January 28, 2004
Project No. 52876-002-310

TeckCominco Ltd.
Bag 2000
Kimberley, BC
V1A 3E1

Attention: **Mr. Bruce Donald**

RE: **Polaris Mine Soils Stockpile Assessment**

Dear Bruce,

Please find attached our data report on the acid generation and metal leaching potential of two metals contaminated soil stock piles at the Polaris mine.

Teck Cominco staff collected four (4) samples from stockpile RBH 185-8 and stockpile RBH 229-2 (2 per pile) on January 9, 2004. These samples were analysed for acid-base accounting (ABA) and ICP metals, plus leachable metals using the Meteoric Water Mobility Procedure (MWMP). Analyses were carried out by Vizon Scitec (formerly BC Research) in Vancouver, BC.

ABA testing is used to determine the potential of a material to generate acid and/or leach metals. The testing determines the ability of the material to neutralize acid (the neutralization potential, or NP) and to generate acid (the acid potential, or AP); units for both measurements are in kg/$CaCO_3$/tonne. The ratio of these two values (NP/AP) is used to estimate the potential for a material to generate acid and is known as the neutralization potential ratio (NPR). In Nunavut, a NPR value greater than 3 indicates that the material is acid consuming and will not generate acid. Another measure used is the Net Neutralization Potential (NNP), which is the difference between the NP and AP values (ie. NNP=NP-AP). Materials with NNP values greater than 20 kg $CaCO_3$/tonne are considered to be non acid generating.

The purpose of the Meteoric Water Mobility Procedure (MWMP) is to simulate the leaching of a soil by precipitation. The procedure consists of a single-pass column leach over a 24 hour period using a sample to extraction fluid (effluent) ratio of 1:1. The leachate quality from this test is assumed to be equivalent to the seepage quality expected after a rainfall or snowmelt event. Samples that have weathered for longer periods of time without any natural flushing tend to accumulate soluble metals and release them during this test.

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A composite sample of each pile (two samples total) were prepared and tested for leachable metals using the MWMP technique. ABA and ICP metals analyses were carried out on all four samples. Results are presented in Tables 1 – 3 and discussed below.

ABA Parameters and ICP Metals

Analyses were performed on the <2 mm fraction of the soil samples. The samples have neutralization potentials from 743.2 to 931.8 kg $CaCO_3$/tonne. Samples from stockpile RBH 229-2 had sulphide sulphur concentrations of 0.22 and 0.28 %. Soil samples from stockpile RBH 185-8 have sulphide sulphur concentrations of 1.33 and 4.22% with sulphate-sulphur concentrations of 0.01%.

Comparison of the carbonate neutralization potential to the modified Sobek neutralization potential (Table 1) indicates that most of the neutralization capacity of the tailings is a result of carbonate minerals, but there is also a small component of non-carbonate minerals providing neutralization capacity.

Neutralization potential ratios (NPR) ranged from 5.6 to120 and are shown in Figure 1. This range of values indicates that acid generation is not expected for these samples. NPR values greater than 3 are considered to be acid consuming not acid generating. Net neutralization potential (NNP) values are all very high (611 to 923 kg/$CaCO_3$/tonne) and indicate that the samples are strongly acid consuming (Figure 2).

Metal concentrations for the samples are presented in Table 2. Lead and zinc concentrations are elevated, but not unexpected for a soil containing some mine wastes.

Leach Tests

Two MWMP tests were run on the soil samples. Results are given in Table 3. Summarized below are the results of the tests compared to the Water Licence:

Element	Water Licence	Polaris 1-2	Polaris 3-4
As	0.5	<0.0005	0.0005
Cd	0.005	0.00008	0.00045
Cu	0.07	0.0011	0.0024
Hg	0.0005	0.0001	<0.0001
Pb	0.07	0.0325	0.0432
Ni	0.5	0.0002	0.0002
Zn	0.5	0.1582	0.1929

(All units in mg/L)

The results are below the site Water Licence requirements and are indicative of the 'first flush' of a material containing mine waste that has been allowed to weather without removal

of any accumulated weathering products. Metal concentrations in the leachates would be expected to decrease significantly over time if the soils were to continue to be exposed to ongoing snow melt or rainfall conditions.

