Gartner Lee

Table 1. Key to Tables of Test Pit Results

Table Sample ID	2	3	4	5	6	7	8	9	10	11	12
TP02-01							X				
TP02-02							X				
TP02-03							X				
TP02-04							X				
TP02-05							X				
TP02-06							X				
TP02-07							X				
TP02-08	X										
TP02-11	X										
TP02-12	X										
TP02-14											X
TP02-15			X								X
TP02-16											X
TP02-17											X
TP02-18											X
TP02-19											X
TP02-20											X
TP02-21											X
TP02-22			X								X
TP02-23											X
TP02-24											X
TP02-25											X
TP02-26											X
TP02-27			X								X
TP02-28			X								X
TP02-29			X								X
TP02-30											X
TP02-31											X
TP02-32											X
TP02-33			X								X
TP02-34											X
TP02-35											X
TP02-36			X								X
TP02-37											X
TP02-38			X								X
TP02-39											X
TP02-40											X
TP02-41											X
TP02-42											X
TP02-43											X
TP02-44			X								X
TP02-45											X
TP02-46			X								X
TP02-47			X								X
TP02-48											X
TP02-49											X
TP02-50			X								X
TP02-51			X								X
TP02-52											X
TP02-53			X								X
TP02-54											X
TP02-55			X								X
TP02-56											X
TP02-57			X								X
TP02-58			X								
TP02-60			X								
TP02-61			X								
TP02-63			X								
TP02-65			X								

Table Sample ID	2	3	4	5	6	7	8	9	10	11	12
TP02-98					X						
TP02-99					X						
TP02-100					X						X
TP02-101					X						X
TP02-102											X
TP02-103						X					
TP02-104						X					
TP02-105						X					
TP02-106	X										
TP02-107	X										
TP02-108	X										
TP02-109	X										
TP02-110	X										
TP02-114	X										
TP02-115	X										
TP02-117	X										
TP02-119	X										
TP02-120				X							
TP02-122				X							
TP02-123				X							
TP02-124				X							
TP02-125				X							
TP02-127				X							
TP02-128				X							
TP02-129				X							
TP02-130				X							
TP02-131A				X							
TP02-132				X							
TP02-136				X							
TP02-138				X							
TP02-139				X							
TP02-140				X							
TP02-141				X							
TP02-142				X							
TP02-143				X							
TP02-144				X							
TP02-145								X			
TP02-146								X			
TP02-147								X			
SS02-001											X
SS02-002											X
SS02-002-1								X			
SS02-002-2								X			
SS02-003											X
SS02-003-1								X			
SS02-003-2								X			
SS02-004											X
SS02-005											X
SS02-006											X
SS02-007											X
SS02-008											X
SS02-009											X
SS02-010											X
SS02-011											X
SS02-012							X				
SS02-013							X				
SS02-014							X				
SS02-015							X				
SS02-017							X				

Gartner Lee

Table 1. Key to Tables of Test Pit Results

Table Sample ID	2	3	4	5	6	7	8	9	10	11	12
TP02-66			X								
TP02-68			X								
TP02-69			X								
TP02-70			X								
TP02-72			X								
TP02-73		X									
TP02-74		X									
TP02-75		X									
TP02-76		X									
TP02-77		X									
TP02-79		X									
TP02-80		X									
TP02-81		X								X	
TP02-82		X								X	
TP02-83		X									
TP02-85		X									
TP02-86		X									
TP02-87		X									
TP02-88		X								X	
TP02-89		X									
TP02-90		X									
TP02-91		X									
TP02-92		X									
TP02-93					X						
TP02-94					X						
TP02-95					X					X	
TP02-96					X						
TP02-97					X					X	

