P.O. BOX 119
GJOA HAVEN, NU X0B 1J0
TEL: (867) 360-6338
FAX: (867) 360-6369

NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

File: 8BC-HIG

February 13, 2007

Mr. Andrew Mitchell
Project Manager
Wolfden Resources Inc.
403–1113 Jade Court
Thunder Bay, ON
P7B 6M7

Subject: NWB review of the submitted Water Licence Application for the Relicencing Program of the High Lake Project

Dear Mr. Mitchell:

The following presents a response to the above-noted file.

The Nunavut Water Board (NWB) requests further clarity on issues related to the Water Licence Application for the construction and operation of the High Lake exploration camp and associated infrastructures. The following documents were consulted the review.

i. **Project Description Relicencing Program High Lake Project** – Wolfden Resources Inc. – *High Lake Project* (dated: September 21, 2006; received: October 12, 2006)
ii. **Spill Contingency Plan, High Lake Relicencing Project** – Wolfden Resources Inc. – *High Lake Project* (dated: May 2006; received: October 12, 2006)
iii. **Water Licence Application Form** – Wolfden Resources Inc. – *High Lake Project* (dated: September 6, 2006; received: October 12, 2006)
iv. **Exploration/Remote Camp Supplementary Questionnaire** – Wolfden Resources Inc. – *High Lake Project* (dated: June 2006; received: October 12, 2006)
v. **NIRB Screening Decision Report** – Wolfden Resources Inc. – *High Lake Project* (dated: August 11, 2006; received: October 12, 2006)

After a review of the above listed correspondence it has been determined that additional information and clarity is needed. The NWB requests additional information regarding the following listed items.

Project Description

1. **Section 4.1 Weatherhaven Camp –** This section provides a general description of the Weatherhaven camp (portable tent camp) including amenities, location, services, and capacity. The second last sentence of this section states that the Weatherhaven camp "will replace the existing exploration camp once it is operational." What is the fate of the existing exploration camp once it is replaced? Will the existing camp and its attendant support equipment, services, and wastes be removed from the site? Will the site of the existing camp, once replaced by the Weatherhaven camp, be restored to its original condition?

2. **Section 4.1.1 Site Preparation and Construction–** This section briefly describes the site preparation and structural characteristics for the Weatherhaven camp. However, it does not indicate what type of ground the camp will be founded on. Briefly, what is the nature of the original ground on which the camp will be founded (e.g. tundra, muskeg, alluvial deposit, exposed bedrock)?

3. **Section 4.1.3 Water Supply and Waste Water –** This section identifies the source and capacity of the freshwater supply for the camp and briefly describes the camp sewage treatment system and discharge strategy (i.e. treated effluent to be discharged into the lake identified as L20). Additional clarification is requested regarding the following:

    a. This section does not identify a proposed monitoring program to ensure that the sewage treatment system is functioning properly. Furthermore, the *Exploration/Remote Camp Supplementary Questionnaire* indicates that only drinking water will be analyzed. Does the proponent intend to monitor the discharge effluent from the sewage treatment system? If so, what is the proposed frequency of the discharge sampling? What are the proposed discharge criteria to be met? What contingency measures are in place in the event that the discharge effluent does not meet the discharge criteria?

    b. The last sentence of this section states that "Studies completed over the last two years indicate that this lake does not support fish, and drains into non-fish bearing waters." What are the studies that were completed? Can theses studies be referenced in this document?

    c. How does the proponent intend to meet the conditions stated in the *NIRB Screening Decision Report* regarding the use of water? Specifically, will the proponent monitor the water intake quantities to ensure that the amount does not exceed that stipulated in the application? How does the proponent intend to ensure that effluent discharged to L20 is protective of the receiving environment?

4. **Section 4.1.4 Solid Waste Disposal –** This section identifies the waste management strategy for the Weatherhaven Camp. The section indicates that all combustible, non-hazardous waste will be incinerated, and then provides a list of waste types that will be disposed of in a proposed on-site landfill (including incinerator ash, rubber products, plastics, glass, and, potentially, scrap metal). It is assumed by the NWB that this strategy will be the same for the temporary construction camp located at Sand Lake. However, as pointed out in the EC comments made in their letter dated December 15, 2006, the requirements of the *NIRB Screening Decision Report* state that all such wastes are to be removed from the site. In addition, a landfill design was not included as part of the application. Clarification is requested regarding these apparent discrepancies.