Yours very truly,

URS CANADA INC.

per:

ORIGINAL SIGNED BY

Steve Sibbick, M.Sc., PGeo.
Senior Geochemist

SS:HP

Enclosure

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS FOR ACID-BASE ACCOUNTING (ABA) ANALYSIS USING THE MODIFIED ABA METHOD
WASTE ROCK SAMPLES
POLARIS MINE
LITTLE CORNWALLIS ISLAND, NUNAVUT

Sample	Location	Date	Paste pH	CO_2 (wt%)	$CaCO_3$ Equivalent (kg $CaCO_3$/tonne)	Total Sulphur (wt%)	Sulphate Sulphur (wt%)	Sulphide Sulphur (wt%)*	Maximum Potential Acidity** (kg $CaCO_3$/tonne)	Neutralization Potential (kg $CaCO_3$/tonne)	Net Neutralization Potential (kg $CaCO_3$/tonne)	Fizz
Polaris 1	Stockpile RBH 185-8, S.W. side	9-Jan-04	7.9	37.18	845.0	4.23	0.01	4.22	131.9	743.2	611.3	strong
Polaris 2	Stockpile RBH 185-8, N.W. side	9-Jan-04	8.0	39.78	904.1	1.34	0.01	1.33	41.6	843.7	802.1	strong
Polaris 3	Stockpile RBH 229-2, N side	9-Jan-04	8.1	43.77	994.8	0.30	0.02	0.28	8.8	931.8	923.1	strong
Polaris 4	Stockpile RBH 229-2, Top center	9-Jan-04	8.0	40.18	913.2	0.24	0.02	0.22	6.9	825.1	818.2	strong
Method Detection Limit			0.1	0.01	---	0.02	0.01	0.01	---	0.1	0.1	---

< - less than the detection limit indicated
NS - No standard established
* Based on difference between total sulphur and sulphate-sulphur
** Based on sulphide-sulphur
BC Research

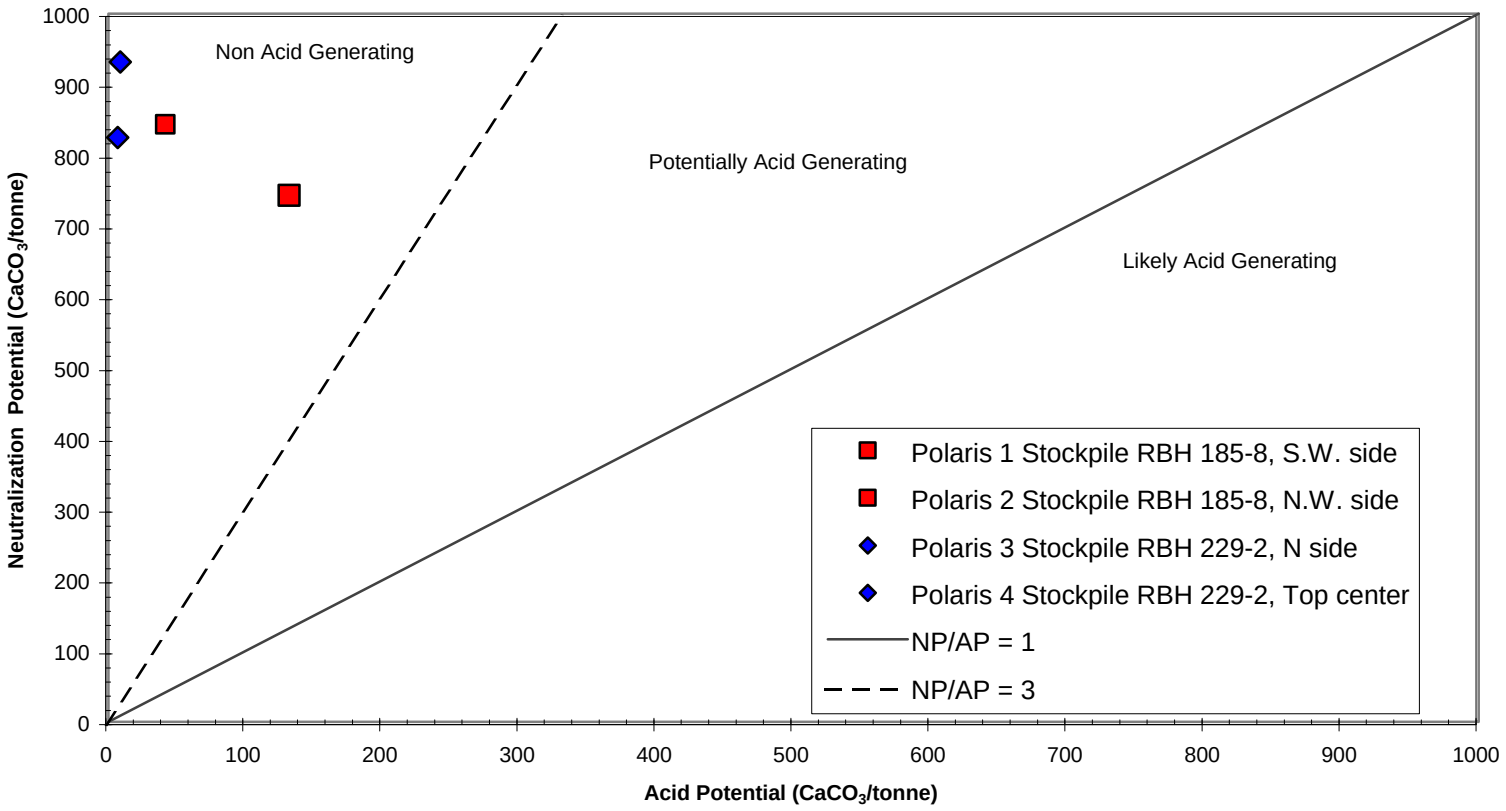
TABLE 2
SUMMARY OF ANALYTICAL RESULTS FOR AQUA REGIA METALS
POLARIS MINE
LITTLE CORNWALLIS ISLAND, NUNAVUT
(ppm)