Table Sample ID	2	3	4	5	6	7	8	9	10	11	12
SS02-019	X										
SS02-020			X								
SS02-021								X			
SS02-022								X			
SS02-023								X			
SS02-024							X				
SS02-025	X										
SS02-026	X										
SS02-027	X										
SS02-028	X										
SS02-029			X								
SS02-031			X								
SS02-032			X								
SS02-033			X								
SS02-045			X								
SS02-046			X								
SS02-047			X								
SS02-048			X								
SS02-049			X								
SS02-055			X								
SED02-001											X
SED02-002											X
SED02-3									X		
SED02-4									X		
SED02-5									X		
SED02-6									X		
SED02-7									X		
SED02-8									X		
SED02-9									X		
DUST02-01				X							
DUST02-02				X							
DUST02-03				X							
DUST02-04				X							
LFC02					X						
RD02-01			X								
RD02-02			X								
RD02-04			X								
RD02-05			X								
RD02-06			X								
S-SEEP										X	
LF-WSEEP										X	
TP02-DUP										X	

Table 2. Town and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES (CL) [b]		FEDERAL CCME GUIDELINES (PL) [b]		Location:	Townsite												
							Sample ID:	TP02-106-1	TP02-106-2	TP02-106-3	TP02-107-1	TP02-108-3	TP02-109-1	TP02-110-1	TP02-110-2	TP02-114-1	TP02-115-1	TP02-115-2	TP02-117-1	TP02-117-3
							Sample Date:	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23
							Sample Depth (m):	0.0-0.25	0.4-0.7	1.2	0.0-0.25	1.0-1.2	0.0-0.2	0.2-0.4	0.6-0.8	0.0-0.05	0.0-0.05	0.15-0.3	0.0-0.1	0.9-1.2
							Field Screen [a] (ppm)	5.4	1.7	1.6	na	333	na	25.1	42.1	na	na	na	1127	455
			PHC CWS[c]	CEQG [d]	PHC CWS[c]	CEQG [d]		in front of Northern Telecom building	in front of Northern Telecom building	in front of Northern Telecom building	SE corner of airport road and townsite road	south of Pamo building	NW corner of baseball diamond	SE corner of ball diamond	SE corner of ball diamond	SE of town, along road to tailings pond	E of town, between town and creek	weathered bedrock	existing AST	existing AST
Extractable Hydrocarbons																				
Fraction 2 (C10-16) surface [e,f,g]	ug/g	25	**760**		**450**			-	<25	<25	-	<25	-	-	<25	-	-	-	<25	**11900**
Fraction 3 (C16-34) surface [e,f,g]	ug/g	25	**1700**		**400**			-	<25	<25	-	<25	-	-	<25	-	-	-	<25	*520*
Fraction 4 (C34-50) surface [e,f,g]	ug/g	5	**3300**		**2800**			-	<10		-	-	-	-	-	-	-	-	<10	-
Metals								-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	ug/g	0.5		**22**		**10**		9.1	<0.5	-	5.7	-	4.7	0.9	<0.5	5.5	1.9	2.9		
Lead (Pb)	ug/g	1		**260**		**140**		**299**	26	-	**342**	-	**159**	79	9	**213**	58	**367**		
Zinc (Zn)	ug/g	1		**320**		**200**		**3690**	83	-	**1970**	-	**1650**	**262**	33	**1870**	**1530**	**1300**		

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS) surficial samples
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results

Table 2. Town and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES (CL) [b]		FEDERAL CCME GUIDELINES (PL) [b]		Location:	Townsite							Carpenter Shop			
							Sample ID:	TP02-119-1	SS02-025	SS02-026	SS02-027-1	SS02-027-2	SS02-028-1	SS02-028-2	SS02-019	TP02-08-3	TP02-11-1	TP02-12-1
							Sample Date:	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-23	2002-07-24	2002-07-24	2002-07-17	2002-07-17	2002-07-17	2002-07-17
							Sample Depth (m):	0.0-0.2	0.0-0.3	0.0-0.3	0.0-0.03	0.05-0.25	0.0-0.05	0.05-0.2	0.0-0.10	0.7-1.0	1.2	1.0
							Field Screen [a] (ppm)	687	104	65	na	21.2	na	28.5	23.6	3.1	11.5	43.9
			PHC CWS[c]	CEQG [d]	PHC CWS[c]	CEQG [d]		existing AST	existing AST	existing AST	existing AST	existing AST	existing AST, no surface staining	existing AST, no surface staining	seepage from bank North of shop	adjacent excavated area	assumed down gradient	down gradient 5m east of TP01-12
Extractable Hydrocarbons																		
Fraction 2 (C10-16) surface [e,f,g]	ug/g	25	**760**		**450**			100	**3020**	80	**2640**	380	300	420		140	**1200**	400
Fraction 3 (C16-34) surface [e,f,g]	ug/g	25	**1700**		**400**			30	*480*	<25	**1120**	130	190	<25		<25	<25	<25
Fraction 4 (C34-50) surface [e,f,g]	ug/g	5	**3300**		**2800**			-	-	-	-	-	-	-	-	-	-	-
Metals								-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	ug/g	0.5		**22**		**10**						1.4	2.7	<0.5	5.4	-	-	-
Lead (Pb)	ug/g	1		**260**		**140**						69	**751**	34	**412**	-	-	-
Zinc (Zn)	ug/g	1		**320**		**200**						**512**	**1030**	131	**2010**	-	-	-

