Table ESP-23-1. Exploration Stockpile and Shoreline North of Dock Remediation Confirmation Soil Samples - Metals

Gartner Lee

Parameter	Units	Federal CCME Guidelines CEQG (PL)[a]	Federal CCME Guidelines SQRO[b]	ESP-103-F-C	ESP-104-F-C	ESP-105-F-C	ESP-106-F-C	ESP-109-F-C*	ESP-110-F-C	ESP-114-F-C	ESP-115-F-C	ESP-120-F-D	ESP-124-W-C	ESP-125-W-C	ESP-126-W-D
			Location	Exploration Stockpile and Shoreline North of Dock											
			Date Sampled	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03
			Field Screen Pb[c] (ppm)	285.66	328.58	804.73	1506.34	616.7	506.7	208.19	447.24	380.73	274.73	1066.33	362.41
			Field Screen Zn[c] (ppm)	1069.16	1043.82	3143.54	5223.84	4120.57	1994.05	598.35	2258.26	2387.01	990.75	5978.18	1547.92
Physical Tests															
pH		-	-	9	-	-	-	-	-	-	-	-	-	-	-
Total Metals															
Antimony T-Sb	mg/kg	20[d]	-	<20[e]	-	-	-	-	-	-	-	-	-	-	-
Arsenic T-As	mg/kg	12	-	<10	-	-	-	-	-	-	-	-	-	-	-
Barium T-Ba	mg/kg	500	-	398	-	-	-	-	-	-	-	-	-	-	-
Beryllium T-Be	mg/kg	4[d]	-	<1	-	-	-	-	-	-	-	-	-	-	-
Cadmium T-Cd	mg/kg	10	-	2	-	-	-	-	-	-	-	-	-	-	-
Chromium T-Cr	mg/kg	64	-	8	-	-	-	-	-	-	-	-	-	-	-
Cobalt T-Co	mg/kg	50[d]	-	<4	-	-	-	-	-	-	-	-	-	-	-
Copper T-Cu	mg/kg	63	-	7	-	-	-	-	-	-	-	-	-	-	-
Lead T-Pb	mg/kg	-	2000	194	164	1250	1530	527	778	192	287	163	101	520	146
Mercury T-Hg	mg/kg	7	-	<0.05	-	-	-	-	-	-	-	-	-	-	-
Molybdenum T-Mo	mg/kg	10[d]	-	<8	-	-	-	-	-	-	-	-	-	-	-
Nickel T-Ni	mg/kg	50	-	15	-	-	-	-	-	-	-	-	-	-	-
Selenium T-Se	mg/kg	1	-	<3[e]	-	-	-	-	-	-	-	-	-	-	-
Silver T-Ag	mg/kg	20[d]	-	<4	-	-	-	-	-	-	-	-	-	-	-
Tin T-Sn	mg/kg	50[d]	-	<10	-	-	-	-	-	-	-	-	-	-	-
Vanadium T-V	mg/kg	130	-	22	-	-	-	-	-	-	-	-	-	-	-
Zinc T-Zn	mg/kg	-	10000	839	467	6850	4410	2200	4680	521	3600	674	375	2550	519

Associated ALS Analytics files: T6394, T4327, T3582, T3279, T2886, T2587

Notes:

Bold	*Exceeds the CCME Tier 1 Soil Quality Guidelines for Parkland Land Use*
Bold	*Exceeds the CCME Tier 3 Risk-Based Soil Soil Quality Remedial Objectives for the Polaris Mine Site*

<= Less than analytical method detection limit

"-" = No analysis performed for given parameter, or no guideline

na = No field screening result available

a) Canadian Council of Ministers of Environment (CCME) Canadian Environmental Quality Guidelines (CEQG) - Tier 1 soil quality remediation guidelines for parkland land use (PL). The site specific factors used for determining the soil quality guideline include: soil ingestion, soil contact, and nutrient cycling.

b) Canadian Council of Ministers of Environment (CCME) Tier 3 Risk based soil quality remedial objective (SQRO) for the Polaris Mine Site.

c) Field screening measurements are based on the Niton XLi 700 Series portable X-Ray Fluorescence (XRF) elemental analyser.

d) Canadian Council of Ministers of Environment (CCME) Tier 1 parkland land use interim remediation criteria, where soil quality gudelines based on the CCME soil protocol have not been developed yet.

e) The analytical method detection limit (MDL) exceeds the CCME Tier 1 Soil Quality Remediation Guidelines for parkland land use (PL).

** Sample ESP-109-F-C is recorded incorrectly as ESP-109-Comp-F in ALS report T2587*

Table ESP-23-1. Exploration Stockpile and Shoreline North of Dock Remediation Confirmation Soil Samples - Metals

Gartner Lee

Parameter	Units	Federal CCME Guidelines CEQG (PL)[a]	Federal CCME Guidelines SQRO[b]	Exploration Stockpile and Shoreline North of Dock											
Location				Exploration Stockpile and Shoreline North of Dock											
Sample ID				ESP-128-W-D*	ESP-129-F-D	ESP-133-I-C	ESP-135-I-C	ESP-136-I-C	ESP-137-I-C	ESP-138-I-C	ESP-139-I-C	ESP-140-I-C**	ESP-141-I-C	ESP-142-I-C	ESP-143-I-C
Date Sampled				4/8/03	7/28/03	9/8/03	9/8/03	9/8/03	9/8/03	9/8/03	9/8/03	9/8/03	9/8/03	9/8/03	9/8/03
Field Screen Pb[c] (ppm)				240.22	497.58	700	419.07	390.25	415.81	473	424.01	393.34	324.51	325.85	415.17
Field Screen Zn[c] (ppm)				1231.01	2060.01	1787.57	1341.62	1188.88	1459.92	1362.37	1137.64	1252.45	768.96	905.02	1179.04
Physical Tests															
pH		-	-	9	-	-	-	-	-	9	-	-	-	-	9
Total Metals															
Antimony T-Sb	mg/kg	20[d]	-	<20[e]	-	-	-	-	-	<20[e]	-	-	-	-	<20[e]
Arsenic T-As	mg/kg	12	-	<10	-	-	-	-	-	<10	-	-	-	-	<10
Barium T-Ba	mg/kg	500	-	**565**	-	-	-	-	-	49	-	-	-	-	96
Beryllium T-Be	mg/kg	4[d]	-	<1	-	-	-	-	-	<1	-	-	-	-	<1
Cadmium T-Cd	mg/kg	10	-	<1	-	-	-	-	-	2	-	-	-	-	5
Chromium T-Cr	mg/kg	64	-	<4	-	-	-	-	-	<4	-	-	-	-	<4
Cobalt T-Co	mg/kg	50[d]	-	<4	-	-	-	-	-	<4	-	-	-	-	<4
Copper T-Cu	mg/kg	63	-	<2	-	-	-	-	-	<2	-	-	-	-	2
Lead T-Pb	mg/kg	-	2000	<100	<100	301	221	218	740	<200	265	785	<200	<200	511
Mercury T-Hg	mg/kg	7	-	<0.05	-	-	-	-	-	<0.05	-	-	-	-	<0.05
Molybdenum T-Mo	mg/kg	10[d]	-	<8	-	-	-	-	-	<8	-	-	-	-	<8
Nickel T-Ni	mg/kg	50	-	<10	-	-	-	-	-	<10	-	-	-	-	<10
Selenium T-Se	mg/kg	1	-	<2[e]	-	-	-	-	-	<3[e]	-	-	-	-	<3[e]
Silver T-Ag	mg/kg	20[d]	-	<4	-	-	-	-	-	<4	-	-	-	-	<4
Tin T-Sn	mg/kg	50[d]	-	<10	-	-	-	-	-	<10	-	-	-	-	<10
Vanadium T-V	mg/kg	130	-	12	-	-	-	-	-	9	-	-	-	-	9
Zinc T-Zn	mg/kg	-	10000	499	1750	1300	819	786	1700	659	798	2770	464	906	1980