5. **Section 4.1.5 Fuel Storage and Section 4.4.5 Fuel Handling and Storage–** These sections describe the fuel storage equipment and outline the fuel storage containment structures for both the Weatherhaven camp and the proposed airstrip. Both proposed facilities will have a high density polyethylene liner covering a bermed area with a capacity of 110% of the volume of stored fuel. Additional clarification is requested regarding the following:

    a. As pointed out in DIAND's letter dated December 15, 2006, there is a discrepancy between the size and number of fuel storage tanks identified in this section and those listed in the *Exploration/Remote Camp Supplementary Questionnaire*. Furthermore, EC's letter of the same date indicates that the tank capacities and types identified in these sections contradict the requirements of the *NIRB Screening Decision Report*. Clarification is requested as to Clarification is requested regarding this apparent discrepancy.

    b. Although a brief description of the fuel storage areas was provided in these two sections, no drawings or cross-sections of these proposed structures were provided. How does the proponent intend to ensure that these fuel storage areas will be able to contain potential spills while preventing impacts to the surrounding waters? Does the proponent intend to provide engineering design drawings for these structures for review by the NWB prior to their construction?

6. **Section 4.2 Explosives Magazine –** This section briefly describes and identifies the proposed location of the explosives storage area. It is understood that the design of the storage facility will conform to current legislation. However, for the purposes of the application record, engineering design drawings were not provided. Additionally, there is no indication whether a gravel pad is required or how long the facility may be required. What is the nature of the original ground on which the camp will be founded? Is a gravel pad required? If so, what are the dimensions of the

pad and what are the quantities, types, and sources of the material required for its construction? How will the grading and location of the pad (if required) prevent impacts to waters? How long will the facility be required? Is the facility only to be required during the winter months or will it be required over multiple seasons?

7. **Section 4.3 Gravel Pits and Quarries –** This section identifies the potential aggregate sources and their respective locations. The section then describes the proposed extraction methods. Subsection 4.3.1 that follows, describes each aggregate source location in more detail, including the type and nature of the source material and the end use. Additional clarification is requested regarding the following:

    a. The last sentence of the first paragraph of Section 4.3 states "Final determinations of the quantities of material to be extracted…will be made following field investigations and final civil/grading designs to be completed in the summer of 2006." As identified by the DOE in their letter dated December 14, 2006, to date, no such final quantities or civil/grading designs have been provided to the NWB. Does the proponent intend to provide them?

    b. Within subsection 4.3.1, under the heading *Bedrock Quarries* it is stated that "granite will be quarried with a very low acid generating potential". However, as stated in DOE's letter dated December 14, 2006, no investigations appear to have been conducted to substantiate this claim. Has the proponent performed an investigation of the acid generating and metal leaching potential of the proposed quarry rock? If not, why not? Does the proponent have any other proof (e.g. studies of local bedrock) that may provide evidence that the proposed quarry rock is neither acid generating nor has the potential to leach significant concentrations of metals?

8. **Section 4.4 Airstrip –** This section identifies and describes the location of the proposed airstrip and then provides horizontal dimensions for the runway and apron. The thickness of the proposed runway and apron is not provided. The quantity, type, and source of material required for the construction of the airstrip are not provided. Does the proponent intend to provide the above information? Has an engineering design for the airstrip been completed, including drawings and cross-sections? Does the proponent intend to provide a design? As per EC's comments in their letter dated December 15, 2006, what is the water management strategy in place to deal with runoff water from the airstrip surfaces?

9. **Section 4.4.3 Workforce Accommodations –** This section describes the construction force required to build the proposed airstrip along with the location and features of the temporary camp that will house them. It is stated here that sewage from the camp will be treated and then discharged into Kennarctic River. Additional detail and discussion is requested to address each of the following:

    a. DIAND's letter dated December 15, 2006, points out that the sewage disposal method identified in Section 4.4.3 for the construction camp (i.e. Rotating Biological Contactor) is not the same as the method noted in the *Water Licence Application Form* and *Exploration/Remote Camp Supplementary Questionnaire*. Clarification is requested regarding this apparent discrepancy.

    b. If the treatment strategy stated in Section 4.4.3 is chosen to deal with the sewage and greywater produced at the airstrip construction camp, how does the proponent intend to ensure that the system is functioning properly? Is there a monitoring regime planned that will assess the quality of the effluent? What is the sampling frequency? What effluent criteria are proposed by which to compare the results of the monitoring? What contingency plan is in place should the effluent quality exceed the proposed criteria? What are the specifications of the RBC unit noted? The above questions also apply to the sewage treatment system identified for the Weatherhaven camp.