BOLD Concentration **BOLD** Concentration greater than or equal to CCME soil guideline

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

Notes:
< = Less than the detection li
- = Analysis not conducted, c

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

a Field screening results are a
b Guideline is based on the n
ecological soil contact, nu
c Petroleum Hydrocarbon C
d Canadian Environmental Q
e Guideline is dependant up
f Guideline is dependent on n
Coarse >75 µm). Median
g Use of the guideline requir

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS) surficial samples
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results

Table 3. Industrial Complex and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b]		FEDERAL CCME GUIDELINES [b]		Location:	Industrial Complex											
							Sample ID:	TP02-73-1	TP02-73-3	TP02-74-1	TP02-74-2	TP02-74-3	TP02-75-1	TP02-75-2	TP02-75-3	TP02-76-1	TP02-76-2	TP02-77-3	TP02-79-1	TP02-79-3	TP02-80-1
							Sample Date:	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-22
							Sample Depth (m):	0.0-0.2	1.4	0.0-0.4	0.45-0.7	1.9	0.0-0.15	0.75-0.9	2.1	0.0-0.15	0.6-0.8	1.3	0.0-0.15	1.4	0.0-0.15
							Field Screen [a] (ppm)	47.2	677	491	695	887	40.2	3	245	599	629	1.1	0	0.5	na
			PHC CWS[c]	CEQG [d]	PHC CWS[c]	CEQG [d]		between warm and cold storage	between warm and cold storage	surface staining at warm storage	west of warm storage shed	at permafrost	in front of warm storage	in front of warm storage	in front of warm storage	at oil water separator, power house	at oil water separator, power house	main road below warm storage	main road below cold storage	north of TP02-77 on main road	adjacent mine rescue building
Non-Halogenated Volatiles			**CL**		**PL**																
Benzene	ug/g	0.05		**5**		**0.5**											<0.05				
Fraction 1(C6-10) surface [e,f]	ug/g	20	**330**		**130**												**590**				
Toluene	ug/g	0.1		**14**		**1.4**											1.1				
Ethylbenzene	ug/g	0.1		**20**		**1.2**											**1.8**				
Meta- & para-Xylene	ug/g	0.2															**7.2**				
ortho-Xylene	ug/g	0.1															**4.4**				
Total Xylene [g]	ug/g			**21**		**1**											**11.6**				
Extractable Hydrocarbons																					
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**		**450**			70	**1380**	**5040**	**4850**						**2030**	40		<25	
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**		**1500**							**3730**			*1650*						
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**		**400**			**2040**	280	**3130**	**1160**						**5130**	150		<25	
Fraction 3 (C16-34) subsoil [e,f,h]	ug/g	25	**3500**		**2500**							370			270						
Fraction 4(C34-50) surface [e,f,h]	ug/g	5	**3300**		**2800**			340	<10	360							420				
Polycyclic Aromatic Hydrocarbons																					
Benzo(a)anthracene	ug/g	0.1																			
Benzo(a)pyrene	ug/g	0.2		**1.4**		**0.7**															
Benzo(b)fluoranthene	ug/g	0.1																			
Benzo(k)fluoranthene	ug/g	0.1																			
Dibenzo(a,h)anthracene	ug/g	0.1																			
Indeno(1,2,3-c,d)pyrene	ug/g	0.1																			
Naphthalene	ug/g	0.1		**22**		**0.6**															
Phenanthrene	ug/g	0.1																			
Pyrene	ug/g	0.1																			
Ethylene Glycol [i]	ug/g	10		**960**		**960**				<10					<10						
Metals																					
Antimony (Sb)	ug/g	1						<1													
Arsenic (As)	ug/g	0.4		**12**		**12**		5.7													
Barium (Ba)	ug/g	1		**2000**				11													
Beryllium (Be)	ug/g	1						<1													
Boron (B)	ug/g	0.5						2.3													
Cadmium (Cd)	ug/g	0.5		**22**		**10**		**225**		**39.0**			**101**	1.1		**44.4**			**17.1**		**12.6**
Chromium (Cr)	ug/g	1		**8.7**		**64**		41													
Chromium (VI) [j]	ug/g	1		**1.4**		**0.4**		<1													
Cobalt (Co)	ug/g	1						19													
Copper (Cu)	ug/g	1		**91**		**63**		**88**													
Lead (Pb)	ug/g	1		**260**		**140**		**2750**		**1190**			**2200**	36		**2480**			**569**		**650**
Mercury (Hg)	ug/g	0.1		**24**		**6.6**		0.7													
Molybdenum (Mo)	ug/g	1						3													
Nickel (Ni)	ug/g	1		**50**		**50**		29													
Selenium (Se)	ug/g	1						<1													
Silver (Ag)	ug/g	1						32													
Thallium (Tl) [k]	ug/g	1		**1**		**1**		<1													
Vanadium (V)	ug/g	1		**130**		**130**		24													
Zinc (Zn)	ug/g	1		**320**		**200**		**82900**		**10400**			**37700**	**373**		**15800**			**7060**		**4640**