Sample	Location	Date	TOT/S	Carbon Dioxide (%)	Aluminum (%)	Antimony	Arsenic	Barium	Boron	Bismuth	Cadmium	Calcium (%)	Chromium	Cobalt	Copper	Gallium	Gold	Iron (%)	Lanthanum	Lead	Mercury	Magnesium (%)	Manganese	Molybdenum	Nickel	Phosphorous (%)	Potassium (%)	Scandium	Selenium	Silver	Sodium (%)	Strontium	Thallium	Thorium	Titanium (%)	Tungsten	Uranium	Vanadium	Zinc
Polaris 1	Stockpile RBH 185-8, S.W. side	9-Jan-04	4.23	37.18	0.05	0.3	2.	121.	2.	<1.	44.1	16.4	11.6	1.1	5.7	1.	1.2	2.08	2.	5152.1	0.02	5.46	301.	1.5	5.4	0.008	0.02	0.5	<5.	1.6	0.014	83.	0.1	0.4	<1.	<1.	0.5	7.	>10000
Polaris 2	Stockpile RBH 185-8, N.W. side	9-Jan-04	1.34	39.78	0.08	0.4	1.7	214.	4.	<1.	33.8	19.62	7.4	1.6	7.8	1.	<5.	0.75	2.	3925.4	0.02	6.06	289.	1.2	5.7	0.009	0.04	0.6	0.6	1.3	0.019	153.	0.1	0.6	<1.	<1.	0.6	11.	>10000
Polaris 3	Stockpile RBH 229-2, N side	9-Jan-04	0.3	43.77	0.04	0.2	1.8	145.	3.	<1.	5.3	21.94	7.7	0.8	3.6	<1.	<5.	0.32	2.	1525.6	0.01	6.72	351.	1.5	5.4	0.005	0.02	0.5	<5.	0.2	0.018	89.	<1.	0.3	<1.	<1.	0.6	6.	2029
Polaris 4	Stockpile RBH 229-2, Top center	9-Jan-04	0.24	40.18	0.12	0.4	2.2	690.	6.	<1.	2.6	21.48	8.6	1.7	9.7	1.	<5.	0.46	3.	715.9	0.02	5.62	253.	1.3	5.6	0.016	0.05	0.7	0.5	0.1	0.018	126.	0.1	0.7	<1.	<1.	0.7	13.	887
Method Detection Limit			0.01	0.02	0.01	0.1	0.5	1.	1.	0.1	0.1	0.01	1.	0.1	0.1	1.	0.5	0.01	1.	0.1	0.01	0.01	1.	0.1	0.1	0.001	0.01	0.1	0.5	0.1	0.001	1.	0.1	0.1	0.001	0.1	0.1	2.	1

