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Your File: 4703 001 032

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Nunavut Water
Board

MAR 02 2007

Public Registry

Dear Ms. Spagnuolo,

Re: NIRB 06EN048 – Wolfden Resources – High Lake Relicensing Program

Further to the NIRB Screening Decision Report dated August 11, 2006, and in particular with reference to Condition #4 of that report, Wolfden wishes to respond to the outstanding comments in your letter addressed to NIRB dated July 25th, 2006. The numbering scheme as noted in your letter has been retained for ease of reference to this and earlier correspondence.

1. Domestic sewage and grey water generated from camp activities will be treated to acceptable standards using a Rotating Biological Contractor system. This unit is designed by Biodisk Corporation, and is a wastewater treatment system that uses a rotating biological contactor (RBC) as the form of aeration. The Biodisk unit has been designed based on the following performance criteria:

Design influent BOD	300mg/l
Design influent SS	300 mg/l
Outdoor temperature	-40° to + 25° C
Indoor temperature	10° to 25°C
Location	Outdoors
Operating schedule	24 hr/day, 365 days/year

The unit has been designed to produce an effluent with the following characteristics:

BOD	40mg/l
SS	60mg/l
Fecal coliform	10,000 CFU/100ml
Oil and grease	<5 mg/l
PH	6-9

The proposed discharge meets the Guidelines for the Discharge of Domestic Wastewater in Nunavut (September, 2000) for discharge into a lake with residency time < 5 years, for a discharge rate of 250 l/person/day. Water licenses typically include limits on BOD5, suspended solids, pH, oil and grease, and fecal coliform. RBC plants are used throughout North America for the treatment of wastewater in a large range of applications from small, private plants such as High Lake to large municipal facilities. It is one of the more common wastewater treatment technologies. Efficacy of this type of treatment plant has been successfully demonstrated in an arctic mining camp at Wolfden's camp at the Ulu property. Additional information on the advantages of the Biodisk can be found at www.Biodisk.ca.

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The quantity of sewage and grey water produced will vary with the number of personnel on site at any given time, however, combined sewage and grey water discharge is not expected to exceed 17.5 m³/day at the Weatherhaven camp, and 7.5 m³/day at the Sand Lake construction camp.

2. (b) The unit that Wolfden proposes to use at High Lake is an Eco Waste Oxidizer that operates on a batch basis and uses a computerized process control system requiring only a part-time operator (unlike many other incinerators that use a continuous feed process typically requiring full-time operators). The Eco Waste Oxidizer does not require highly technical or previously skilled personnel. A representative of the manufacturer will be retained during project construction to oversee the installation and commissioning of the unit. This work will include a training course for Wolfden's operations staff in the proper operation and maintenance of the incinerator. After sales support from the manufacturer will be obtained to ensure the unit is adequately maintained and functions in accordance with design performance criteria. This support will likely contain regular technical bulletins and updates to operating procedures so that the incinerator can be kept working at its optimum efficiency level.

2. (c) The Volume of waste from a 70-person camp assuming 4 lbs waste/person/day will generate up to 280 lbs per day during the maximum camp occupancy. In addition to domestic waste, there will be other construction waste (paper, filters, light plastics, cooking oil) and waste engine oil. The incinerator has a batch capacity of 420 lbs, based on assumed waste characteristics described.

5. The setback distance from the centerline of the airstrip runway end safety area to Sand Lake is approximately 35 metres. The majority of the airstrip construction, particularly at the north end near Sand Lake, will involve placing coarse grained granular or rock fill directly on the tundra ground cover, without disruption of the continuity of the vegetation. This will be done to preserve the permafrost conditions in the underlying soils. By using this construction technique, the potential for erosion of native soils and/or fill materials and transport of silt into nearby waterways is significantly reduced. Coarse-grained granular soils are not highly erodible and do not yield large quantities of silt through runoff following rainfall or in snow melt events. By not disturbing the ground cover in the immediate area of the runway embankment and using these coarse-grained, stable fill materials, the majority of the fine materials will become trapped in the tundra vegetation before any runoff enters the lake. Also, since the airstrip will be constructed of rock and permeable sand and gravel materials, much of the rainfall would be expected to infiltrate into the runway surface.

Where the embankment approaches within 100 m of the lake, a geotextile silt curtain will be installed to retain fine sediment and prevent its entry into Sand Lake. This curtain will be installed prior to construction and maintained throughout the operational life of the airstrip.

6. The location of the fuel storage area was chosen on the basis of environmental, operational and construction criteria. The area is a flat to gently sloping area, which will reduce the amount of gravel fill required and enable the construction of the gravel pad and secondary containment berms without excavation of the existing ground cover. This will aid in the preservation of the permafrost conditions under the tanks and enhance foundation stability. The slight surface gradient away from the tank area will also make it easier to contain any contamination in the unlikely occurrence of a spill that is not contained by the secondary containment berms. The tanks are also situated adjacent to the airstrip apron, camp and garage facilities, thereby limiting the ground disturbance footprint area and concentrating the facilities in one location.

