. Survey's will be helicopter based with some ground reconnaissance where appropriate. Flights may include community representatives and regulatory personnel where possible, to address local wildlife concerns. Survey height will be greater than 325' (100 m) above ground level or as further advised by territorial and/or federal wildlife agencies. Fall staging waterfowl surveys may be conducted using helicopter and fixed wing aircraft.

- Winter track counts may be conducted in winter (2005) using standard transect survey techniques to identify tracks by species and to document vegetation types in which they occur. GPS locations will be documented for key wildlife species. Navigation will be by GPS. Data recorded will include weather and snow conditions, and wildlife observations by species, sex, age, location and vegetation type.

2. Vegetation and Terrain

Vegetation, terrain and soil surveys will contribute to ecosystem mapping and description, identification of wildlife habitat for key species and preparation of baseline information for reclamation programs are planned. And to support the engineering design team. These surveys will be undertaken within the study area.

- Prior to field surveys, vegetation types will be mapped using aerial photography/satellite imagery. Maximum use will be made of available data i.e., Nunavut Government and previous vegetation mapping. Field surveys will be carried out on a sample of representative vegetation types. Methods used will be standard vegetation plot surveys incorporating field observations and photography to record information on plant communities. Limited samples of individual plants will be collected for later identification, if field identification is not possible. If such a plant is believed to be rare, then only a plant part will be collected and then only if it is from a sufficiently large local population (> 20 plants). Field logistics will be integrated with the wildlife and soil teams.
- A limited rare plants program will be undertaken in 2004 at some sites, with additional work being planned once the footprint of the project such as road and infrastructure sites are better defined.
- Terrain and Soils investigations will use standard techniques involving visual observation of terrain features and recording of soil. Shallow soil pits (30-50 cm diameter and 30-60 cm deep; above permafrost) will be hand dug using spades. In the absence of permafrost, a small manual soil auger will be used to obtain material to a depth of 1 metre. Various soil characteristics will be recorded, and classification will follow. Soil samples (approx. 1 kg each, average of 3 samples per site) will be collected from a subset of sites for analysis of selected properties such as texture, content of metal or other indicators, and nutrients. Most of the field studies relating to vegetation and soils will be carried out in July to August of 2004.
- Permafrost investigation: at this stage, there is no plan to undertake a drilling program specifically for the permafrost program. Thermistors will be installed and data will be collected from existing drillholes created during ongoing mineral exploration activities at the High Lake and Ulu sites.
- Coastal processes: shoreline conditions and erosion will be assessed from helicopter or boat. Ice conditions will be assessed through satellite imagery as well.

3. Archaeological Studies

- An separate application for an Archaeologists' Permit is being made.

4. Air/Climate

The meteorological data collection program involves establishing two climate stations in the study area. One site will be established at the proposed High Lake site and the other will be established at the Ulu site. Both stations are similar in design and will collect the following climate information:

- Wind direction and speed
- Air temperature
- Relative humidity and barometric pressure
- Solar radiation
- Total precipitation

The High Lake installation will be semi-permanent with recording sensors mounted on a standard 10 metre high tower. The Ulu installation will include a tripod mount with instrumentation mounted at a height of 3 metres. Both stations will be self-contained utilizing solar power/batteries for instrument operation and data collection and storage.

The stations are compact and do not require any support buildings or services. Installation will be conducted over a period of days with minimal disruption to the local environment. The tripod mounted system at Ulu is a free-standing design with the tripod feet anchored using large rocks. The High Lake tower will require a small concrete platform to support the base of the tower and guy wires will be rock bolted to the ground surface to support the tower. Installation will require approximately 6 man days of labor and no site preparation activities are required.

The stations are fully automated and will be visited on a regular basis to electronically download stored data. Ideally, the stations should be visited once per week, but are capable of storing data for periods up to three months.

7. Location(s) of data collection:

Land Status Types: Crown, X Commissioners' Inuit Owned Surface Lands:X
Inuit Owned Sub-Surface Lands Other

*Please ensure that maps of the project area (1:50 000, 1:250 000) are **faxed or mailed** to the NRI.*
See Map attached.

High Lake Project	South of Coronation Gulf, west of Bathurst Inlet and north of Contwoyto Lake (see three attached figures	66° 50' to 68° 00' N	110° 35' to 111° 30 W	76M/2, 76M/3, 76M/6, 76M/7, 76M/10, 76M/11, 76M/14, 76M/15, 76L/14	Inuit Owned and Federal Crown lands.

NON-TECHNICAL PROJECT PROPOSAL SUMMARY

8. On a separate page, please include a non-technical description of the project proposal, no more than 300 words, in English and Inuktitut (Inuinnaqtun, if in the West Kitikmeot). The project description should outline the project activities (research methods, camps, etc.) and their necessity, method of transportation, any structures that will be erected, expected duration of activity and alternatives considered. If the proposed activity fits into any long-term developments, please describe the projected outcome of the development for the area and its timeline.