10. **Section 4.5 All-Season Access Road Construction –** This section is divided into several subsections that describe the access road design parameters, route selection criteria, proposed stream crossings, road embankment features, and construction sequence. Additional information

is requested to address each of the following (the questions apply to both the construction *and* operation phases of the access road):

a. This section did not include a discussion of how the proponent intends to deal with surface water runoff from the road. What is the water management strategy in place to control runoff water (e.g. grading plan, attenuation/sedimentation ponds)? How does the proponent intend to ensure or confirm that the materials used for the construction of the access road are neither acid generating nor leaching significant concentrations of metals (e.g. water sampling and monitoring plan)?

b. Subsection 4.5.3 identifies and briefly describes the stream crossings proposed for the access road. As noted by the DIAND letter date December 15, 2006, section drawings of each stream crossing were not provided as well as a description and section of the abutments for the bridge crossing. Does the proponent intend to provide these?

c. Further on in subsection 4.5.3 it is stated that "Appropriate erosion and sediment control measures…will be utilized to minimize negative impacts to watercourses" and in addition that "work in the water will be conducted during acceptable time periods to avoid negative impacts to fisheries". How does the proponent intend to monitor for sediment and erosion? What decision making criteria are in place that would lead to the installation of the erosion and sediment control measures? What are the acceptable time periods within which work will be conducted "in water"? How does the proponent propose to prevent damage to the watercourse during work in water?

11. **Section 6.0 Assessment of Potential Adverse Effects and Proposed Mitigation –** This section presents a summary of potential environmental effects of the project construction and operation and the proposed mitigation measures for each in tabular format. Additional detail and discussion is requested to address each of the following:

    a. Within the *Sand Lake, Construction of airstrip and ancillary facilities* section under *Project Component* in the table, some of the proposed mitigation measures to be implemented in the event that surface water quality is effected due to changes in drainage pattern, contamination by blast residue, and leaching of metals and/or acid generation from quarry rock, are: i) the use of proper construction and operation methods; ii) diversion of runoff from site to sedimentation ponds; iii) avoidance of the use of acid generating material; and iv) proper explosives management. However, none of the above are detailed anywhere in the text. What are the proper construction and operation methods that serve to prevent impacts to waters? Where are the proposed sedimentation ponds in the vicinity of the airstrip and ancillary facilities that will serve to collect runoff waters? How has the quarry rock been assessed to ensure that it is not acid generating? What sampling and testing methods were employed to support the conclusion that the construction material is not acid generating? What constitutes proper explosives management? Is there an explosives management plan? Who are the qualified personnel that will manage the explosives on-site? What are their qualifications?

    b. Within the *High Lake, Construct Weatherhaven camp* section under *Project Component* in the table proposed mitigation measures are offered to deal with changes in surface water quality due to the reasons stated in a. One of the mitigation methods proposed is proper drainage control and collection during construction. This implies a water management strategy or plan; however, no such strategy or plan was identified or detailed in the text. Does the proponent intend to develop a water management plan for the construction and operation of the camps and road? If not, how does the proponent intend to prevent impacts to waters due to the runoff from these areas?

12. **Section 7.0 Site Abandonment and Restoration –** This section provides an overview of the timeline for restoration, describes revegetation measures and then outlines the abandonment and restoration measures for each aspect of the project (i.e. Weatherhaven camp, access road, airstrip etc.) in separate subsections. Additional detail and discussion is requested to address each of the following:

a. In each of the subsections dealing with the abandonment and restoration of the various facilities that are part of the project reference is made to disposal of wastes in the landfill: "the tanks will be collapsed and the steel disposed of in the onsite landfill." (Section 7.2.5); "The structures will be…cut up and disposed of in the onsite landfill." (Section 7.2.6); "the structures will be buried in the landfill." (Section 7.3.2); and "the tanks will be pierced and collapsed and the steel disposed of in the site landfill." (Section 7.3.4). However, as noted in Item 4 above, the requirements of the *NIRB Screening Decision Report* state that all such wastes are to be removed from the site. Additionally, a landfill design has not been presented in this application. Clarification is requested regarding these apparent discrepancies.

