Rescan™ Environmental Services Ltd.

Sixth Floor, 1111 West Hastings Street
Vancouver, British Columbia
Canada, V6E 2J3
Telephone: (604) 689-9460
Facsimile: (604) 687-4277
e-mail: rescan@rescan.com

908 – 5201, 50th Avenue
Yellowknife, Northwest Territories
Canada, X1A 3S9
Telephone: (867) 920-2090
Facsimile: (867) 920-2015

Refer To File No. Hydrocarbon REPORT DEC

15 January 2008

Allison Rippin Armstrong
Starfield Resources Inc.
130 Adelaide Street West, Suite 2210
Toronto, Ontario
Canada M5H 3P5

Attention: Allison Rippin Armstrong

Dear Allison

Re: Ferguson Lake hydrocarbon testing

On November 29, 2007 a D-4 Bulldozer fell through the ice while clearing the ice for an airstrip. The location was near a pressure ridge crack; UTM coordinates (Easting, Northing; UTM Zone 14 V) were taken around the hole in the ice:

- 607123 6976456 was taken on the shore side of the pressure ridge crack approximately in the centre of the D-4 tracks
- 607122 6976460 was the west side of the hole on the shore side of the pressure ridge crack
- 607128 6976462 was the west side of the hole on the airstrip side of the pressure ridge crack
- 607131 6976458 was the east side of the hole on the airstrip side of the pressure ridge crack

Surface water was collected from two locations on Ferguson Lake on December 19, 2007 (1) at the potentially contaminated site (Site one) and (2) at a reference site 10 meters from the potentially contaminated site. At both Site one and the reference site, two surface water samples were collected and analysed for Polycyclic Aromatic Hydrocarbons (PAHs) and petroleum hydrocarbons that include both Light Extractable

CANADA EXPORT AWARD

Petroleum Hydrocarbons (LPEH; number of carbons C1-C19) and Heavy Extractable Petroleum Hydrocarbons (HPEH; number of carbons C19-C32). At the potentially contaminated site, three additional surface water samples were collected to assess the concentration of glycols (associated with antifreeze). A hydrocarbon distribution report or chromatogram (assists in characterising possible hydrocarbons in the sample) was produced for two samples at the potentially contaminated site and one sample from the reference site (Figure 1).

The results indicate that the concentrations were below detection limit for all PAH parameters analyzed in water samples at Site one and the reference site (Table 1). The Canadian Council of Ministers of the Environment (CCME) guidelines are provided in Table 1, however none of the parameters analyzed exceed the guidelines for the protection of aquatic life (CCME, 2006). Laboratory (ALS Environmental) efficiency at extracting PAHs from the samples was determined by the ability to extract surrogate compunds (*e.g.* d10-Acenaphthene) from the sample. The efficiency of recovery of the target analytes varied between 91% and 97%.

There are no CCME guidelines for total petroleum hydrocarbons in water however there have been some limits established in Contaminated Sites Regulation (Yukon Territorial Government and British Columbia) for protection of aquatic life. The standards suggest that LEPH water concentration should not exeed 500 µg/L. There is no Contaminated Site Regulation for HEPH. The concentration of LEPH at the potentially contaminated site and the reference site was below detection limit for all water samples (Table 1). However concentration of HEPH at the contaminated site (Average HEPH concentration = 1,600 µg/L) was an order of magnitude greater than concentrations found at the reference site (Average HEPH concentration = 100 µg/L, half the detection limit was given to the value below detection limit). This suggests that a petroleum product such as motor oil, lubricating oil or grease was at the site at the time of sampling. The hydrocarbon distribution report (Figure 1) also indicated the likelihood of a petroleum product with nC19 - nC32 hydrocarbon compounds in the two water samples collected from the potentially contaminated site and not in the water sample collected 10 m from the site. Comparison of the chromatogram of samples from the potentially contaminated site to chromatograms of known petroleum products (completed by ALS environmental) indicates that the petroleum product is likely a motor oil.

None of water samples taken from the potentially contaminated site contained glycol concentrations above the detection limit (Table 2). Although glycols (toxic to fish) can breakdown in the water within several days to a week, the data suggests that at the time of sampling there was no glycol contamination associated with antifreeze.