The initial shipments of fuel into the facility (prior to the gravel airstrip being in commission) will come by aircraft landing on Sand Lake. In order to facilitate the safe transfer of fuel from the aircraft tanks to the storage tanks, the facility was at the north end of the strip, close to the shore of Sand Lake, where the ice airstrip will be located. By placing the tanks in this location, the need for a shuttle tanker will be eliminated, which reduces the risk of a significant fuel spill; eliminates fuel handling on the lake ice and

provides a more rapid turn-around for the aircraft, reducing fuel supply costs. The storage area will be bermed and lined to prevent contamination of surrounding land and water in the event of a spill or leak.

7. The design of the all-season road incorporates measures to limit the potential for degradation of permafrost over time, where practical and necessary. The terrain is largely composed of exposed bedrock or sand and gravel soil, which are not generally prone to thaw-induced instability. Where thaw sensitive soils may be encountered the road will be constructed with a minimum of ground disturbance to maintain as close as possible, the pre-existing thermal conditions and to preclude the inducement of thaw-induced instability.

The following specific design features have been incorporated into the road and other general construction activities to preserve the integrity of permafrost.

- In the areas of thicker soil cover, such as the sand and gravel areas in the northerly section of the road, near Sand Lake, the road, airstrip and camp pad embankments will be placed mostly over the tundra without sub-excavation of the soils beneath the construction area and without stripping of the vegetation cover. The vegetation cover will maintain the continuity of surface conditions required to minimize the heat loss from the ground and resulting thawing of permafrost.
- In the more rugged, rocky areas permafrost conditions are not a significant influence on the design and performance of a rudimentary road such as the one proposed for this project. Simply raising the ground temperature of solid bedrock along the road width will not materially affect the stability of the terrain or the movement of groundwater through the rock mass.
- The all-season road and other embankments will be monitored to ensure that signs of permafrost degradation, erosion or mass movement are quickly identified and mitigated by using appropriate surface cover, drainage and erosion control measures. This will not only be important for structural integrity but will also keep the effect of change to permafrost sensitive areas to a minimal number of areas.
- The vehicular traffic will be restricted to the road alignment to ensure that the surface vegetation, thermal exchange conditions, slope conditions and local drainage patterns on permafrost sensitive landforms are not affected.

10. These comments pertain to the barge landing and temporary storage of equipment and supplies at Grays Bay. As this component of the Relicensing Program is no longer proposed, it is assumed that the comment is no longer relevant.

11. See response under # 10.

12. The runoff from the airstrip at Sand Lake will be controlled as described under # 5.

14. The design of the foundation for the camp at High Lake will incorporate measures to reduce the heat transfer between the facilities and the ground. The camp facilities will be erected on a gravel foundation. See also comments regarding embankment construction in point 7. The principal means by which effect on permafrost from the camp construction is controlled are:

- The placement of the sand and gravel fill for the camp directly over the tundra, without removal of the vegetation layer and
- The placement of a sufficiently thick layer of fill to keep the active (seasonally thawed) layer limited to the fill. For the High Lake camp, this means that the fill will be a minimum of 2 m thick.

15. Runoff and erosion control at quarry pits will reduce the potential for sedimentation in the surrounding environment/adjacent water bodies. Means of controlling erosion will focus on keeping the quarry sites as dry as possible, thereby reducing the need for further treatment of drainage, and include the following measures:

- Divert natural surface runoff at the top of surrounding slope(s), thereby reducing the amount of natural runoff entering the site that may require additional treatment prior to discharge;
- Containment of all localized site drainage into a single natural depression (sump) that will allow suspended sediment to settle out prior to discharge.

17. Upon closure, the ground surface will be prepared to facilitate vegetation establishment where possible. Compacted surfaces such as the all-season road, infrastructure pads and the airstrip will be loosened or scarified. Overburden suitable for revegetation will be distributed on disturbed surfaces. Use of commercially available seed bred for Northern latitudes will also be investigated. Species that will be considered are those that are native to the Project area. Any commercially grown seed will be double tested for weed components before use.

18. Water intake pumps will be submersible pumps. A weatherproof enclosure approximately 1.2 m (4 feet) on each side will be located near the shore of the lake to house the motor-starter and other electrical components. The intake pipe will be laid horizontally across the surface of the lake, and be supported on a floating platform. The pump will be suspended by the pipe and held in place by a chain, submersed in the water. The pump will hang approximately 5-6 m below the surface to be below ice level in winter time and above the bottom to avoid the intake of solids in the summer. Submersible potable water pumps generally have a screen with a nominal 5 mm (1/4 inch) openings or smaller, depending on make and model, to prevent the entrainment of fish or foreign matter into the pump.

19. Remaining fuel in the tanks will be drained into barrels and flown offsite.

Wolfden appreciates the clarification regarding the minimum flying altitudes and understands their purpose. It is Wolfden's intention to ensure that to the extent possible, minimum altitudes will be observed particularly in areas that are known to be particularly sensitive for birds.

Yours very truly,
Wolfden Resources Inc.



Andrew Mitchell, P.Geo.
Project Manager

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