b. In Section 7.2.5 *Fuel Storage* (Weatherhaven camp) and further in Section 7.3.4 *Fuel Handling and Storage* (Airstrip), it is stated that "Soil found to have hydrocarbon concentrations above applicable remediation criteria will be excavated and disposed of in the onsite landfill or suitably remediated by some other means." The DOE letter dated December 14, 2006, notes the remediation criteria for hydrocarbon impacted soils (2500ppm total petroleum hydrocarbon) and further states that soil exceeding this threshold cannot be disposed of in a landfill. How does the proponent intend to determine whether the soil meets or exceeds "applicable criteria"? Given the requirements of the *NIRB Screening Decision Report* regarding waste disposal, how does the proponent intend to deal with hydrocarbon impacted soil?

Spill Contingency Plan

1. **General –** This document generally follows the Northwest Territories Water Board *Guidelines for Contingency Planning*. However, there are several figures missing that depict the layout of the Weatherhaven camp, the road alignment, and the airstrip. When does the proponent intend to provide Figures 1 to 4? It is understood that Figures 2 and 3 identify the locations of mobile spill kits available for use at the site; however, will the figures (including Figure 1 and 4) also identify the locations of potential sources of spills, environmentally sensitive areas, direction of surface water flow, and potential drainage paths of spilled material?

2. **Section 2.3 External Reporting –** This section provides a procedure for spill reporting outside of the company, identifies the responsible personnel, and lists or references contact information. The reader is referred to Appendix 4 for MSDSs *presumably* of the chemicals and fuels anticipated to be stored onsite. Since the MSDS are not provided in this plan, what are the chemicals and fuels that are likely to be stored and used onsite?

3. **Section 3.1.2 Sand Lake Airstrip –** This section provides site information for the Sand Lake airstrip and temporary construction camp, including site location, equipment and services, and fuel storage facilities. The tank types and sizes for the proposed fuel storage are different than those listed in the *Exploration/Remote Camp Questionnaire*. In addition, they are not the same as the requirements outlined in the *NIRB Screening Decision Report.* Clarification is requested regarding this apparent discrepancy.

4. **Section 5.1 Sewage –** This section describes the sewage treatment system for both the Weatherhaven camp and the airstrip construction camp. It is stated that both camps will employ "small self-contained premanufactured plants" to treat sewage onsite. However, both the *Water Licence Application Form* and the *Exploration/Remote Camp Questionnaire* identify Pacto toilets as the chosen sewage treatment method for the construction camp. Clarification is requested regarding this apparent discrepancy.

5. **Section 5.2.2 Spill Containment, Recovery and Disposal –** This section describes containment and recovery procedures for spills on land, snow, ice, and open water. Additional detail and discussion is requested to address each of the following:

    a. Under the headings *Containment, On Land* it is stated that "Synthetically lined dykes are more effective than just snow or snow and ice-lined dykes". Further on it is stated that "During warmer months, containment dykes may be constructed from sand or gravel". Will the sand and gravel dykes also be synthetically lined?

b. Under the heading *Disposal* it is stated that “All impacted soil should be transported to the lined landfill south of the Weatherhaven camp.” However, as pointed out in the EC comments made in their letter dated December 15, 2006, the requirements of the *NIRB Screening Decision Report* state that all such wastes are to be removed from the site. Clarification is requested regarding this apparent discrepancy.

c. Further on under the heading *Disposal* it is stated that ”Approval for burning of petroleum products must be obtained prior to combustion.” However, it is not identified from whom or from what organization or regulatory body this approval must be obtained. Clarification is requested regarding this statement.

In summary, the Board requests a formal response to each of the above stated provisions. Sufficient detail and an avoidance of ambiguity should be followed in submitting response materials to the listed provisions. If you require any assistance whatsoever, please feel free to contact Matthew Hamp at (416) 434-8027 or tech5@nunavutwaterboard.org.

Sincerely,

Original signed by:

Matthew Hamp, B.Sc.
Technical Advisor