See Attachment C.

*(Please **fax or mail** this page to the NRI. Make sure that you include your reference number in your documentation.)*

SECTION 4: MATERIAL USE

9. List equipment (including drills, pumps, aircrafts, etc.):

Equipment Type	Number	Size dimensions	Proposed Use
Boat and outboard motor	1	14 foot	Lake water, sediment and fish sampling. Bathymetric mapping of High Lake.
Power hand auger	1	8 inch diameter	For drilling through ice for winter through-ice water sampling
Helicopter	Up to 4	To carry a field crew size of 5	Transport of field crew to and from site; observation purposes.
Marine offshore boat	1	Greater than 20 feet	For near-shore sediment, water and fisheries sampling and bathymetric mapping.
Small plane	1	To be determined	Wildlife survey

10. Detail fuel and hazardous materials use:

Any fuel required for field work will be available at the Ulu and High Lake camps. Only the required amount necessary for the time spent in the field each day will be carried into the field. Sealed storage containers (i.e., 23 L red plastic fuel containers) will be used for fuel; fuel transfer will be by hand pump or pouring directly into fuel tank. Absorbent material will be laid down to capture any overflow or drips.

*11. Describe any procedures and materials in place to handle accidental spills. Please **fax or mail** your spill contingency plan and other appropriate information about the hazardous materials associated with the proposed project.*

See Attachment B, Contingency Plan, Ulu Exploration Project

SECTION 5: WASTE DISPOSAL AND TREATMENT FACILITIES

12. Describe amount and methods of disposal:

Waste disposal and treatment facilities used would be those at the existing camps located at Ulu and High Lake. These camps would be the "base camps" used by the field teams for gathering baseline biophysical information in the project study area.

Type of Waste	Projected amount Generated	Method of Disposal	Additional Treatment Procedures
Sewage	N/A	Incinerated	N/A
Grey water	N/A	Surface disposal	Solids and grease removed and incinerated.
Garbage	N/A	Incinerated.	Hazardous material back hauled to Yellowknife for proper disposal.
Batteries	2 batteries/year (climate stations)	Returned for recycling	None required
Hazardous	N/A	N/A	N/A
Other	N/A	N/A	N/A

** (organic soil, waste material, tailings)*

SECTION 6: RESTORATION AND ABANDONMENT PLANS

13. Site restoration will occur in accordance with any closure and decommissioning plans approved by project regulators; and any requirements of existing Land Use Permits and other licences or authorizations.

SECTION 7: ENVIRONMENTAL IMPACT

*14. Indicate and describe the components of the environment that are near the project area, as applicable. **Fax or mail** any relevant maps or information:*

Type of species (common name, associated herd, etc.)	**Important Habitat Area (calving, staging, denning, migratory pathways, spawning, nesting, etc.)**	**Critical time periods (calving, post-calving, spawning, nesting, breeding, etc.)**
Example: Narwhal	*Ice floe edge in Pond Inlet*	*June-July, around break-up*
Fish	Lake trout, whitefish and arctic char- some overwintering and fall spawning areas in lakes and streams	Late fall
Caribou	Bathurst Caribou Herd, Spring and fall migration No calving ground Dolphin-Union herd (small groups) from Victoria Island into the study area- wintering ground	March to April, and October to November November to March
Wolverine	Potential denning sites in sandy soils	Late April to Mid May
Muskox	Grazing area for small herds	Year round
Migratory birds	Predators- no known nests Peregrine tundrius – several nests identified on Ulu property Songbirds Shorebirds (gulls and turns)	Nesting period June-July Minimize disruption near nests
Waterfowl	Common loon, yellow-billed loon, several species of ducks - shoreline habitat important for nesting	Nesting period June-July
Seals	Ring and bearded seals along marine shoreline	Spring to mid- summer
Whales	Not observed	
Narwhales	Not observed	
Wolverine	Seen in the area but no dens identified	Spring
Canid family	Wolves, Arctic fox – esker and sandy soils habitat important for denning sites	March to Mid- June
Bears	Grizzly-esker habitat and rolling sandy landforms important for denning sites	March to May
Eskers	One esker noted on the Ulu Property, other sites may be identified during field investigations	Important denning sites for canids and bears, may also be rare plant sites.
Communities	Kugluktuk	

Archaeological / Historical sites	On the 1:250,000 map (map 76M) 5 sites are identified. Within the proposed study area for this project, there are 3 sites. The Borden numbers for these sites are MjNt-1; MkNu-1; MkNv-1. For legal purposes the latitude and longitude cannot be provided.	It is not possible to undertake archaeological work in the winter time.

15. Mineral exploration has occurred at the High Lake site since the mid-1950's and at the Ulu site intensive mineral exploration started in the early 1990's. During a Community Open House in Kugluktuk in February 2004, local residents indicated that the Coronation Gulf coastal area is used extensively for fishing and travel and several Kugluktuk residents have cabins along the coast; but due to the harsh terrain around High Lake, no one travels through that area.