Associated ALS Analytics files: T6394, T4327, T3582, T3279, T2886, T2587

Notes:

Bold	*Exceeds the CCME Tier 1 Soil Quality Guidelines for Parkland Land Use*
Bold	*Exceeds the CCME Tier 3 Risk-Based Soil Soil Quality Remedial Objectives for the Polaris Mine Site*

<= Less than analytical method detection limit

"-" = No analysis performed for given parameter, or no guideline

na = No field screering result available

a) Canadian Council of Ministers of Environment (CCME) Canadian Environmental Quality Guidelines (CEQG) - Tier 1 soil quality remediation guidelines for parkland land use (PL). The site specific factors used for determining the soil quality guideline include: soil ingestion, soil contact, and nutrient cycling.

b) Canadian Council of Ministers of Environment (CCME) Tier 3 Risk based soil quality remedial objective (SQRO) for the Polaris Mine Site.

c) Field screening measurements are based on the Niton XLi 700 Series portable X-Ray Fluorescence (XRF) elemental analyser.

d) Canadian Council of Ministers of Environment (CCME) Tier 1 parkland land use interim remediation criteria, where soil quality gudelines based on the CCME soil protocol have not been developed yet.

e) The analytical method detection limit (MDL) exceeds the CCME Tier 1 Soil Quality Remediation Guidelines for parkland land use (PL).

**Sample ESP-128-W-D is recorded incorrectly as sample ESP-128-D in ALS report T2587*

*** Sample ESP-140-I-C is recorded incorrectly as sample ESP-140-I-D in ALS report T2886*

Table ESP-23-1. Exploration Stockpile and Shoreline North of Dock Remediation Confirmation Soil Samples - Metals

Gartner Lee

Parameter	Units	Federal CCME Guidelines CEQG (PL)[a]	Federal CCME Guidelines SQRO[b]	ESP-150-I-D*	ESP-151-I-D**	ESP-153-I-Q (duplicate of ESP 137-I-C)***	ESP-168-F-C	ESP-169-F-C	ESP-170-F-C	ESP-171-F-C	ESP-172-F-C	ESP-173-F-C	ESP-186-F-C****	ESP-195-F-C	ESP-196-W-C
Location				Exploration Stockpile and Shoreline North of Dock											
Date Sampled				9/8/03	9/8/03	10/8/03	25/8/2003	25/8/2003	25/8/2003	25/8/2003	25/8/2003	25/8/2003	29/8/2003	19/09/2003	19/09/2003
Field Screen Pb[c] (ppm)				468.37	350.07	495.91	2684.4	202.22	9207.62	3575.91	9387.91	3354.58	na	276.23	469.47
Field Screen Zn[c] (ppm)				1450.99	866.05	1895.58	25161.48	1296.78	71470.59	26125.28	64278.2	20872.24	na	1347.23	2585.3
Physical Tests															
pH		-	-	-	-	-	-	-	-	-	-	-	-	8	-
Total Metals															
Antimony T-Sb	mg/kg	20[d]	-	-	-	-	-	-	-	-	-	-	-	<20[e]	-
Arsenic T-As	mg/kg	12	-	-	-	-	-	-	-	-	-	-	-	<10	-
Barium T-Ba	mg/kg	500	-	-	-	-	-	-	-	-	-	-	-	**1280**	-
Beryllium T-Be	mg/kg	4[d]	-	-	-	-	-	-	-	-	-	-	-	<1	-
Cadmium T-Cd	mg/kg	10	-	-	-	-	-	-	-	-	-	-	-	4	-
Chromium T-Cr	mg/kg	64	-	-	-	-	-	-	-	-	-	-	-	7	-
Cobalt T-Co	mg/kg	50[d]	-	-	-	-	-	-	-	-	-	-	-	<4	-
Copper T-Cu	mg/kg	63	-	-	-	-	-	-	-	-	-	-	-	7	-
Lead T-Pb	mg/kg	-	2000	312	<200	1510	256	514	254	345	97	246	143	306	674
Mercury T-Hg	mg/kg	7	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Molybdenum T-Mo	mg/kg	10[d]	-	-	-	-	-	-	-	-	-	-	-	<8	-
Nickel T-Ni	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	13	-
Selenium T-Se	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	<4[e]	-
Silver T-Ag	mg/kg	20[d]	-	-	-	-	-	-	-	-	-	-	-	<4	-
Tin T-Sn	mg/kg	50[d]	-	-	-	-	-	-	-	-	-	-	-	<10	-
Vanadium T-V	mg/kg	130	-	-	-	-	-	-	-	-	-	-	-	24	-
Zinc T-Zn	mg/kg	-	10000	953	527	4130	614	1030	1350	1600	802	1090	719	1570	1520

Associated ALS Analytics files: T6394, T4327, T3582, T3279, T2886, T2587

Notes:

Bold	*Exceeds the CCME Tier 1 Soil Quality Guidelines for Parkland Land Use*
Bold	*Exceeds the CCME Tier 3 Risk-Based Soil Soil Quality Remedial Objectives for the Polaris Mine Site*

<= Less than analytical method detection limit

"-" = No analysis performed for given parameter, or no guideline

na = No field screening result available

a) Canadian Council of Ministers of Environment (CCME) Canadian Environmental Quality Guidelines (CEQG) - Tier 1 soil quality remediation guidelines for parkland land use (PL). The site specific factors used for determining the soil quality guideline include: soil ingestion, soil contact, and nutrient cycling.

b) Canadian Council of Ministers of Environment (CCME) Tier 3 Risk based soil quality remedial objective (SQRO) for the Polaris Mine Site.

c) Field screening measurements are based on the Niton XLi 700 Series portable X-Ray Fluorescence (XRF) elemental analyser.

d) Canadian Council of Ministers of Environment (CCME) Tier 1 parkland land use interim remediation criteria, where soil quality gudelines based on the CCME soil protocol have not been developed yet.

e) The analytical method detection limit (MDL) exceeds the CCME Tier 1 Soil Quality Remediation Guidelines for parkland land use (PL).

