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March 1, 2006

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**RE: NWB2FER0507 – Starfield Resources Inc. – Ferguson Lake Project - Amendment**

On behalf of Environment Canada (EC), I have reviewed the above mentioned application. The following specialist advice has been provided pursuant to Environment Canada's mandated responsibilities for the enforcement of the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act,* the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

Starfield Resources Inc. is applying for a licence amendment for water use and waste disposal associated with exploration drilling and camp operations for its Ferguson Lake Project. The Ferguson Lake Property is known to have nickel, copper, platinum, and palladium deposits. The proponent requires an amendment to its project's licence because it wants to establish an exploration camp. This camp will accommodate 30 people and be positioned in an area nearby Ferguson Lake's southwest shore, having a coordinate of 62˚53'33.66"N, 95˚54'15.03"W. The communities closest to the project area are Baker Lake, 160 km north, and Rankin Inlet, 240 km east. In previous years the proponent has based its project activities from a fishing camp on Ferguson Island. The proposed location for its new camp is 3 km southeast of the former camp site.

The proponent has requested that its licence allow the use of 97.7 $m^3$ of freshwater on a daily basis to support project operations. Domestic needs will require 7.7 $m^3$ of water which will be acquired from Ferguson Lake and be stored in 450 gallon tanks at the camp. Drilling operations will obtain freshwater from local water sources and not exceed 90 $m^3$. Drill cuttings will be bagged and removed from the project area for proper disposal and 'poor quality' drill water will be directed to a sump that is at least 30 m above the high water mark of nearby water bodies.

Camp sewage and gray water will be treated in a rotating biological contactor (RBC) unit prior to being discharged into a sump which is positioned at least 100 m from the high water mark of any water body. In the event that the RBC unit has a temporary breakdown, effluent will be directly discharged into the sump. Sludge will be collected every 6 months, air dried, and incinerated. Prior to the operation of an RBC unit, sewage will be incinerated and gray water will be treated in a sump.

Combustible wastes and waste oil will be incinerated on-site and non-combustible wastes will be brought to the Rankin Inlet municipal landfill. Empty fuel drums will be removed from the project area and returned to their vendors. Any hazardous wastes associated with the Ferguson Lake Project will receive treatment at an approved facility.

The proponent will continue to use the Ferguson Island airstrip to access its project area. A main fuel cache will be established on this island and a monthly supply of fuel will be stored at the new camp site. Liquid fuel products will be contained in 205 L steel drums. The monthly supply of fuel to be maintained at the new camp will consist of 37,515 L of diesel (183 drums), 24,600 L of Jet B fuel (120 drums), 1,435 L of gasoline (7 drums), and one 100 lb propane tank.

All fuel products will be stored in locations that are at least 100 m above the high water mark of nearby water bodies. A Spill Contingency Plan has been prepared for this project. This Plan provides a chain of command for responding to spills, response procedures for spills on land, water, snow, and ice, a list of contacts for reporting spills, and an inventory of spill response equipment. Spill response kits will be made available at the camp site, fuel storage and transfer areas, generator shack, and helicopter landing area.

Regular maintenance, temporary closure, and final abandonment procedures are provided in the project's Abandonment and Restoration Plan.

Environment Canada recommends that all drill water be placed within sumps or receive another form of treatment (e.g., containment troughs) that separates sediment and other deleterious substances from water before it is released into the surrounding environment.

Environment Canada recommends that erosion control measures be implemented at the point of discharge for treated gray water and drill water.

Environment Canada requests that its Enforcement Officer in Iqaluit, Jimmy Noble, be included in the Spill Contingency Plan's Contact List. Noble can be reached by office telephone at (867) 975-4644, cell phone at (867) 975-1925, and by secure fax-line at (867) 975-4594. Please note that the Environment Canada phone number indicated in the Contact List is incorrect (i.e., 867-975-.4464).

Environment Canada recommends that the following conditions be applied throughout all stages of the project:

GENERAL

- The proponent shall not deposit, nor permit the deposit of any fuel, drill cuttings, chemicals, wastes, or sediment into any water body. According to the *Fisheries Act*, Section 36(3), **the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited.**
- Section 35 of the *Migratory Bird Regulations* states that **no person shall deposit nor permit to be deposited, oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.** Therefore, Environment Canada recommends that sumps be backfilled or made otherwise inaccessible to migratory birds prior to their arrival in spring and that the proponent ensure that all spills are thoroughly cleaned-up.

DRILLING

- Environment Canada would like to inform the proponent that the *Canadian Environmental Protection Act* has listed CaCl as a toxic substance. The proponent shall therefore ensure that if CaCl is used as a drill additive, all sumps containing CaCl are properly constructed and located in such a manner as to ensure that the contents will not enter any water body.
- Drilling additives or muds shall not be used in connection with holes drilled through lake ice unless they are re-circulated or contained such that they do not enter the water, or demonstrated to be non-toxic.
- For 'on-ice' drilling, return water released must be non-toxic, and not result in an increase in total suspended solids in the immediate receiving waters above the Canadian Council of Ministers of the Environment Guidelines for the Protection of Freshwater Aquatic Life (i.e., 10 mg/L for lakes with background levels under 100 mg/L, or 10% for those above 100 mg/L).
- Land based drilling should not occur within 30 m of the high water mark of any water body. Drilling wastes should be disposed of in a sump such that the contents do not enter any water body.

CAMPS

- The proponent shall not store materials on the surface ice of lakes or streams, except that which is for immediate use.
- Any sumps, including those created for the disposal of drill cuttings, shall be located above the high water mark of any water body and in such a manner as to prevent the contents from entering any water body frequented by fish. Further, all sumps shall be backfilled upon completion of the field season and contoured to match the surrounding landscape.

FUEL STORAGE / SPILL CONTINGENCY / HAZARDOUS MATERIALS

- Environment Canada recommends the use of secondary containment, such as self-supporting insta-berms, when storing barreled fuel on location rather than relying on natural depressions.
- Drip pans, or other similar preventative measures, shall be used when refueling equipment on site.

MIGRATORY BIRDS

- Environment Canada recommends that all activities be conducted outside the migratory bird breeding season, which extends from approximately 15 May to 1 August. These dates are approximate, and if active nests (i.e., nests containing eggs or young) are encountered outside of these dates, the proponent should avoid the area until nesting is complete (i.e., the young have left the nest). Paragraph 6(a) of the *Migratory Bird Regulations* states that **no one shall disturb or destroy the nests of migratory birds.**
- In order to mitigate potential effects and minimize disturbance, any aircraft used in conducting project activities should maintain a horizontal distance of 2 km and a vertical distance of 610 m from any observed groups (colonies) of migratory birds.

If there are any changes in the proposed project, EC should be notified, as further review may be necessary. Please do not hesitate to contact me if you have any questions or comments with regards to the foregoing at (867) 975-4631 or by email via david.abernethy@ec.gc.ca.

Sincerely,

David W. Abernethy
Environmental Assessment Technician

cc. Colette Spagnuolo – Environmental Assessment / Contaminated Sites Specialist, Environment Canada, Iqaluit