Bathurst Inlet Lodge is approximately 100 km to the east of the study area. Other outfitters arrange for hunts of caribou, grizzly bear, wolves and muskox in the Bathurst Inlet area. In the area between the coast and the Burnside River, there are other exploration camps 6 active exploration programs and/ or camps and 12 inactive ones. There are also 4 applications for mining exploration.

Research is being undertaken as part of the Bathurst Inlet Road and Port Proposal. Traditional use research has taken place in the area. The KIA, in collaboration with BHP, have completed an atlas (draft) of the traditional use areas. The West Kitikmeot Slave Study (WKSS) report, *Tuktu and Nogak Project: A Caribou Chronicle*, documented Inuit knowledge about caribou and calving areas in the Bathurst Inlet region. The study area for the caribou study was the historical and current hunting grounds of the communities of Umingmaktuuk and Kingauk.

16. Describe the impacts of the proposed project activity on the environmental components and uses, in the area listed above:

Potential impacts associated with the biophysical baseline sampling program activities are summarized in the table below.

Biophysical Component	Activities	Potential Impact(s)	Duration	Intensity
Engineering Feasibility	• Reconnaissance flights • rock sample collection, screening & sieving • test pits	• Aircraft noise • Removing rock • Digging pits	• Short-term • Permanent • Short-term	• Low – medium • Low • Low

Biophysical Component	Activities	Potential Impact(s)	Duration	Intensity
Fish & Aquatic Studies	• Fish collection • Helicopter flights • Boats & motors • Invertebrate collection	• Handling and / or removing fish • Aircraft noise • Motor noise • Handling and / or removing invertebrates	• Short-term / permanent • Short-term • Short-term • Short-term / permanent	• Low / lethal • Low – medium • Low - medium • Low / lethal
Hydrology	• Helicopter flights • Substrate sampling & sieving • Test pits	• Aircraft noise • Disturbing rock & substrate • Digging pits	• Short-term • Short-term • Short-term	• Low – medium • Low • Low
Sediment & Water Quality	• Helicopter flights • Boats & motors • Water removal • Sediment & substrate sampling & removal	• Aircraft noise • Motor noise • Disturbing & removing water • Disturbing & removing sediment & substrate	• Short-term • Short-term • Short-term / permanent • Short-term / permanent	• Low – medium • Low – medium • Low • Low
Wildlife	• Aerial surveys • Observing wildlife • Scat sampling & removal	• Aircraft noise • Proximity to wildlife • Disturbing & removing scat	• Short to medium –term • Short-term • Short-term / permanent	• Low – medium • Low – medium • Low
Vegetation & Terrain	• Helicopter flights • Soil sampling & removal • Vegetation sampling & removal	• Aircraft noise • Disturbing & removing soil / substrate • Disturbing & removing plants / plant parts	• Short-term • Short-term / permanent • Short-term / permanent	• Low - medium • Low • Low / lethal
Archaeological Survey *	* Please refer to separate Archaeological Survey application.			
Air / Climate	• Helicopter flights • Installation & operation of semi-permanent structure	• Aircraft noise • Unnatural structure	• Short-term • Long-term / permanent	• Low – medium • Low - medium

17. What are some suggested mitigation measures for these impacts?

All of the biophysical baseline sampling activities proposed are low or low – medium impact causing minimal disturbance to the environment. Where lethal / permanent sampling occurs (e.g., plants, fish, vegetation, rock, soil, water) only amounts required for creating reference material and conducting identification/analysis will be taken. All field crews will be instructed in how to maintain a low impact presence while in the field. All material taken into the field will be removed to camp, except sampling/monitoring equipment erected in the field for longer term sampling programs (i.e., meteorological stations). The meteorological stations are small and unobtrusive and will be placed close to existing camp facilities. They do not generate any noise and will have no impact on biophysical receptors.

Aircraft and boat motor noise will be minimized. Where interference with wildlife (i.e., nesting raptors) is anticipated, restricted flights/no fly zones will be implemented. Any other mitigation measures recommended by regulators, Wildlife Officers, Inspectors, Elders, and others will be considered and implemented where feasible or required.

SECTION 7: COMMUNITY INVOLVEMENT AND REGIONAL BENEFITS

18. List the community representatives that you have contacted about this proposed project:

Community	Name	Organization	Date Contacted	Means	Tel / Fax / e-mail
Kugluktuk	Many community residents	-	February 9, 2004	Community Open House	-
Kugluktuk	Jack Kaniak	KIA Lands manager	February 10, 2004	Face to face meeting	(867) 982-3310
Kugluktuk	Geoffrey Clark	KIA Environmental Screener	February 10, 2004	Face to face meeting	(867) 982-3310
Kugluktuk	Cal Shaw	SAO, Hamlet of Kugluktuk	February 11, 2004	Face to face meeting	(867) 982-4471
Kugluktuk	Alex Buchan	Manager, Community Development	February 11, 2004	Face to face meeting	(867) 982-4471
Gjoa Haven	Many community residents	-	April 6, 2004	During KIA AGM presentation about High Lake Project	-