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-53-3 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life
j Method detection limit (MDL) exceeds guideline
k Method detection limit (MDL) equivalent to guideline

Table 3. Industrial Complex and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	PHC CWS [c]	CEQG [d]	Location: Industrial Complex												
Sample ID:							TP02-81-1	TP02-81-2	TP02-82-1	TP02-82-2	TP02-83-1	TP02-83-3	TP02-85-1	TP02-85-2	TP02-85-3	TP02-86-1	TP02-86-2	TP02-86-3	TP02-87-1	TP02-87-2
Sample Date:							2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22
Sample Depth (m):							0.0-0.2	1.8	0.0-0.2	0.8-1.0	0.0-0.3	1.4	0.0-0.1	0.1-0.25	0.5-0.7	0.0-0.15	0.6-0.8	2.2	0.0-0.15	0.2-0.25
Field Screen [a] (ppm)							10.3	2.2	15.3	13.5	44.4	10	na	na	na	89.2	22.6	11	na	na
							adjacent compressor building	front of compressor building	ditch east of DMS loadout	ditch east of DMS loadout	in front of wash bay	in front of wash bay	south side of mill complex	south side of mill complex	south side of mill complex	existing waste oil AST	existing waste oil AST	existing AST	reagent storage area west of mill	reagent storage area west of mill
Non-Halogenated Volatiles			**CL**		**PL**															
Benzene	ug/g	0.05		**5**		**0.5**														
Fraction 1(C6-10) surface [e,f]	ug/g	20	**330**		**130**															
Toluene	ug/g	0.1		**14**		**1.4**														
Ethylbenzene	ug/g	0.1		**20**		**1.2**														
Meta- & para-Xylene	ug/g	0.2																		
ortho-Xylene	ug/g	0.1																		
Total Xylene [g]	ug/g			**21**		**1**														
Extractable Hydrocarbons																				
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**		**450**					80	130	<25				30				
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**		**1500**			50										<25		
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**		**400**					60	210	40				*510*				
Fraction 3 (C16-34) subsoil [e,f,h]	ug/g	25	**3500**		**2500**			450										<25		
Fraction 4(C34-50) surface [e,f,h]	ug/g	5	**3300**		**2800**						230					60				
Polycyclic Aromatic Hydrocarbons																				
Benzo(a)anthracene	ug/g	0.1																		
Benzo(a)pyrene	ug/g	0.2		**1.4**		**0.7**														
Benzo(b)fluoranthene	ug/g	0.1																		
Benzo(k)fluoranthene	ug/g	0.1																		
Dibenzo(a,h)anthracene	ug/g	0.1																		
Indeno(1,2,3-c,d)pyrene	ug/g	0.1																		
Naphthalene	ug/g	0.1		**22**		**0.6**														
Phenanthrene	ug/g	0.1																		
Pyrene	ug/g	0.1																		
Ethylene Glycol [i]	ug/g	10		**960**		**960**					<10									
Metals																				
Antimony (Sb)	ug/g	1																		
Arsenic (As)	ug/g	0.4		**12**		**12**														
Barium (Ba)	ug/g	1		**2000**																
Beryllium (Be)	ug/g	1																		
Boron (B)	ug/g	0.5																		
Cadmium (Cd)	ug/g	0.5		**22**		**10**	**34.0**		**10.3**				**87.7**	**24.6**	<0.5	**49.5**	**24.7**		**230**	**19.4**
Chromium (Cr)	ug/g	1		**8.7**		**64**														
Chromium (VI) [j]	ug/g	1		**1.4**		**0.4**														
Cobalt (Co)	ug/g	1																		
Copper (Cu)	ug/g	1		**91**		**63**														
Lead (Pb)	ug/g	1		**260**		**140**	**2690**		**461**				**660**	**1890**	16	**847**	**1170**		**2010**	**417**
Mercury (Hg)	ug/g	0.1		**24**		**6.6**														
Molybdenum (Mo)	ug/g	1																		
Nickel (Ni)	ug/g	1		**50**		**50**														
Selenium (Se)	ug/g	1																		
Silver (Ag)	ug/g	1																		
Thallium (Tl) [k]	ug/g	1		**1**		**1**														
Vanadium (V)	ug/g	1		**130**		**130**														
Zinc (Zn)	ug/g	1		**320**		**200**	**14500**		**4720**				**1220**	**8060**	130	**18400**	**9580**		**131000**	**4700**