In conclusion the data suggests that, at the time of sampling, a small amount of petroleum product had contaminated the site. It is recommended that future water quality testing be conducted at the site to ensure no further contamination has occurred.

In addition it is recommended that sediment quality testing (in particular hydrocarbon analysis) be conducted to ensure that any parameters (in particular Phenanthren and Benzo(a)pyrene) that have broken down and/or have settled in the water column over time do not exceed CCME sediment guidelines for protection of aquatic life.

References

CCME. 2006. *Canadian water quality guidelines for the protection of aquatic life: Summary table*. Updated 2006. In: *Canadian environmental quality guidelines*, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

Yours truly,

RESCAN™ ENVIRONMENTAL SERVICES LTD.

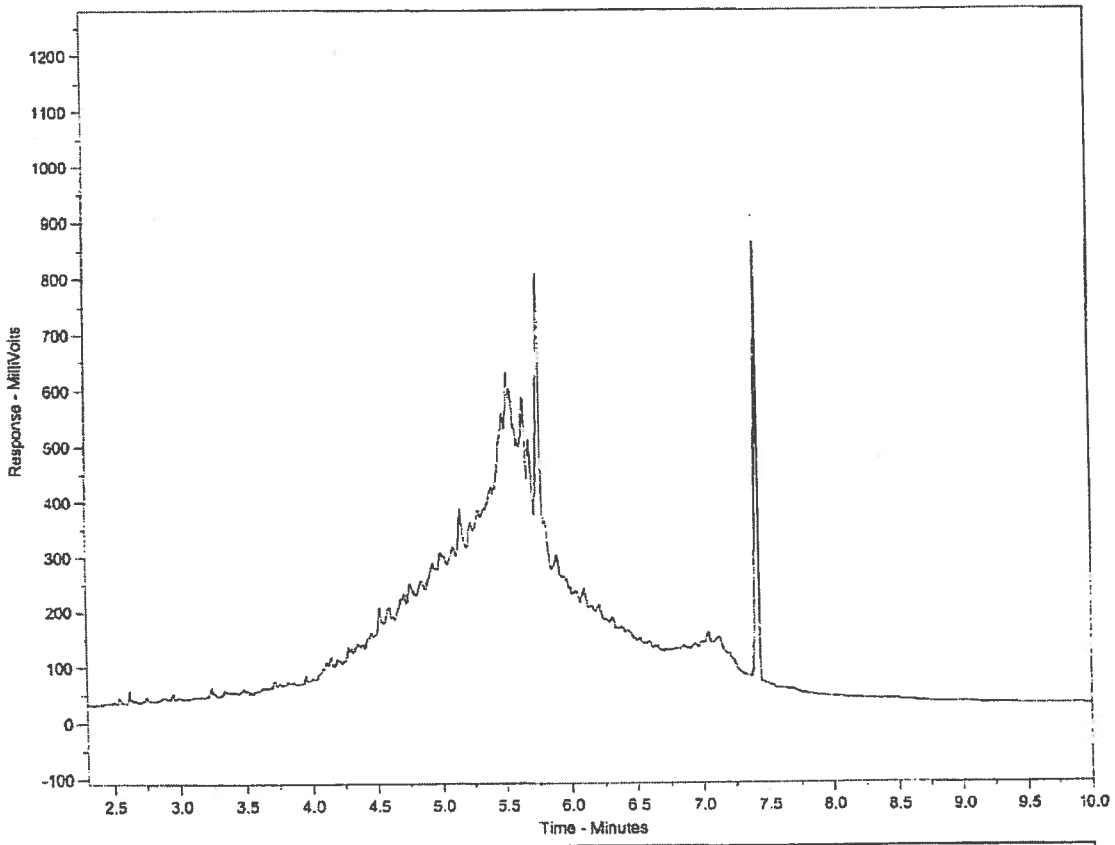
per:

Tonia Robb, Ph.D.
Aquatic Biologist

/encl.