** Sample ESP-150-I-D is incorrectly recorded as ESP-150-I-C in ALS report T2886*

*** Sample ESP-151-I-D is incorrectly recorded as ESP-151-I-C in ALS report T2886*

**** Sample ESP-153-I-Q was recorded as ESP-153-I-C in ALS report T2886*

***** Sample ESP-186-F-C was incorrectly recorded as ESP-186-W-C in ALS report T3582*

Table ESP-23-1. Exploration Stockpile and Shoreline North of Dock Remediation Confirmation Soil Samples - Metals

Gartner Lee

		Location		Exploration Stockpile and Shoreline North of Dock				
		Sample ID		ESP-197-W-C	ESP-198-F-Q (Duplicate of ESP-195-F-C)	ESP-245-F-C	ESP-246-F-C	ESP-247-F-C
		Date Sampled		19/09/2003	19/9/2003	4/11/03	4/11/03	4/11/03
		Field Screen Pb[c] (ppm)		427.61	276.23	na	na	na
		Field Screen Zn[c] (ppm)		1455.17	1347.23	na	na	na
Parameter	Units	Federal CCME Guidelines						
		CEQG (PL)[a]	SQRO[b]					
Physical Tests								
pH		-	-	-	-	-	-	-
Total Metals								
Antimony T-Sb	mg/kg	20[d]	-	-	-	-	-	-
Arsenic T-As	mg/kg	12	-	-	-	-	-	-
Barium T-Ba	mg/kg	500	-	-	-	-	-	-
Beryllium T-Be	mg/kg	4[d]	-	-	-	-	-	-
Cadmium T-Cd	mg/kg	10	-	-	-	-	-	-
Chromium T-Cr	mg/kg	64	-	-	-	-	-	-
Cobalt T-Co	mg/kg	50[d]	-	-	-	-	-	-
Copper T-Cu	mg/kg	63	-	-	-	-	-	-
Lead T-Pb	mg/kg	-	2000	264	677	670	1090	***2820***
Mercury T-Hg	mg/kg	7	-	-	-	-	-	-
Molybdenum T-Mo	mg/kg	10[d]	-	-	-	-	-	-
Nickel T-Ni	mg/kg	50	-	-	-	-	-	-
Selenium T-Se	mg/kg	1	-	-	-	-	-	-
Silver T-Ag	mg/kg	20[d]	-	-	-	-	-	-
Tin T-Sn	mg/kg	50[d]	-	-	-	-	-	-
Vanadium T-V	mg/kg	130	-	-	-	-	-	-
Zinc T-Zn	mg/kg	-	10000	767	2440	5410	8250	3700

Associated ALS Analytics files. T6394, T4327, T3582, T3279, T2886, T2587

Notes:

Bold	*Exceeds the CCME Tier 1 Soil Quality Guidelines for Parkland Land Use*
Bold	*Exceeds the CCME Tier 3 Risk-Based Soil Soil Quality Remedial Objectives for the Polaris Mine Site*

<= Less than analytical method detection limit

"-" = No analysis performed for given parameter, or no guideline

na = No field screening result available

a) Canadian Council of Ministers of Environment (CCME) Canadian Environmental Quality Guidelines (CEQG) - Tier 1 soil quality remediation guidelines for parkland land use (PL). The site specific factors used for determining the soil quality guideline include: soil ingestion, soil contact, and nutrient cycling.

b) Canadian Council of Ministers of Environment (CCME) Tier 3 Risk based soil quality remedial objective (SQRO) for the Polaris Mine Site.

c) Field screening measurements are based on the Niton XLi 700 Series portable X-Ray Fluorescence (XRF) elemental analyser.

d) Canadian Council of Ministers of Environment (CCME) Tier 1 parkland land use interim remediation criteria, where soil quality gudelines based on the CCME soil protocol have not been developed yet.

e) The analytical method detection limit (MDL) exceeds the CCME Tier 1 Soil Quality Remediation Guidelines for parkland land use (PL).

Table ESP-23-2. Exploration Stockpile and Shoreline North of Dock Quality Assurance and Quality Control Remediation Soil Samples

Gartner Lee	Parameter	Pb		Zn		Total Pb			Total Zn		
	Relative Percent Difference (RpD)[a]	MDL	PQL[b]	MDL	PQL[b]	Sample Pb	Duplicate Pb	RpD[a] (%)	Sample Zn	Duplicate Zn	RpD[a] (%)
Sample ID	Duplicate ID										
On Site Field Screening Duplicates											
ESP-5-I-D	ESP-255-I-Q	70	350	150	750	1346	1489	5.0	8890	9719	4.5
ESP-8-I-D	ESP-256-I-Q	70	350	150	750	1189	1140	2.1	6724	4502	19.8
ESP-17-I-D	ESP-257-I-Q	70	350	150	750	10085	10720	3.1	53793	54310	0.5
ESP-21-I-D	ESP-258-I-Q	70	350	150	750	18831	17590	3.4	101748	100336	0.7
ESP-24-I-D	ESP-259-I-Q	70	350	150	750	16199	17585	4.1	81551	85831	2.6
ESP-42-I-D	ESP-260-I-Q	70	350	150	750	1240	2269	29.3	8186	15745	31.6
ESP-45-I-D	ESP-261-I-Q	70	350	150	750	1605	1725	3.6	10958	9550	6.9
ESP-69-I-D	ESP-254-I-Q	70	350	150	750	3122	2538	10.3	28713	23305	10.4
ESP-137-I-C	ESP-153-I-Q	70	350	150	750	416	496	8.8	1460	1896	13.0
ESP-203-I-C	ESP-250-I-Q	70	350	150	750	6314	8684	15.8	58072	71141	10.1
ESP-204-I-D	ESP-251-I-Q	70	350	150	750	9334	9331	0.0	64902	65516	0.5
ESP-209-I-D	ESP-252-I-Q	70	350	150	750	5225	2923	28.3	107142	54187	32.8
Analytical Laboratory Duplicates											
ESP-137-I-C	ESP-153-I-Q	200	1000	4	20	740	1510	na	1700	4130	41.7
ESP-195-F-C	ESP-198-F-Q	100	500	2	10	306	677	na	1570	2440	21.7
Analytical Laboratory Replicates											
ESP-129-F-D	QC# 349325	100	500	2	10	<100	257	na	1750	1070	24
ESP-135-I-C	QC# 350294	200	1000	4	20	221	437	na	819	1940	41
ESP-169-F-C	QC# 351835	50	250	1	5	514	446	7	1030	770	14
ESP-186-F-C	QC# 352936	100	500	2	10	143	215	na	719	2770	**58.8**
ESP-195-F-C	QC# 356057	100	500	2	10	306	315	na	1570	1630	1.9

Notes:

Bold	*RpD value is greater than or equal to 50% and the concentrations of both samples are greater than the practical quantitation limit (PQL)*

"na" = RpD value is not applicable because one or both results are less than the practical quantitation limit (PQL).