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-53-3 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life
j Method detection limit (MDL) exceeds guideline
k Method detection limit (MDL) equivalent to guideline

Table 3. Industrial Complex and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	Industrial Complex TP02-87-3 reagent storage area west of mill	Industrial Complex TP02-88-2 boneyard below cold storage	Industrial Complex TP02-88-3 boneyard below cold storage	Warehouse Yard TP02-89-2 adjacent 10W30 drum storage	Warehouse Yard TP02-90-2 surface staining	Warehouse Yard TP02-91-1 typical non stained area	Warehouse Yard TP02-92-1 adjacent drums of waste from mill	Warehouse Yard TP02-92-2 adjacent drums of waste from mill
Location:							Industrial Complex			Warehouse Yard				
Sample ID:							TP02-87-3	TP02-88-2	TP02-88-3	TP02-89-2	TP02-90-2	TP02-91-1	TP02-92-1	TP02-92-2
Sample Date:							2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22
Sample Depth (m):							0.7-0.9	0.6-0.8	1.5	0.6-0.8	1.1	0.0-0.3	0.0-0.3	1.1
Field Screen [a] (ppm)							na	270	182	221	202	474	3442	1857
Non-Halogenated Volatiles			CL		PL									
Benzene	ug/g	0.05		**5**		**0.5**				<0.05		<0.05	<0.05	<0.05
Fraction 1(C6-10) surface [e,f]	ug/g	20	**330**		**130**					60		<20	<20	<20
Toluene	ug/g	0.1		**14**		**1.4**				<0.1		<0.1	<0.1	<0.1
Ethylbenzene	ug/g	0.1		**20**		**1.2**				<0.1		<0.1	<0.1	<0.1
Meta- & para-Xylene	ug/g	0.2								<0.2		<0.2	<0.2	<0.2
ortho-Xylene	ug/g	0.1								<0.1		<0.1	<0.1	<0.1
Total Xylene [g]	ug/g			**21**		**1**								
Extractable Hydrocarbons														
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**		**450**			380	*600*	50	<25	<25	440	
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**		**1500**									
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**		**400**			30	40	**7200**	120	<25	290	
Fraction 3 (C16-34) subsoil [e,f,h]	ug/g	25	**3500**		**2500**									
Fraction 4(C34-50) surface [e,f,h]	ug/g	5	**3300**		**2800**					10	<10	<10	10	
Polycyclic Aromatic Hydrocarbons														
Benzo(a)anthracene	ug/g	0.1											<0.1	
Benzo(a)pyrene	ug/g	0.2		**1.4**		**0.7**							<0.1	
Benzo(b)fluoranthene	ug/g	0.1											<0.1	
Benzo(k)fluoranthene	ug/g	0.1											<0.1	
Dibenzo(a,h)anthracene	ug/g	0.1											<0.1	
Indeno(1,2,3-c,d)pyrene	ug/g	0.1											<0.1	
Naphthalene	ug/g	0.1		**22**		**0.6**							<0.1	
Phenanthrene	ug/g	0.1											<0.1	
Pyrene	ug/g	0.1											<0.1	
Ethylene Glycol [i]	ug/g	10		**960**		**960**								
Metals														
Antimony (Sb)	ug/g	1												
Arsenic (As)	ug/g	0.4		**12**		**12**								
Barium (Ba)	ug/g	1		**2000**										
Beryllium (Be)	ug/g	1												
Boron (B)	ug/g	0.5												
Cadmium (Cd)	ug/g	0.5		**22**		**10**	5.4					1.9	11.1	2.5
Chromium (Cr)	ug/g	1		**8.7**		**64**								
Chromium (VI) [j]	ug/g	1		**1.4**		**0.4**								
Cobalt (Co)	ug/g	1												
Copper (Cu)	ug/g	1		**91**		**63**								
Lead (Pb)	ug/g	1		**260**		**140**	**141**					125	**490**	126
Mercury (Hg)	ug/g	0.1		**24**		**6.6**								
Molybdenum (Mo)	ug/g	1												
Nickel (Ni)	ug/g	1		**50**		**50**								
Selenium (Se)	ug/g	1												
Silver (Ag)	ug/g	1												
Thallium (Tl) [k]	ug/g	1		**1**		**1**								
Vanadium (V)	ug/g	1		**130**		**130**								
Zinc (Zn)	ug/g	1		**320**		**200**	**1650**					**669**	**4220**	**928**

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-53-3 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life
j Method detection limit (MDL) exceeds guideline
k Method detection limit (MDL) equivalent to guideline