				and general discussion made. Session was open to the public, many attended.	
Gjoa Haven	Raymond Kamookak	SAO, Hamlet of Gjoa Haven	April 6, 2004	Face to face meeting	(867) 360-7141
Gjoa Haven	Sterling Firlotte	Assistant SAO, Hamlet of Gjoa Haven	April 6, 2004	Face to face meeting	(867) 360-7141
Gjoa Haven	Dionne Filiatrault	Senior Technical Advisor, NWB	April 6, 2004	Face to face meeting	(867) 360-6338
Cambridge Bay	Many Community Residents	-	April 7, 2004	Community Open House	-
Cambridge Bay	Mark Calliou	SAO, Hamlet of Cambridge Bay	April 7, 2004	Face to face meeting	(867) 983-2337
Cambridge Bay	Colin Dickie	Lands Officer, Hamlet of Cambridge Bay	April 7, 2004	Face to face meeting	(867) 983-2371
Cambridge Bay	Wayne Weese, Director of Municipal Works; Chris King, Economic Development Officer; Helen Koaha, Human Resources; Kylo Harris, Recreation Coordinator; Sandi Gillis, Director of Finance; Derrick Anderson, Assistant Man. Public Works; Eric Johnson, Interim Assistant Director Wellness.	Various Hamlet Employees	April 7, 2004	Face to face meeting	(867) 983-2371
Cambridge Bay	Terry McCallum, Mayor; Brenda Jancke,	Mayor and	April 7, 2004	Face to face	(867) 983-2371

	Deputy Mayor; Ruth Niptanatiak-Wilcox, Councillor; Johnny Lyall Sr., Councillor; Elik Tologonak, Councillor Jessie Lya;ll, Councillor; Stephanie Briscoe, Councillor	Councli		meeting	

19. Describe the level of involvement that the residents of Nunavut have had with respect to the proposed project. Elaborate on local employment opportunity, training programs, contracts, Inuit Impact Benefit Agreements (if applicable):

The High Lake Project is in its inception and is composed of two project sites, at Ulu and High Lake. The High Lake property is entering advanced exploration and the Ulu property has completed advanced exploration. The work anticipated under this Research Permit is about the collection of baseline biophysical information in preparation for the environmental assessment and regulatory phases of mine development and licensing. The High Lake Project will provide local training and employment opportunities consistent with exploration and mine development. An IIBA will also need to be negotiated prior to the project proceeding. Legal counsel for KIA has already been contacted.

For the purposes of this Research Permit application for biophysical baseline information collection, it is anticipated that local residents will be hired as field assistants and to provide information about the local area to field staff. Gartner Lee Limited and Wolfden Resources Incorporated are working closely with the KIA, affected communities and interested local residents to identify residents for these positions. At this point in field program planning, we have not identified the final number of local hires.

*20. Describe, and **fax or mail** documentation regarding community concerns or support for the proposed project:*

Public reception of the High Lake Project is positive in all communities visited (Kugluktuk, Gjoa Haven and Cambridge Bay). Many of the questions raised relate to employment opportunities on the project. (Results of Community visits attached).

An active public participation program is being developed and will be implemented over the next 2 years. This can be forwarded when completed. In April, community visits / meetings will take

place in Cambridge Bay and Gjoa Haven. Additional and ongoing Community visits are anticipated over the next several years at a minimum frequency of once per quarter.

21. Is there a Traditional Knowledge (TK) component to this research project? If yes, see Appendix C.
A separate application will be filed for the Socio-Economic and Traditional Knowledge component of the project.

☐

Yes ___x__ *No* _____ *Don't know* _____

Applicant:

Attachment C - NRI reference number 48
HIGH LAKE PROJECT
NON-TECHNICAL PROJECT PROPOSAL SUMMARY
In support of Nunavut Research Institute Research Permit Application

Wolfden Resources Inc., through its consultant Gartner Lee Limited, will develop and complete environmental and socio-economic baseline information gathering programs to develop an understanding of the environmental, social and economic conditions for the High Lake Project. And, to meet environmental assessment and regulatory requirements for developing the High Lake Project into an operating gold and base metal mine, that will have about a 15 year mine life. Information gathering is expected to take several field seasons to complete, with most of the site information being collected in the summer. Socio-economic information and traditional knowledge gathering will occur throughout the year, and at the planned community meetings. Wolfden's vision is to bring the High Lake property into mining production for the benefit of its shareholders and the residents of Nunavut in a manner that respects the environmental and socio-economic conditions in Nunavut. Wolfden will operate in a highly professional manner to generate trust and respect between the firm and residents of Nunavut.