< less than the method detection limit indicated
BC Research

TABLE 3
SUMMARY OF ANALYTICAL RESULTS FOR DISSOLVED METALS USING THE METEORIC WATER MOBILITY PROCEDURE
POLARIS MINE
LITTLE CORNWALLIS ISLAND, NUNAVUT
(ppb)

Sample	Units	Detection Limit	Polaris 1-2 Composite	Polaris 3-4 Composite
Date			**9-Jan-04**	**9-Jan-04**
Volume Input	ml	5.	5600.	5770.
Volume Output	ml	5.	5100.	5180.
pH		0.01	7.2	7.74
Dissolved Metals				
Ag - silver	ppb	0.05	< .05	< .05
Al - aluminum	ppb	1.	11	11
As - arsenic	ppb	0.5	< .5	0.5
Au - gold	ppb	0.05	0.36	0.18
B - boron	ppb	20.	180	286
Ba - barium	ppb	0.05	164.7	86.28
Be - betyllium	ppb	0.05	< .05	< .05
Bi - bismuth	ppb	0.05	< .05	< .05
Br - bromine	ppb	5.	139	125
Ca - calcium	ppb	50.	57605	142724
Cd - cadmium	ppb	0.05	0.08	0.45
Ce - cerium	ppb	0.01	< .01	< .01
Cl - chloride	ppm	1.	35	32
Co - cobalt	ppb	0.02	0.65	0.78
Cr - chromium	ppb	0.5	2.5	2.3
Cs - cesium	ppb	0.01	0.04	0.03
Cu - cupper	ppb	0.1	1.1	2.4
Dy - dysprosium	ppb	0.01	< .01	< .01
Er - erbium	ppb	0.01	< .01	< .01
Eu - europium	ppb	0.01	< .01	< .01
Fe - iron	ppb	10.	< 10	< 10
Ga - gallium	ppb	0.05	< .05	< .05
Gd - gadolinium	ppb	0.01	< .01	< .01
Ge - germanium	ppb	0.05	0.07	0.07
Hf - hafnium	ppb	0.02	< .02	< .02
Hg - mercury	ppb	0.1	0.1	< .1
Ho - holmium	ppb	0.01	< .01	< .01
In - indium	ppb	0.01	< .01	< .01
Ir - iridium	ppb	0.05	< .05	< .05
K - potassium	ppb	50.	6845	10794
La - lanthanum	ppb	0.01	< .01	< .01
Li - lithium	ppb	0.1	5.2	8.2
Lu - letetium	ppb	0.01	< .01	< .01
Mg - magnesium	ppb	50.	11197	17003
Mn - manganese	ppb	0.05	19.26	24.14
Mo - molybdenum	ppb	0.1	5.8	10.6
Na - sodium	ppb	50.	29965	26881
Nb - neodymium	ppb	0.01	< .01	< .01
Nd - neodymium	ppb	0.01	< .01	< .01
Ni- nickel	ppb	0.2	0.2	0.2
Os - osmium	ppb	0.05	< .05	< .05
P - phosphorus	ppb	20.	< 20	< 20
Pb - lead	ppb	0.1	32.5	43.2
Pd - palladium	ppb	0.2	< .2	< .2
Pr - praseodymium	ppb	0.01	< .01	< .01
Pt - platinum	ppb	0.01	< .01	< .01
Rb - rubidium	ppb	0.01	4.31	4.72
Re - rhenium	ppb	0.01	0.03	0.06
Rh - rhodium	ppb	0.01	< .01	< .01
Ru - ruthenium	ppb	0.05	< .05	< .05
S - sulphur	ppm	1.	55	139
Sb - antimony	ppb	0.05	0.49	0.55
Sc - acandium	ppb	1.	< 1	< 1
Se - selenium	ppb	0.5	1.5	3
Si - silicon	ppb	1.	1147	2081
Sm - samarium	ppb	0.02	< .02	< .02
Sn - tin	ppb	0.05	0.38	0.5
Sr - strontium	ppb	0.01	178.17	369.8
Ta - tantalum	ppb	0.02	< .02	< .02
Tb - terbium	ppb	0.01	< .01	< .01
Te - tellurium	ppb	0.05	< .05	< .05
Th - thorium	ppb	0.05	< .05	< .05
Ti - titanium	ppb	10.	< 10	< 10
Tl - thallium	ppb	0.01	0.2	0.32
Tm - thulium	ppb	0.01	< .01	< .01
U - uranium	ppb	0.02	0.17	0.6
V - vanadium	ppb	0.2	< .2	< .2
W - tungsten	ppb	0.02	0.05	0.02
Y - yttrium	ppb	0.01	0.01	< .01
Yb - ytterbium	ppb	0.01	< .01	< .01
Zn - zinc	ppb	0.5	158.2	192.9
Zr - zirconium	ppb	0.02	< .02	< .02



Neutralization Potential versus Acid Potential
Polaris Mine, Nunavut

Teck Cominco Ltd.