Table 4. Dock and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	Location:	Concentrate Shed and Loadout Conveyor and Dock													
							Sample ID:	SS02-020	TP02-15-1	TP02-15-2	TP02-22-1	TP02-27-1	TP02-27-2	TP02-28-1	TP02-29-1	TP02-33-3	TP02-36-2	TP02-38-2	TP02-44-2	TP02-46-2	TP02-47-2	TP02-50-2
							Sample Date:	2002-07-19	2002-07-18	2002-07-18	2002-07-18	2002-07-18	2002-07-18	2002-07-18	2002-07-18	2002-07-18	2002-07-19	2002-07-19	2002-07-19	2002-07-19	2002-07-19	2002-07-19
							Sample Depth (m):	0.0-0.15	0.0-0.2	0.5-0.7	0.0-0.15	0.0-0.15	0.6-0.85	0.0-0.1	0.0-0.15	0.5-0.65	0.3-0.5	0.5-0.65	0.15-0.25	0.2-0.35	0.2-0.35	0.7-0.8
							Field Screen [a] (ppm)	71.4	na	na	19.8	1.4	1.5	0.9	1	na	na	na	na	na	na	263
								existing AST	NE corner of concentrate storage shed	NE corner of con. shed	SE corner of con. shed	E side of con. shed, 25 m from bldg.	E side of con. shed, 25 m from bldg.	E side of con. shed, 22 m from bldg.	E side of con. shed, 20 m from bldg.	NW corner of con. Shed	below conveyor to dock	at dock, east side	adjacent west side of conveyor	W side of con. Shed	W side of con. Shed	down gradient of fuel pump building
Non-Halogenated Volatiles			**CL**		**PL**																
Benzene (B)	ug/g	0.05	-	**5**	-	**0.5**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) surface [e,f]	ug/g	20	**330**	-	**130**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) subsoil [e,f]	ug/g	20	**700**	-	**350**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene (E)	ug/g	0.1	-	**20**	-	**1.2**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene (T)	ug/g	0.1	-	**14**	-	**1.4**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
meta- & para-Xylene	ug/g	0.2	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ortho-Xylene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene [g]	ug/g	1	-	**21**	-	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extractable Hydrocarbons																						
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**	-	**450**	-		**4430**	-	-	-	-	-	-	-	-	-	-	-	-	-	**11720**
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**	-	**1500**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**	-	**400**	-		170	-	-	-	-	-	-	-	-	-	-	-	-	-	*490*