The High Lake Project consists of: the High Lake and Ulu mineral properties; transportation corridors from Ulu to High Lake (to transport ore from Ulu to High lake for processing) and north to the coast (to transport ore concentrate to the coast for shipping to market, and brining back supplies to High Lake and Ulu); and a deepwater port facility at Grays Bay on the Coronation Gulf. The High Lake Project is located in the Kitikmeot Region of Nunavut.

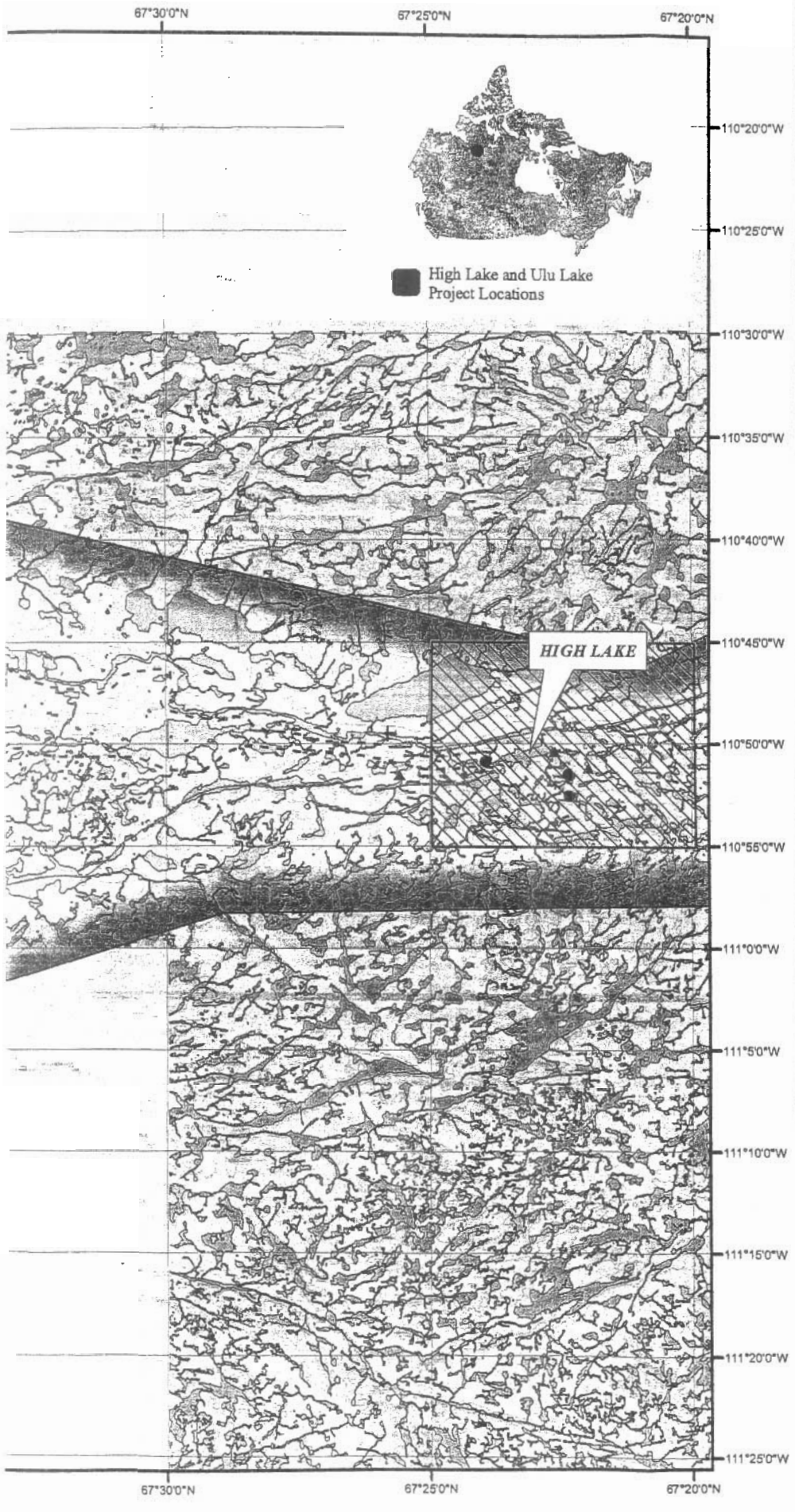
Field work will include studies to gather environmental and socio-economic information that will help in design and construction planning. For all field studies, access will be by helicopter, boat or on foot as appropriate; ATVs will also be used near the existing camps, located at High Lake and Ulu. These camps will be used as the base camps for the field work. Sampling methods will include the collection of water, soil, rock, vegetation, and fish samples for analysis. Information will also be gathered about wildlife, birds, vegetation, fish, and weather conditions. Information on marine mammals, ice and weather conditions in the Coronation Gulf will be collected for proposed shipping activities. Weather stations will be constructed at High Lake and Ulu to gather weather information. Archaeological studies of the area are also being done.