Hydrocarbon Distribution Report

Client Sample ID: S1#
ALS Sample ID: L589168-1



nC10	nC16	nC32	Surrogate	nC40
174°C 346°F	330°C 626°F	467°C 873°F		522°C 972°F

Gasoline
Diesel / Jet Fuels
Motor Oils / Lube Oils / Grease

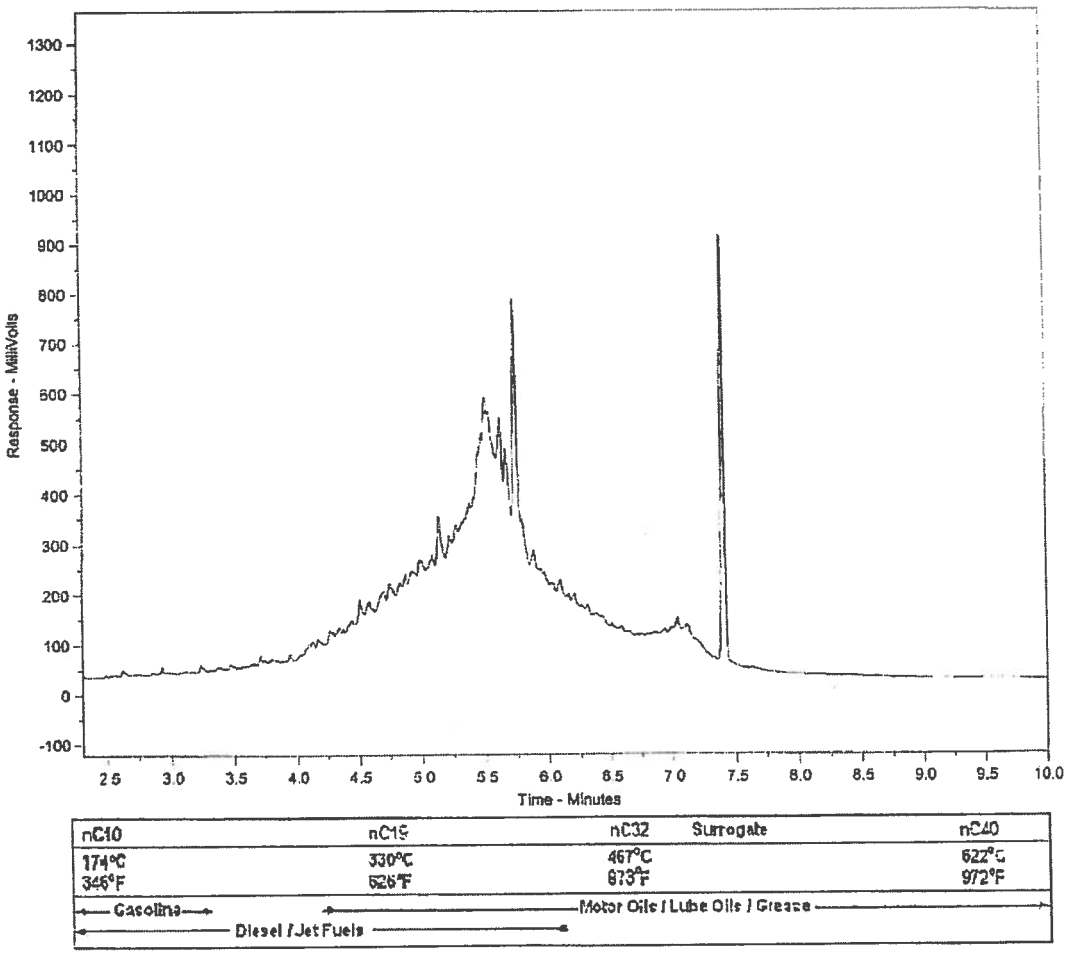
Chromatograms from the ALS HDR Reference Library indicate the patterns of hydrocarbon compounds found in petroleum products, reference standards, and some examples of natural plant and organic materials. The chromatogram from left to right roughly corresponds to increasing boiling point from approximately 174°C to 522°C, a range encompassing most middle distillate and residual petroleum products (diesel, fuel oils, lubricating oils, etc). Comparison of library chromatograms with those of unknown samples may aid in the identification of contaminants. Surrogate compounds, which are added to samples by the laboratory, are not present in HDR library chromatograms.