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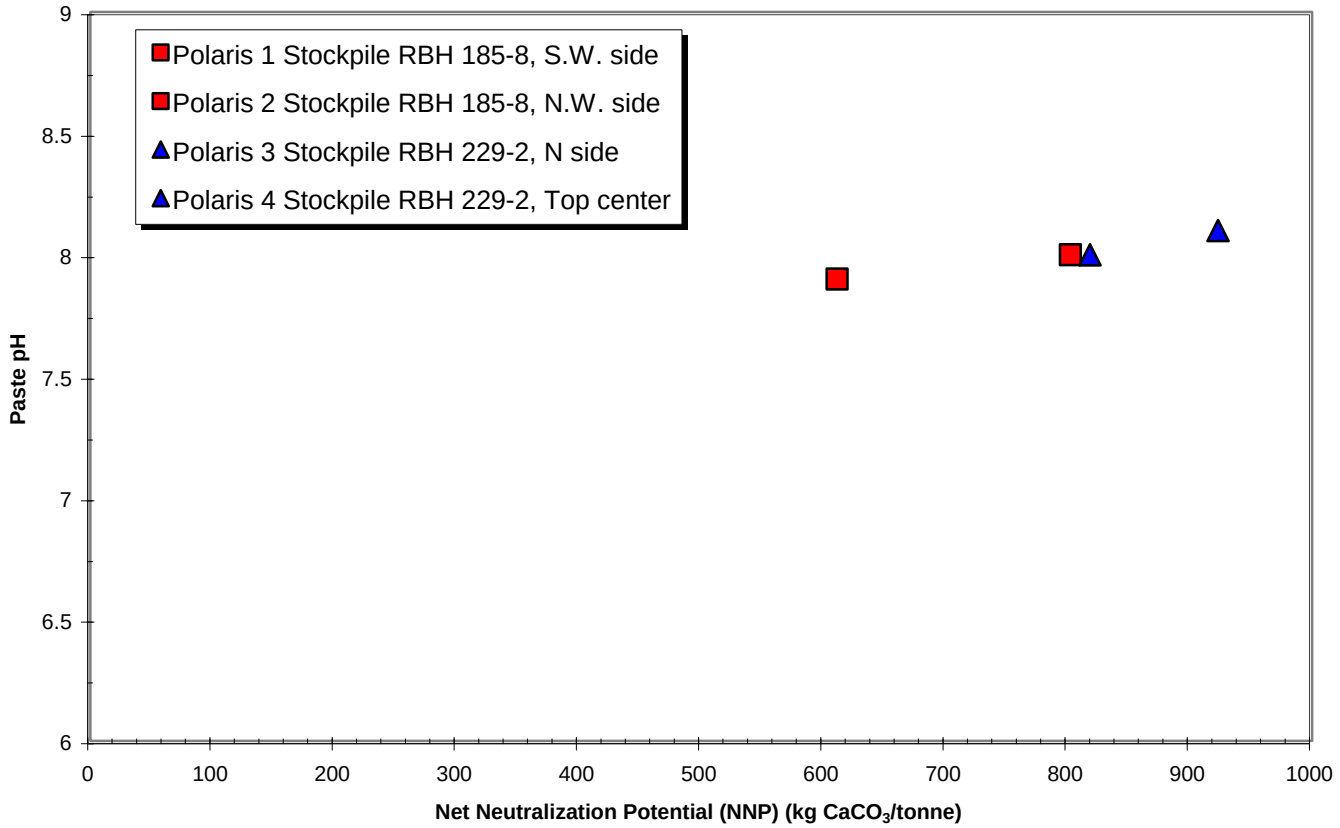

Net Neutralization Potential
vs Paste pH
Polaris Mine, Nunavut

Teck Cominco Ltd.

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