HIGH LAKE HAVAANGA
PILUAQNANGITTUNUT HAVAAQ UUKTUGUTAUYUQ UNIQTUUTA TAINAQHIMAYUQ
Ikayuqtugut tapkununga Nunavut Naunaiyaiyit Piyungnauta Tukhiqtugut

Wolfden Resources Nanminilgit atuqhugit qauyimayigiyai Gartner Lee Nanminilgit, pivaliatitiniat tapkuatlu iniqtiqlugit avatiliginiqmun tapkuatlu inungnut-maniliuguhiqnut aulahimaititlugit naunaiyaqnii tuhaqtakhat katitigaunii havagutit tapkuat pivaliatitauniinut kangiqhimanii tapkuat avatiliginiqmun, inuliginiqmun tapkuatlu maniliuguhiqmut qanugitnii taphumunga High Tahiq Havaanga. Tamnalu, pinahuaqhugu avatiliginiqmun naunaiyaqnia tapkuatlu aulattiyit atugiaqaqtitai tapkuat pivaliatitauniinut tamna High Tahiq ProHavaanga pilugu aulattukhaq guulinut tapkuatlu atuqtauvaktut havikhat uyagakhiuqvik, tamna pihimaniaq mikhaani 15 ukiunik uyagakhiuqviuluni. Tuhagakhat katitauyut nigiugiyauyut qaphinik ukiunik havakvikmi iniqtigaunahuaqniat, tapkuat amihuuniqpaat taphuma havalviup tuhaqtakhai katitigaulutik auyami. Inungnut-maniliuguhiqmut tuhaqtakhat tapkuatlu ilitquhiit naluyaungitnii katitigauniat tapkunani ukiungani, tapkuatlu upalungaiyaqviani nunaliuyut miitiqniini. Wolfden-kut ihumagiyat pinahuaqnianut tamna High Tahiq havakvia uyagakhiuqviuliqtitnianik tapkuat ihuaqutikhainik tapkuat nanminiqaqviuniinik tigumiagutilgit tapkuatlu nunaliuyut talvani Nunavutmi pilutik havaguhiigut tapkuat nalakniqaqlutik avatiliginiqmik tapkuatlu inungnut-miniliuguhiqmun qanugitniinik talvani Nunavutmi. Wolfden aulattiniaq havaguhiqaqlutik havaktiqpiatut pitquhiqaqlutik pinahuaqlutik ukpigiyauniqmik tapkuatlu nalakniinik tapkuat nanminilgit tapkuatlu nunaliuyut talvani Nunavutmi.

Tamna High Tahiq Havaanga pilik tapkuninga: tamna High Tahiq tamnalu Ulu havikhanut havakvii; apqutigiyauvaktut talvangat Ulu talvunga High Tahiq (tapkuat agyaqtuqniinik havikhait talvangat Ulu talvunga High lake havikhaliuqtauyukhat) talvungalu kitaanut tagiup hinaanut (tapkuat agyaqtuqniinik havikhait hiqumagikhihimayut tahamunga tagiup hinaanut umiaqpakkut niuvgutauyukhat, tapkuatlu tikipkaqniinik atuqtakhat talvunga High Tahiq tamnalu Ulu); tamnalu itiyumi tulaktaqvik havagutai talvani Grays Kangiqhuk tahamani Kugluktup Tagiungani. Tamna High Tahiq Havaanga inilik tahamani Kitikmeot Nunaliit Aviktuqhimaniani Nunavutmi.

Havakviuyuni havaktauyut ilaqaqniat naunaiyaqniinik tapkuat katitiqtauniinik avatiliginiqmun tapkuatlu inungnut-maniliuguhiqnut tuhaqtakhat tapkuat ikayugutauniat tapkuat hanatyuhikhainut tapkuatlu hanayakhat upalungaiyaqnii. Tapkununga tamaitnut havakviuyuni, tikittagauniat halikaptakkut, qayakkut uvaluniit pihuklutik naliak ihuatqiyaukpat; hantait atuqtauvakniaqmiyut haniani tapkuat tatya atuqtut hiniktaumaviit, inilgit talvani High Tahiq tamnalu Ulu. Tahapkuat hiniktaumaviit atuqtauniat angilgaqtaqviulutik tapkuanunga maniqami havakviuyunit. Naunaiyainiqmun pityuhii ilaqaqniat tapkuat katitigauniinik immait, nunat, uyaqat, nauttiat, tapkuatlu iqaluit naunaiyaqtakhat. Tuhaqtakhatlu tapkuninga tagiumi angutikhat, hiku tamnalu hilap qanugitnia tahamani Kugluktup Tagiungani katitigauniat tapkununga uuktugutauyunut umiaqpait huliniinut. Hilaligiviit hanayauniat talvani High Tahiq tamnalu Ulu katitigahuaqhugit hilamun tuyhaqtakhat. Pitquhituqat naunaiyaqnii tahamani nunaani piyauniaqmiyut.