"-" = no result for given parameter

"<" = less than analytical method detection limit

*a) Relative Percent Difference = RpD = (Difference/Average) * 100*

*b) Practical Quantitation Limit (PQL)=5 * Method Detection Limit (MDL)*

Appendix J

Polaris Mine Operations Contaminated Soil Remediation Close Out Report: 2002 Fuel Spill

Gartner Lee

Gartner Lee Limited

December 31, 2003

Mr. Bruce Donald
Teck Cominco Limited
Bag 2000
Kimberley, BC V1A 3E1

Dear Mr. Donald:

Re: 23305 – Polaris Mine Operations Contaminated Soil Remediation Close Out Report: 2002 Fuel Spill

BACKGROUND

On June 25, 2002, a fuel spill occurred at the Polaris Mine site, as a result of the discharge of standing water that was impacted with diesel fuel, from within the containment berm of the fuel tank farm. Residual hydrocarbon contaminated sediment remained present down gradient of the point of discharge following clean up efforts in 2002. The 2002 Fuel Spill is located down gradient of the fuel tank farm and it is shown as Area 24 on Figure 1: *Contaminated Soils Remediation Progress Plan, December 31, 2003.*

The spill response measures undertaken and the results of an environmental investigation conducted by Gartner Lee Limited (GLL) are documented in the *2002 Fuel Spill Assessment, Polaris Mine, Nunavut,* dated November 2002. The results of a field investigation concluded that hydrocarbon contamination remained between the down slope boundary of a ditch on the west side of the road, the West Interceptor Ditch, and the low tide contour over a length of 40 meters, the "40 m Zone". The 2002 Fuel Spill Assessment concluded that residual impacted soil could be removed during the overall site remediation.

In 2003, the hydrocarbon impacts within the 40 m Zone appeared as discontinuous hydrocarbon stains within the beach sediment as shown on Figure SPL02-24-1. The residual impacted sediment was removed during the overall Site remediation in accordance with the approved *Polaris Mine Decommission and Remediation Plan*, March 2001.

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www.gartnerlee.com

METHODOLOGY

Excavation

On June 26, 2003, excavation of the 40 m Zone commenced between the low tide contour and the West Interceptor Ditch. At the time of excavation, the sea ice was frozen to the ocean floor. The ice conditions therefore, acted as a silt barrier between the excavation and the aquatic environment. To further minimize ocean sediment disturbance, excavation was undertaken at low tide.

Absorbent booms and pads were kept on site to mitigate any possible petroleum hydrocarbon seeps into the marine environment.

To direct the excavation of the hydrocarbon contaminated sediment, visual and olfactory indications were used, along with field screening measurements of the concentrations of organic vapours in sediment samples. The field screening measurements were obtained using a portable photo- ionization detector (PID) to measure the concentrations of organic vapours in the headspace of the sample bags. The limits of the excavation are shown on Figure SPL02-24-2. The material excavated was disposed of underground mine workings in accordance with regulatory approvals.

Confirmation Sampling

Discrete sediment samples were collected at 10 m intervals from within the excavation on July 11, 2003 and September 5, 2003 and sent to Aurora Laboratory Services Ltd. (ALS) of Vancouver, BC, to verify the presence and nature of the hydrocarbon compounds. Upon receipt of these results the area was backfilled in order to control erosion of the roadway.

ANALYTICAL RESULTS

The analytical laboratory results are summarized in Tables SPL02-24-1 and SPL02-24-2, along with the approved Polaris Mine soil quality remediation objectives (SQROs)[1] for hydrocarbons

[1] *Polaris Mine Decommission and Remediation Plan*, March 2001.

and the generic Canadian Environmental Quality Guidelines (CEQG) for hydrocarbons in marine sediment[2], respectively. A total of nine (9) discrete floor remediation confirmation soil samples were submitted for analyses. All samples returned hydrocarbon concentrations below the SQROs. Two (2) samples were analyzed for polycyclic aromatic hydrocarbons and both samples returned results below the generic CEQG probable effect levels for marine sediment. The sediment quality results and the lateral limits of the excavation are shown on Figure SPL02-24-2.

CONCLUSIONS

Based on confirmatory sampling, consistent with good practice and the approved site specific sampling procedures and protocols, the remediation of the 2002 Fuel Spill area has been completed to meet the Polaris Mine remedial targets, as documented in the approved *Polaris Mine Decommissioning and Remediation Plan*, March 2001 and the CEQG guidelines for marine sediment.

LIMITATIONS

This report has been prepared by Gartner Lee Limited and the information in this report is intended for the use of Teck Cominco Metals Limited during the decommissioning and reclamation program currently underway at the Polaris Mine Site. Any use which a third party makes of this report, or any reliance on or decisions made on the basis of the information in this report is the responsibility of such third parties. Gartner Lee Limited accepts no responsibility for damages, if any, suffered by the third party, based on the use of or reliance on any information contained in this report.

The scope of Gartner Lee Limited's work was limited to that described in this report. The confirmation of environmental conditions at the site of the remedial work is based on sampling at specific wall and floor locations within the excavation limits. Gartner Lee Limited has used judgement in the interpretation of the available information but subsurface physical and/or chemical characteristics may vary between or beyond sampling locations. Gartner Lee Limited is

[2] *Canadian Environmental Quality Guidelines* (CEQG) for sediment, Canadian Council of Ministers of the Environment (CCME), Winnipeg MB, 1999.

not a guarantor of the environmental condition of the site but warrants only that its work was undertaken and its report prepared in a manner consistent with the level of skill and diligence normally exercised by competent environmental professionals practicing in the Nunavut Territory.

