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September 29, 2000

Mackenzie Valley Environmental Impact Review Board
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**RE: Information Request for Explor Data Ltd., Land Use Permit N1998B0861 Amendment
Seismic Program, Nahanni Butte, NWT Environmental Assessment**

This letter is in response to the two information requests of September 6, 2000 by the Mackenzie Valley Environmental Impact Review Board (MVEIRB) to facilitate the Environmental Assessment under the Mackenzie Valley Resource Management Act for Explor Data Ltd. The information requested by MVEIRB is listed below in bold, followed by comments by Environment Canada.

Subject: Cumulative effects and the state of the water resources of the South Nahanni watershed.

(a) An indication of the existing state of the environment and integrity of water resources of the South Nahanni River watershed

The existing state of the aquatic environment (i.e. water quality & quantity, suspended sediment quality, fish tissue quality) for Nahanni NPR and the South Nahanni River basin is described extensively in the following attached Environment Canada-Parks Canada Agency reports (complementary copies of these reports were delivered to MVEIRB):

- Halliwell, D.R. (Environment Canada) and Catto, S. (Parks Canada Agency), 1998. *Protecting the Aquatic Quality of Nahanni National Park Reserve, N.W.T.* December 1998., 96 pp. (Raw data MS Excel and Stats Graphics files are also available upon demand on a complementary basis or for a nominal charge basis).
- Spence, C. (Environment Canada, 1998. *An Overview of River Conditions for South Nahanni River Basin, NWT*, December 1998. 28 pp. (Original water quantity data are also available upon demand on the same two above-mentioned bases).
- Environment Canada, 1991. *Protecting the Waters of Nahanni National Park Reserve, N.W.T.*, December 1991. Report C&P-IWD-NWT-91-002 TR91-1/NAH, 88pp.

Lake water and sediment studies in Nahanni NPR (for toxics and climate change/climate variability study purposes) have been carried out during summers 1999 and 2000, and are proposed for summer 2001. Late winter baseflow, and a lesser amount of spring freshet and summer-fall recession, water quality monitoring have been carried out at 6 selected sites since 1997 and to the present day (sampling

is proposed for February 2001). Sampling frequency ranges between three and 12 times per year. Water and sediment samples are analyzed for physicals, nutrients, major ions, trace metals, particle size distribution analysis (sediments only) and organics (lakes only). There is currently no bacteriological or organics stream water data, though this is a future possibility.

The area was found to have natural elevations of copper, zinc and cadmium in stream water, suspended sediment, and fish livers and gills (other studies reveal elevations of these metals in caribou). Nahanni NPR water quality exhibits tremendous spatial and temporal (seasonal, long-term) natural variability (geobiochemical cycling). The NRCan Canadian Earthquake Database homepage documents how tectonically active the area is. Flat River near the Mouth has a statistically-large, 25-year water quality record that documents increased exceedances of CCME Canadian Water Quality Guidelines for several physical and trace metal water quality variables following 12 seismic events (Richter Scale = 5-6, epicentre = Ram Plateau locations, foci depths = 10 km. approx.) in the area between October 1985 and March 1986.

(b) An indication of where water quality monitoring stations are and the extent of baseline water quality data available for the area.

Stream water quality sampling throughout Nahanni NPR and just south of it (i.e. South Nahanni River (SNR) above Nahanni Butte) has been carried out at most of the 6-14 sites in a 1988-1989 study and 1990-present day monitoring (and at the Flat River near the Mouth since 1972). Suspended stream sediment quality has been measured at SNR above Nahanni Butte, and an additional half dozen sites, in 1988-1989 and 1992-1996. Fish tissue quality studies were carried out at two sites in the Nahanni River basin, in fall 1992 and 1994.

Along the Liard River, long-term water quality sampling has been carried out near the mouth (i.e. just above the ferry crossing/highway/gauge site) since 1960 and there are five years of suspended sediment data. The water and sediment samples are analyzed for the above-mentioned inorganic and organic variables. A similar inorganics-only water quality, 6-26 samples per year record exists from the Liard River just above Fort Liard (right, north bank). Shorter water quality records, but with monthly sampling, exist during the AES (1991-1997) years on the Petitot River (EC) and Kotanelee River (INAC).

INAC-WRD Yellowknife has also carried out their Liard River Environmental Quality Monitoring Program. The data and information is collated in a March 1998 235 page Final Study Report and several hundred pages of appendices, co-authored by Taylor Mazier Associates, INAC Water Resources Division (Juanetta Sanderson) and AquatIchtus Consultants. J. Sanderson of INAC is currently carrying out a smaller, follow-up program.

(c) Analysis and conclusions, with supporting rationale, of the potential for cumulative effects on water resources to occur from this proposed development

The analyses and conclusions concerning baseline water, sediment, and biota tissue quality, complete with supporting rationale, are discussed in detail in the above-mentioned three EC-PCA reports and one INAC report. The former EC-PCA report and INAC report are more holistic (i.e. ecosystem approach

based) and begin to address which valued ecosystem components (VECs) are naturally stressed and more sensitive to the cumulative impacts of multiple developments.

This amendment to the seismic line should not increase the already elevated levels of copper, zinc, cadmium, iron and aluminum.

Subject: Incremental developments affecting ecological integrity in the area around and within, Nahanni National Park Reserve (NNPR)

a) An indication of the existing ecological integrity of the area:

The area of proposed activity in the vicinity of Nahanni National Park continues as a naturally functioning ecosystem representative of the Taiga Cordillera and Taiga Plains Ecozone. The overall biodiversity of the area remains intact with little or no change since the arrival of the first Europeans. However, there have been localized changes that can be attributed to human activity such as forestry, limited mineral exploration and probably some limited effects from hunting and trapping.

b) An explanation of how incremental developments such as this seismic development and increased hunting in the area may affect ecological integrity; and

The proposed seismic program with its 35 km of hand-cut 1.5 m wide lines presents little opportunity for improved access. Firstly the lines 'begin and end essentially nowhere' and secondly, motorized travel would not be possible on such lines. Given that this area could potentially be considered for expansion of the Park, there is the possibility of visual impacts due to the proposed cutting. However, at 1.5 m this would be negligible particularly considering how quickly the shrub layer rebounds after such disturbance. The disturbance associated with the helipads and storage areas would be negligible as well, as the vegetation will regenerate.

c) Identify any mitigation measures appropriate for reducing or eliminating risks to ecological integrity.

Given answers to b) above, no further mitigative action would be required.

Please do not hesitate to contact me at (867) 669-4743 with any questions or comments regarding the foregoing.

Yours truly,

Paula Pacholek
Northern Environmental Assessment Coordinator

cc: Steve Harbicht (Head, Assessment & Monitoring, EPB)
Paul Latour/Craig Machtans (Canadian Wildlife Service, Northern Conservation Division)
Doug Halliwell, P.Geol. (NAPEGG) (Aquatic Quality Specialist, MSC)