LEGEND:

Infrastructure

- Potential Air Strip
- Potential Mill Sites
- Potential Camp
- Present Camp
- Potential All Weather Road
- Potential Winter Road
- High Lake Site Property Area
- Potential Dock Site
- Tentative Study Area

Base Data

- Waterbodies
- Contours
- Watercourses

0 1.25 2.5 5 7.5 10

Kilometres

Scale 1:200,000

Data Sources and Disclaimers:

NTS Data created by NRCAN at a scale of 1:50,000 and provided for use by Wolfden Resources.

All Infrastructure Locations delineated by Gartner Lee Ltd.

RADARSAT orthorectified mosaic of Canada at 1000m resolution compiled by Government of Canada, NRCan, Canada Centre for Remote Sensing.

Canadian Digital Elevation Data, Level 1 (CDED1) based on NTDB digital files at a scale of 1:250,000 compiled by Government of Canada, NRCan.

Reviewed By: GGS

Drawn By: CLL

Date Issued: March 5, 2004

Project Number: 30-009

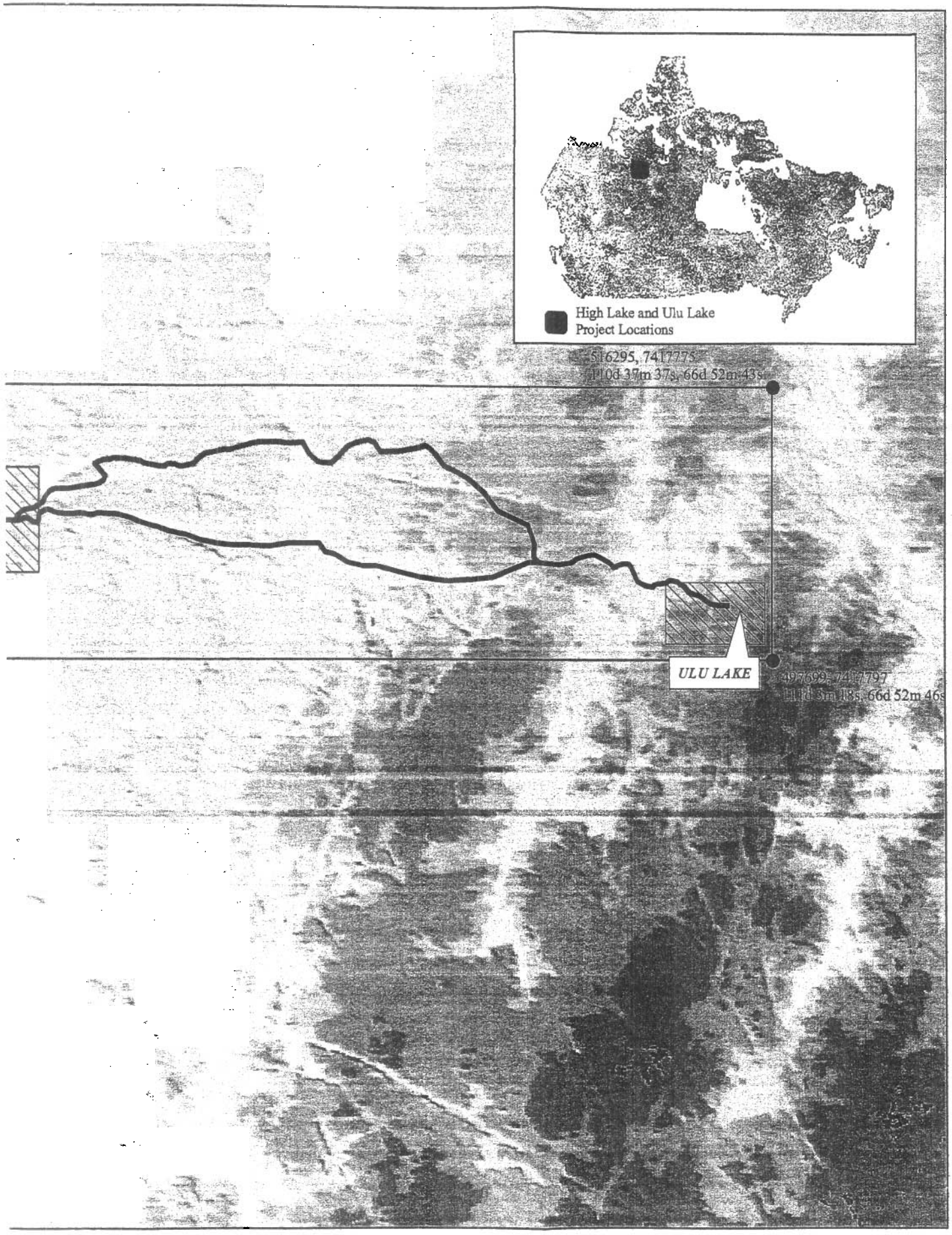
File Name:
Coast_HighLake_30009_5Mar2004.mxd

Revision: 1

Overview of Area Between the Coast and the High Lake Project Site

Gartner Lee Limited

WOLFDEN RESOURCES INC.