Yours very truly,
GARTNER LEE LIMITED

Feb 17/04

Arlene Laudrum, P.Geol.
Remediation Supervisor, Polaris Mine

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER
P 324 Feb 17/04
GARTNER LEE LIMITED

AL:KT

ATTACHMENTS

Tables

Table SPL02-24-1: 2002 Fuel Spill Remediation Confirmation Soil Samples – Extractable Petroleum Hydrocarbon
Table SPL02-24-2: 2002 Fuel Spill Remediation Confirmation Soil Samples – Polycyclic Aromatic Hydrocarbon

Figures

Figure SPL02-24-1: 2002 Fuel Spill Conditions Before Remediation
Figure SPL02-24-2: 2002 Fuel Spill Conditions After Remediation

Table SPL 02-24-1. 2002 Fuel Spill Remediation Confirmation Sediment Samples - Hydrocarbons

Gartner Lee

		Location	June 2002 Spill Zone								
		Sample ID	SPL02-2-F-D	SPL02-3-F-D	SPL02-4-F-D	SPL02-5-F-D	SPL02-6-F-D	SPL02-7-F-D	SPL02-8-F-D	SPL02-9-F-D	SPL02-10-F-D
		Date	7/12/03	7/12/03	7/12/03	7/12/03	9/5/03	9/5/03	9/5/03	9/5/03	9/5/03
		Field Screen (ppm)[b]	20	25	45	25	-	-	-	-	-
Parameter	**Units**	**Polaris Mine SQROs[a]**	**Analytical Results**								
Extractable Hydrocarbons											
EPH (C_{10}-C_{19})[c]	mg/kg	1000 [d]	<200	<200	271	<200	<200	<200	<200	<200	<200
EPH (C_{19}-C_{32})[c]	mg/kg	1000 [d]	<200	<200	<200	<200	<200	<200	<200	<200	<200
LEPH (C_{10}-C_{19})[d]	mg/kg	1000	-	<200	-	-	-	-	<200	-	-
HEPH (C_{19}-C_{32})[d]	mg/kg	1000	-	<200	-	-	-	-	<200	-	-

Associated ALS Files : T1541, T4079

Bold	*Concentration exceeds the Soil Quality Remediation Objective (SQRO) for the Polaris Mine Site*

"<" = less than analytical method detection limit
"-" = no result for given parameter

a) The Soil Quality Remediation Objective for the Polaris Mine Site is based on the Yukon Territorial Contaminated Sites Regulation (CSR) for Parkland Use
b) Field screening measurements are based on the 'dry headspace' method using a combustible gas meter calibrated to a hexane standard.
c) EPH stands for extractable petroleum hydrocarbon
d) LEPH and HEPH stand for light and heavy extractable petroleum hydrocarbons.
e) LEPH/HEPH is determined by subtracting polycyclic aromatic hydrocarbons (PAH) from EPH, therefore use of the EPH remediation objective is conservative.

Table SPL 02-24-2. 2002 Spill Fuel Remedition Confirmation Sediment Samples - Polycyclic Aromatic Hydrocarbons

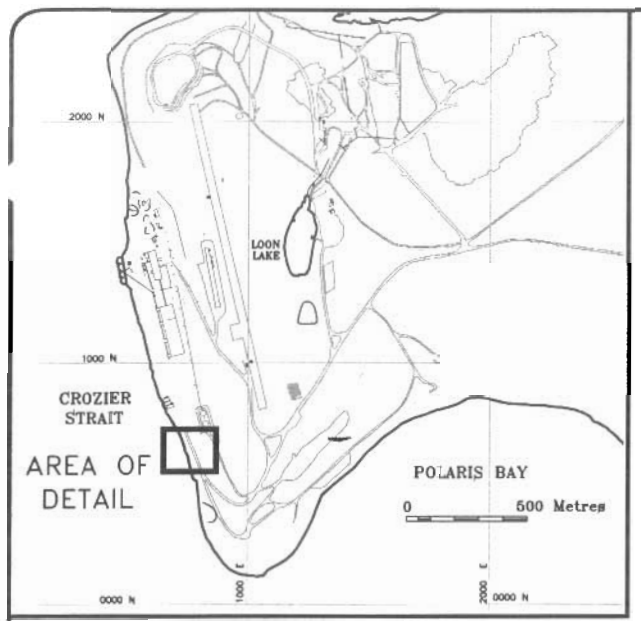
Gartner Lee	FEDERAL CEQG GUIDELINES		Sample Location	June 2002 Fuel Spill	
	Marine Sediment		Sample ID	SPL02-3-F-C	SPL02-8-F-D
			Date Sampled	7/12/03	9/5/03
	ISQG[b]	PEL[c]	Field Screen (ppm)[d]	25	-
Parameter			**Units**	**Analytical Results**	
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene	*0.00671*	0.0889	mg/kg	<0.04	<0.04
Acenaphthylene	*0.00587*	0.128	mg/kg	<0.05	<0.05
Anthracene	*0.0469*	0.245	mg/kg	<0.05	<0.05
Benz(a)anthracene	*0.0748*	0.693	mg/kg	<0.05	<0.05
Benzo(a)pyrene	*0.0888*	0.763	mg/kg	<0.05	<0.05
Benzo(b)fluoranthene	-	-	mg/kg	<0.05	<0.05
Benzo(g,h,i)perylene	-	-	mg/kg	<0.05	<0.05
Benzo(k)fluoranthene	-	-	mg/kg	<0.05	<0.05
Chrysene	*0.108*	0.846	mg/kg	<0.05	<0.05
Dibenz(a,h)anthracene	*0.00622*	0.135	mg/kg	<0.05	<0.05
Fluoranthene	*0.113*	11.494	mg/kg	<0.05	<0.05
Fluorene	*0.0212*	0.144	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	-	-	mg/kg	<0.05	<0.05
Naphthalene	*0.0346*	0.391	mg/kg	<0.05	<0.05
Phenanthrene	*0.0867*	0.544	mg/kg	<0.05	<0.05
Pyrene	*0.153*	1.398	mg/kg	<0.05	<0.05