Please note that retention times may vary between samples by as much as 0.5 minutes.

Figure 1a. Hydrocarbon distribution report of a single water sample from site one (the potentially contaminated site).

Hydrocarbon Distribution Report

Client Sample ID: S1#
ALS Sample ID: L589168-2



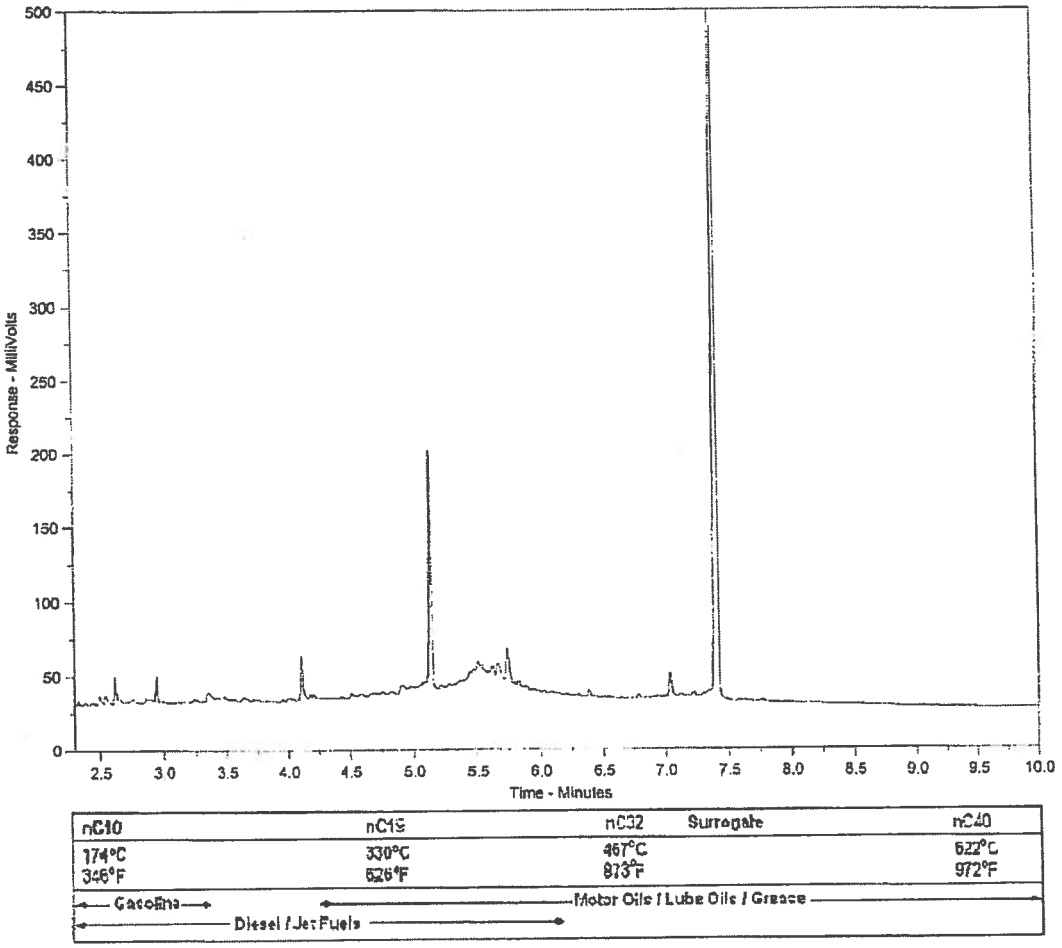
Chromatograms from the ALS HDR Reference Library indicate the patterns of hydrocarbon compounds found in petroleum products, reference standards, and some examples of natural plant and organic materials. The chromatogram from left to right roughly corresponds to increasing boiling point from approximately 174°C to 522°C, a range encompassing most middle distillate and residual petroleum products (diesel, fuel oils, lubricating oils, etc). Comparison of library chromatograms with those of unknown samples may aid in the identification of contaminants. Surrogate compounds, which are added to samples by the laboratory, are not present in HDR library chromatograms.