High Lake and Ulu Lake
Project Locations
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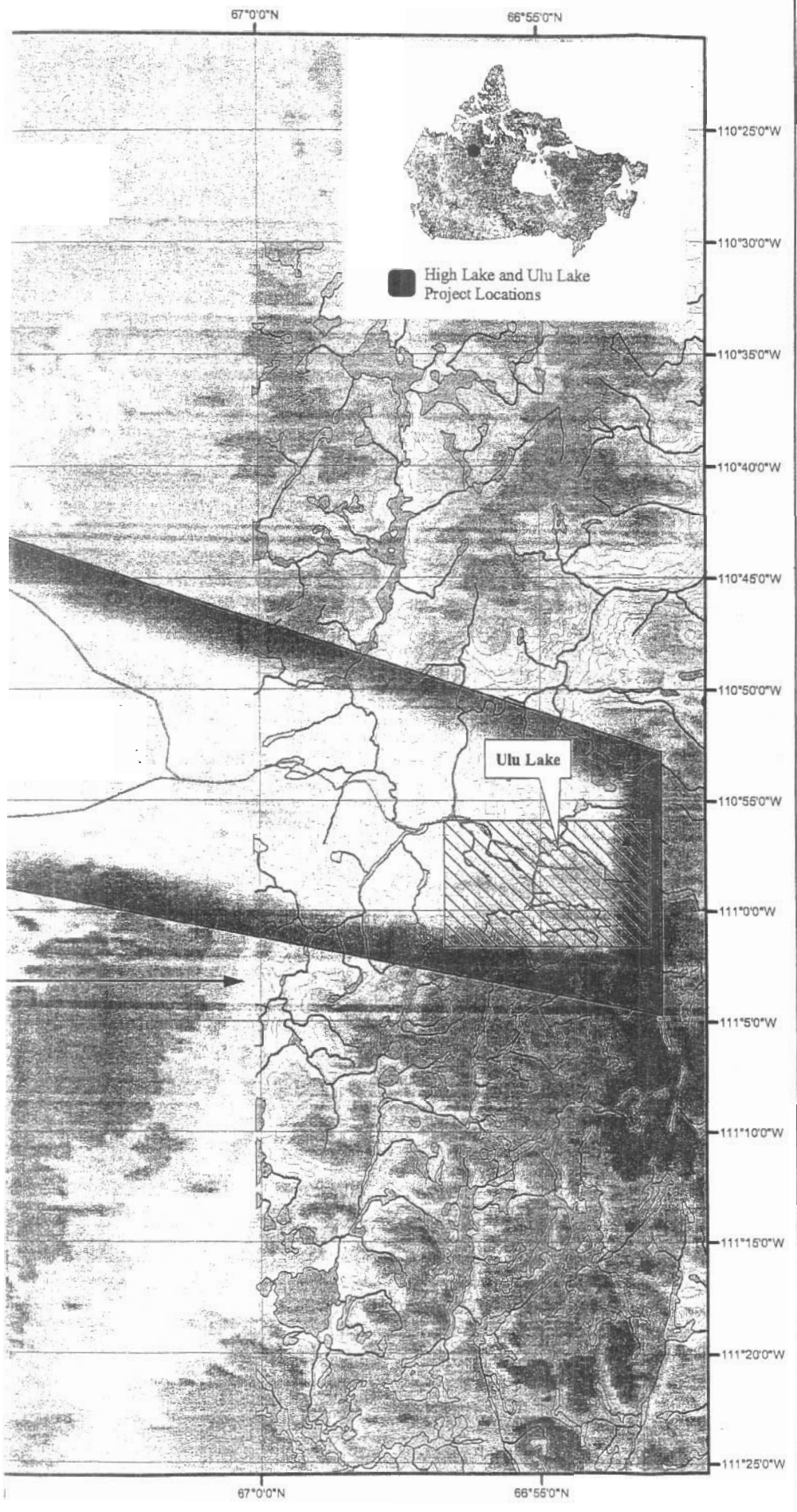
110d 37m 37s, 66d 52m 43s
ULU LAKE
497692, 7417797
111d 3m 18s, 66d 52m 46s



LEGEND:

Infrastructure

- Potential Mill Sites
- Potential Camp
- Present Camp
- Potential All Weather Road
- Potential Winter Road
- Property Areas
- Tentative Study Area

Base Data

- Waterbodies
- Contours
- Watercourses

0 1.25 2.5 5 7.5 10

Kilometres

Scale 1:200,000

Data Sources and Disclaimers:

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Reviewed By: GGS

Drawn By: CLL

Date Issued: March 5, 2004

Project Number: 30-009

File Name:
HighLake_UluLake_30009_5Mar2004.mxd

Revision: 1

Overview of Area Between the High Lake Project Site and the Ulu Project Site

Gartner Lee Limited

WOLFDEN Resources Inc.