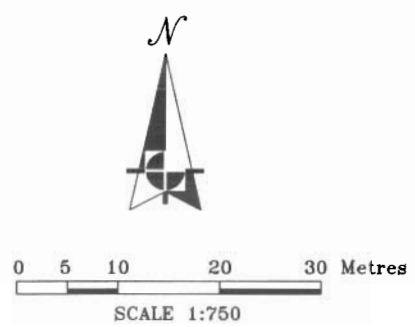
Associated ALS files: T4079, T1541

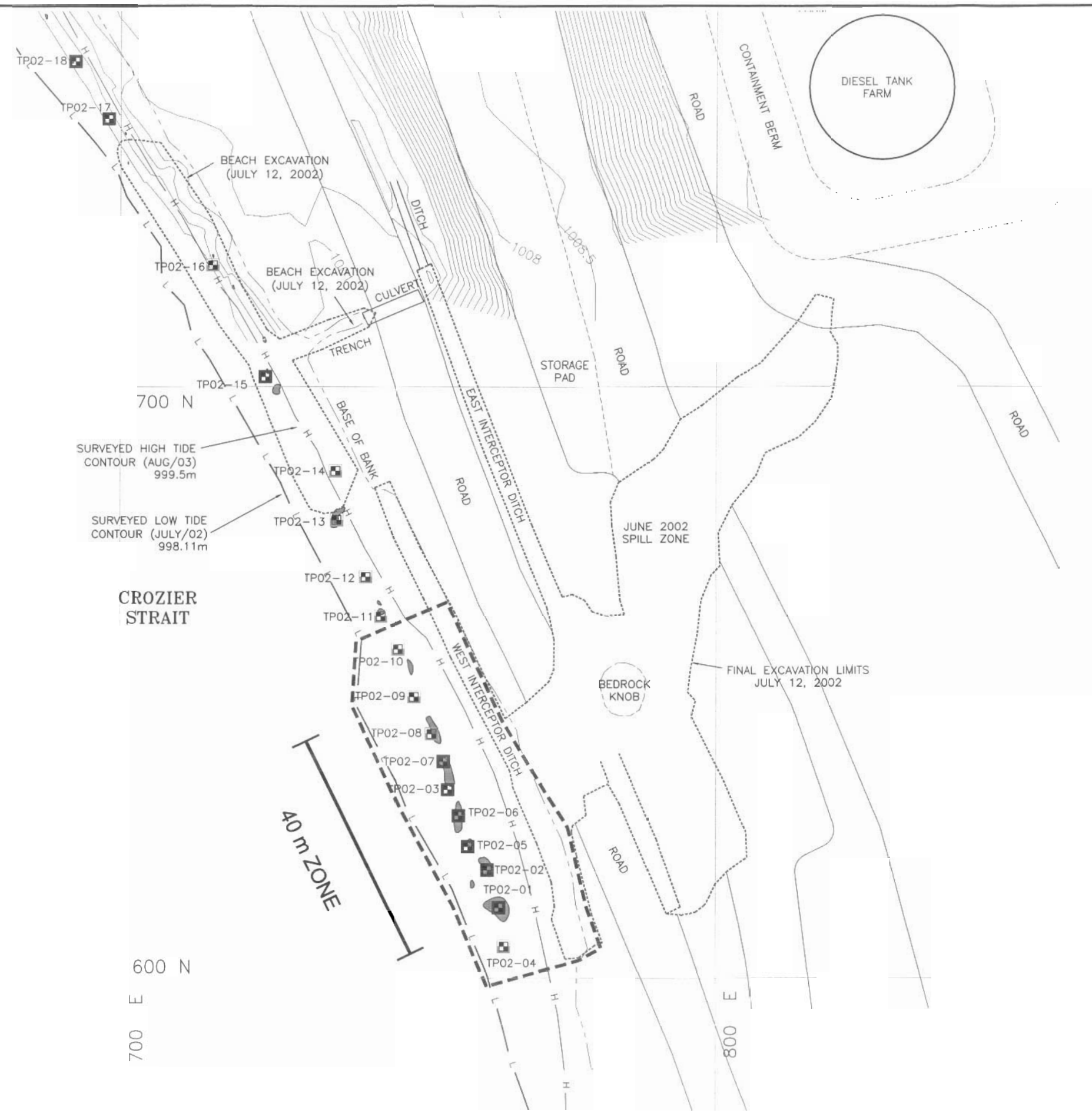
BOLD	Concentration greater than or equal the generic CEQG PEL for marine sediment

Notes:
<= Less than the detection limit indicated.
- = Analysis not conducted, or no guideline.

[a] CEQG - Canadian Environmental Quality Guidelines
[b] *ISQG* - Interim Sediment Quality Guidelines (dry weight)
[c] **PEL** - Probable Effect Levels (dry weight)
[d] Field screening results are measured based on a 'dry headspace' method.







LEGEND:

- LOCATION OF EXISTING BUILDING AND/OR FACILITY
- ROADS
- GROUND CONTOURS BEFORE REMEDIATION (m)
- TOE OF SLOPE
- EDGE OF BERM/ROADWAY
- H — HIGH WATER MARK (SURVEYED AUGUST 2003)
- L — LOW WATER MARK (SURVEYED 19:50 h JULY 10, 2002)
- LIMIT OF 2003 EXCAVATION
- LIMIT OF 2002 EXCAVATION
- TP02-08 TEST PIT – 2002 FUEL SPILL ASSESSMENT

2002 FUEL SPILL ASSESSMENT

- HYDROCARBON SURFACE STAINS (JULY 9, 2002)
- SEDIMENT ANALYTICAL RESULTS ARE LESS THAN THE POLARIS MINE SOIL REMEDIATION OBJECTIVES AND/OR CCME CEQG MARINE SEDIMENT QUALITY GUIDELINES FOR HYDROCARBONS.
- SEDIMENT ANALYTICAL RESULTS ARE GREATER THAN POLARIS MINE SOIL REMEDIATION OBJECTIVES AND/OR CCME CEQG MARINE SEDIMENT QUALITY GUIDELINES FOR HYDROCARBONS.

NOTE:
THIS IS AREA 24 SHOWN ON FIGURE 1 "CONTAMINATED SOILS REMEDIATION PROGRESS PLAN, DECEMBER 31, 2003"

SOURCE OF DRAWING:
SITE SURVEYS PROVIDED BY SNC LAVALIN SEPTEMBER, 2003

DRAWING INFORMATION:	
REVIEWED BY:	KT/AL
DRAWN BY:	CPW
DATE ISSUED:	13 FEBRUARY, 2004
PROJECT NUMBER:	23-305
FILE NAME:	23305-5D-05.DWG
REVISION:	0