Please note that retention times may vary between samples by as much as 0.5 minutes.

Figure 1b. Hydrocarbon distribution report of a replicate water sample from site one (the potentially contaminated site).

Hydrocarbon Distribution Report

Client Sample ID: S1#
ALS Sample ID: L589168-3



nC10	nC16	nC32	Surrogate	nC40
174°C 346°F	330°C 626°F	467°C 873°F		522°C 972°F

Gasoline — Motor Oils / Lube Oils / Grease

Diesel / Jet Fuels

Chromatograms from the ALS HDR Reference Library indicate the patterns of hydrocarbon compounds found in petroleum products, reference standards, and some examples of natural plant and organic materials. The chromatogram from left to right roughly corresponds to increasing boiling point from approximately 174°C to 522°C, a range encompassing most middle distillate and residual petroleum products (diesel, fuel oils, lubricating oils, etc). Comparison of library chromatograms with those of unknown samples may aid in the identification of contaminants. Surrogate compounds, which are added to samples by the laboratory, are not present in HDR library chromatograms.

Please note that retention times may vary between samples by as much as 0.5 minutes.

Figure 1c. Hydrocarbon distribution report of a single water sample from site two (10 m from the site).

Table 1

Polycyclic Aromatic and Extractable Hydrocarbon Concentrations at the Potentially Contaminated Site and Reference Site

Parameter	Site 1 (L589168-1)	Site 1 (L589168-2)	Reference Site (L589168-3)	Reference Site (L589168-4)	CCME[1,2]
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	<0.010	<0.010	<0.010	<0.010	5.8
Acenaphthylene	<0.010	<0.010	<0.010	<0.010	-
Acridine	<0.010	<0.010	<0.010	<0.010	4.4
Anthracene	<0.010	<0.010	<0.010	<0.010	0.012
Benz(a)anthracene	<0.010	<0.010	<0.010	<0.010	0.018
Benzo(a)pyrene	<0.010	<0.010	<0.010	<0.010	0.015
Benzo(b)fluoranthene	<0.030	<0.030	<0.030	<0.030	-
Benzo(k)fluoranthene	<0.010	<0.010	<0.010	<0.010	-
Benzo(g,h,i)perylene	<0.010	<0.010	<0.010	<0.010	-
Chrysene	<0.010	<0.010	<0.010	<0.010	-
Dibenz(a,h)anthracene	<0.010	<0.010	<0.010	<0.010	-
Fluoranthene	<0.010	<0.010	<0.010	<0.010	0.04
Fluorene	<0.010	<0.010	<0.010	<0.010	3.0
Indeno(1,2,3-c,d)pyrene	<0.010	<0.010	<0.010	<0.010	-
Naphthalene	<0.020	<0.020	<0.020	<0.020	1.1
Phenanthrene	<0.020	<0.020	<0.020	<0.020	0.4
Pyrene	<0.010	<0.010	<0.010	<0.010	0.025
Quinoline	<0.010	<0.010	<0.010	<0.010	3.4
Extractable Hydrocarbons					
LEPH	<100	<100	<100	<100	-
HEPH	1810	1390	150	<100	-

Note: < indicates less than the detection limit
Dashes indicate no data available
All units are µg/L
[1]Canadian Council of Ministers of the Environment, 2006. Canadian water quality guidelines for the protection of aquatic life
[2]Interim guideline

Table 2
Glycol Concentrations at the Potentially Contaminated Site

Parameter	Site 1 (L589168-5)	Site 1 (L589168-6)	Site 1 (L589168-7)	CCME[1]
Diethylene Glycol	<5000	<5000	<5000	-
Ethylene Glycol	<5000	<5000	<5000	192,000
1,2-Propylene Glycol	<5000	<5000	<5000	500,000

Note: < indicates less than the detection limit

Dashes indicate no data available

All units are µg/L

[1]**Canadian Council of Ministers of the Environment, 2006. Canadian water quality guidelines for the protection of aquatic life**