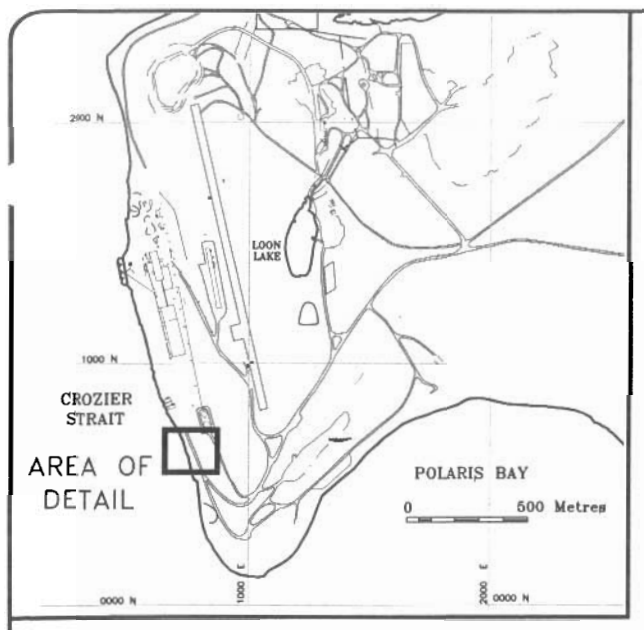
teckcominco

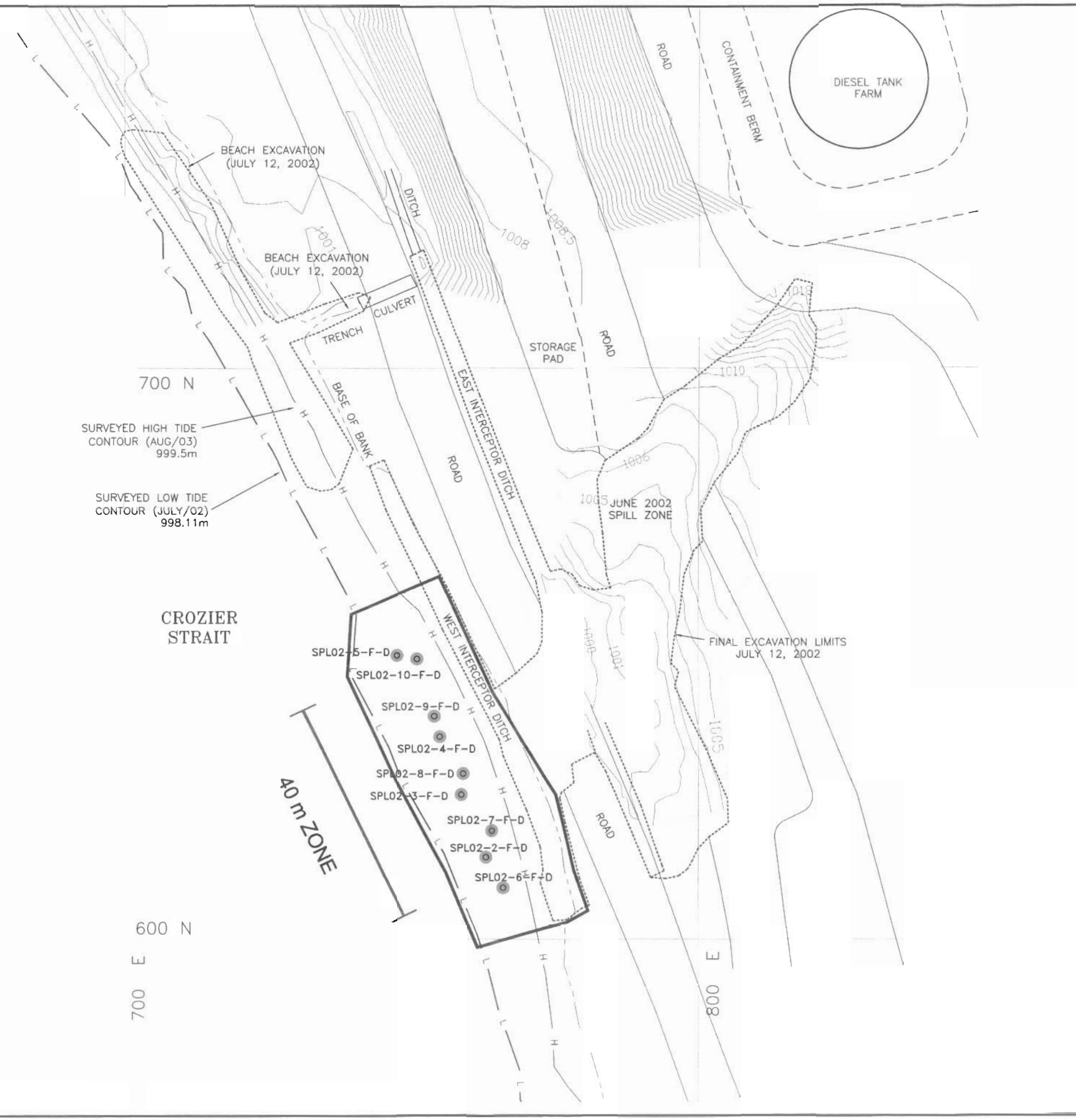
CONTAMINATED SOIL REMEDIATION
2003 CLOSE OUT REPORT
POLARIS MINE, NUNAVUT

2002 FUEL SPILL
CONDITIONS BEFORE REMEDIATION
(DECEMBER 31, 2003)

Gartner Lee

Figure No.
SPL02-24-1





N

0 5 10 20 30 Metres

SCALE 1:750

LEGEND:

- LOCATION OF EXISTING BUILDING AND/OR FACILITY
- ROADS
- LIMIT OF EXCAVATION SURVEY
- TOE OF SLOPE
- EDGE OF BERM/ROADWAY
- H — HIGH WATER MARK (SURVEYED AUGUST 2003)
- L — LOW WATER MARK (SURVEYED 19:50 h JULY 10, 2002)
- CONTOURS - BASE OF 2002 EXCAVATION (m)
- GROUND CONTOURS (m) BASED ON SEPT. 2003 SURVEY
- LIMIT OF 2003 EXCAVATION
- LIMIT OF 2002 EXCAVATION

2003 SAMPLES

- CONFIRMATORY FLOOR OR WALL SAMPLE

2003 SAMPLE NAMING CONVENTION

AREA — SAMPLE ID

SPL02-6-F-D

TYPE
C= COMPOSITE SAMPLE FLOOR-5 SAMPLES IN A 25x25m AREA WALL-5 SAMPLES ALONG 25m OF WALL
D= DISCRETE SAMPLE
Q= DUPLICATED QUALITY ASSURANCE/ QUALITY CONTROL SAMPLE

LOCATION F= FLOOR SAMPLE
I= INTERMEDIATE FLOOR SAMPLE
W= WALL SAMPLE

EPH10-19 / EPH19-32 — SOIL SAMPLE FROM EXCAVATION CONTAINS LESS THAN 1,000 mg/kg EPH 10-19 OR EPH 19-32

2003 CONFIRMATION SAMPLES

EXCAVATION FLOOR SAMPLES

Sample ID	EPH 10-19 (mg/kg)	EPH 19-32 (mg/kg)
SPL02-2-F-D	<200	<200
SPL02-3-F-D	<200	<200
SPL02-4-F-D	271	<200
SPL02-5-F-D	<200	<200
SPL02-6-F-D	<200	<200
SPL02-7-F-D	<200	<200
SPL02-8-F-D	<200	<200
SPL02-9-F-D	<200	<200
SPL02-10-F-D	<200	<200

NOTES:

<200 — Less than detection limit

EPH10-19 — Extractable Petroleum Hydrocarbon (Carbon fraction 10-19) concentration obtained from ALS analytical laboratory

EPH19-32 — Extractable Petroleum Hydrocarbon (Carbon fraction 19-32) concentration obtained from ALS analytical laboratory

NOTE:
THIS IS AREA 24 SHOWN ON FIGURE 1 "CONTAMINATED SOILS REMEDIATION PROGRESS PLAN, DECEMBER 31, 2003"

SOURCE OF DRAWING:
SITE SURVEYS PROVIDED BY SNC LAVALIN SEPTEMBER, 2003

DRAWING INFORMATION:

REVIEWED BY:	KT/AL
DRAWN BY:	CPW
DATE ISSUED:	13 FEBRUARY, 2004
PROJECT NUMBER:	23-305
FILE NAME:	23305-5D-06.DWG
REVISION:	0

teckcominco

CONTAMINATED SOIL REMEDIATION
2003 CLOSE OUT REPORT
POLARIS MINE, NUNAVUT

2002 FUEL SPILL
CONDITIONS AFTER REMEDIATION
(DECEMBER 31, 2003)

Gartner Lee

Figure No. SPL02-24-2

APPENDIX 3

UPDATE OF

DECOMMISSIONING AND RECLAMATION

SCHEDULE

POLARIS MINE - DECOMMISSIONING & RECLAMATION SCHEDULE

UPDATED AS OF December 31, 2003

ACTIVITY	Prior Periods	4th Qtr. 2003			1st Qtr. 2004			2nd Qtr. 2004			3rd Qtr. 2004			Percent Complete As Of Dec 31/03
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
CONTRACTOR MOBILIZATION														
Pre-mobilization Planning / Order Materials/Equip														
Ship to Site with Contractor Equipment														100%
Offload Ship														100%
Setup Warehousing/Laydown Area														100%
SETUP TEMPORARY FACILITIES														100%
DECOMMISSIONING UNDERGROUND														
Remove / Salvage Mine Equipment & Crusher	Cancelled													100%
Remove Refrigeration Plant														0%
Remove Surface Ventilation Fans														0%
Seal Mine Openings														0%
MILL / BARGE DEMOLITION														
Initial Cleanup of Barge by Teck Cominco														100%
Removal of Barge Services														98%
Transfer fuel to Tank Farm & Clean Hull														100%
Remove hazardous Materials / Wastes														100%
Remove / Salvage Process Equipment														100%
Demolish Internal Equipment														100%
Demolish Structure														100%
Remove Hydrocarbon/Metals Contaminated Soils														55%
Regrade Area Surounding Barge														25%
PRODUCT STORAGE BUILDING DEMOLITION														
Cleanup of Building / Remove Liquids from Equip.														100%
Demolish Exterior Conveyors														100%
Demolish Reclaim Conveyors														100%
Remove Cladding from Building														100%
Demolish Structure														100%
Demolish Foundations														98%
Remove Contaminated Soils (Building & Adj. Areas)														60%
Regrading Area														10%
SHIP LOADER / RECLAIM CONVEYOR DEMOL.														
Cleanup of Conveyor Areas/Remove Oils														100%
Demolish Conveyors														100%

POLARIS MINE - DECOMMISSIONING & RECLAMATION SCHEDULE

UPDATED AS OF December 31, 2003

ACTIVITY	Prior Periods	4th Qtr. 2003			1st Qtr. 2004			2nd Qtr. 2004			3rd Qtr. 2004			Percent Complete As Of Dec 31/03
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
DOCK DECOMMISSIONING														
Inspect / Remove Glycols from Freeze Pipes														100%
Remove Metals Contaminated Soils														95%
Remove Cells 1 & 2														75%
Remove Cells 3 & 4														75%
Removal of Temporary Dock														0%
Shoreline Recontouring														70%
Berm Removal														65%
Grade New Beach to Final Profiles														25%
TAILINGS SYSTEM DEMOLITION														
Final Cleanup of Thickener (by Operations)														100%
Flush Tails Lines														100%
Salvage Equipment														100%
Remove hazardous Materials / Wastes														100%
Remove Tails Line / Return Line														80%
Demolish Equipment														100%
Demolish Structure														100%
Remove Foundations														100%
Remove Contaminated Soils														100%
Regrading														100%
Final Cleanup of Area														95%
GARROW LAKE / DAM DECOMMISSIONING														
Drawdown Lake														100%
Removal of Centre Section of Dam														75%
Creek Channel Construction														0%
Final Grading / Armouring of Dam Remnants														0%
CRF PLANT DEMOLITION														
Final Cleanup of Plant														100%
Remove hazardous Materials / Wastes														100%
Demolish Plant Equipment														100%
Demolish Buildings														100%
Site Grading (Plant & Surrounding Area)														100%

POLARIS MINE - DECOMMISSIONING & RECLAMATION SCHEDULE

UPDATED AS OF December 31, 2003

ACTIVITY	Prior Periods	4th Qtr. 2003			1st Qtr. 2004			2nd Qtr. 2004			3rd Qtr. 2004			Percent Complete As Of Dec 31/03
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
ACCOMODATIONS COMPLEX DEMOLITION														
Establish Temporary Offices / Building Services														100%
Use Accomodations Complex														75%
Establish Temporary Camp Accomodations														0%
Use Temporary Camp														0%
Remove hazardous Materials / Wastes														0%
Demolish Buildings														0%
Regrade Area														0%
Remove Temporary Camp														0%
FUEL STORAGE (TANK FARM) DEMOLITION														
Use with Temporary Modifications														100%
Transfer Fuel to Temporary Storage														0%
Cleaning of Tanks / Piping														60%
Demolish Tanks / Piping														0%
Cleanup of Berm & Liner														0%
Site Grading														0%
BLADDER AREA CONTAMINATED SOILS														
Cleanup of Hydrocarbon Soils														100%
Area Grading														100%
MISC. BUILDING DEMOLITION														
Exploration Quonset Huts														100%
Core Shack (Atco Trailer)														100%
Emergency Shelter at North Portal														0%
Steam Wash Bay & Tire Shop (relocated in 3rd Qtr)														50%
Generator Building														0%
Bent Horn Building														0%
Dock Office Trailer														0%
Airstrip Storage Hut														0%
Fresh Water Pump House														0%
Frsh Water Tank & Shed														0%
Carpenter Shop (used as temp. warehouse)														0%
Shipping Containers (Sea Cans - more to move on-going)														50%
Foldaways by Temporary Dock (3)														0%
Firehall														0%

POLARIS MINE - DECOMMISSIONING & RECLAMATION SCHEDULE

UPDATED AS OF December 31, 2003

ACTIVITY	Prior Periods	4th Qtr. 2003			1st Qtr. 2004			2nd Qtr. 2004			3rd Qtr. 2004			Percent Complete As Of Dec 31/03
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
OPERATIONAL LANDFILL CLOSURE														
Reclocate Construction Landfill														100%
Hauling Landfill Cover Cap Material														98%
LRD QUARRY Landfill														
Cut Notch into Quarry / Construct Haul Road														100%
Installation of Thermistor Pipe Stands														100%
Placing debris in Quarry														80%
Grading of Notch to Match Cap														75%
Placement of Cap and Final Grading														0%
Installation of Thermistors (pipes installed)														20%
MISC. SITE RECLAMATION & EARTHWORKS														
Reduction in spare parts/supplies by TCML														100%
Ship Mill Process Chemicals South for Sale/Recycle														100%
Site Cleanup of scrap material during operations														100%
Regrading North 40 Area														80%
Grading of Reclamation Landfill Area														90%
Road Closure / Culvert Removals/Runway														15%
DEMOBILIZE FROM SITE														
Prepare Equipment / Supplies for shipping from site														5%
Prepare Residual Chemicals / Wastes for shipping														85%
Last Ship from Polaris														0%