Fraction 3 (C16-34) subsoil [e,f,h]	ug/g	25	**3500**	-	**2500**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 4 (C34-50) surface [e,f]	ug/g	5	**3300**	-	**2800**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 4 (C34-50) subsoil [e,f]	ug/g	5	-	-	**10000**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Benzo(a)anthracene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	ug/g	0.2	-	**1.4**	-	**0.7**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	ug/g	0.1	-	**22**	-	**0.6**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Glycol [i]			-	**960**	-	**960**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METALS																						
Antimony (Sb)	ug/g	1	-	-	-	-		-	<1	-	-	-	-	-	-	<1	-	-	-	-	-	-
Arsenic (As)	ug/g	0.4	-	**12**	-	**12**		-	4.9	5.5	5.4	4.8	4.3	4.4	4.9	4.7	6.3	5.8	5.1	-	-	-
Barium (Ba)	ug/g	1	-	**2000**	-	**500**		-	54	-	-	-	-	-	-	81	-	-	-	-	-	-
Beryllium (Be)	ug/g	1	-	-	-	-		-	<1	-	-	-	-	-	-	<1	-	-	-	-	-	-
Boron (B)	ug/g	0.5	-	-	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	ug/g	0.5	-	**22**	-	**10**		-	**58.6**	4.8	**119**	**96.4**	**50.6**	**113**	**156**	**35.5**	**33.5**	2.2	1.7	3.2	1.4	-
Chromium (Cr)	ug/g	1	-	**87**	-	**64**		-	27	-	-	-	-	-	-	24	-	-	-	-	-	-
Chromium (VI) [j]	ug/g	1	-	**1.4**	-	**0.4**		-		-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	ug/g	1	-	-	-	-		-	11	-	-	-	-	-	-	11	-	-	-	-	-	-
Copper (Cu)	ug/g	1	-	**91**	-	**63**		-	56	-	-	-	-	-	-	36	-	-	-	-	-	-
Lead (Pb)	ug/g	1	-	**260**	-	**140**		-	**1250**	**141**	**4330**	**2780**	**1690**	**2910**	**2940**	**1020**	**1440**	**93**	39	30	24	-
Mercury (Hg)	ug/g	0.1	-	**24**	-	**6.6**		-	<0.1	-	-	-	-	-	-	<0.1	-	-	-	-	-	-
Molybdenum (Mo)	ug/g	1	-	-	-	-		-	2	-	-	-	-	-	-	<1	-	-	-	-	-	-
Nickel (Ni)	ug/g	1	-	**50**	-	**50**		-	24	-	-	-	-	-	-	21	-	-	-	-	-	-
Selenium (Se)	ug/g	1	-	-	-	-		-	<1	-	-	-	-	-	-	<1	-	-	-	-	-	-
Silver (Ag)	ug/g	1	-	-	-	-		-	11	-	-	-	-	-	-	7	-	-	-	-	-	-
Thallium (Tl) [k]	ug/g	1	-	**1**	-	**1**		-	1	-	-	-	-	-	-	<1	-	-	-	-	-	-
Vanadium (V)	ug/g	1	-	**130**	-	**130**		-	45	-	-	-	-	-	-	40	-	-	-	-	-	-
Zinc (Zn)	ug/g	1	-	**320**	-	**200**		-	**9860**	**1380**	**41000**	**30800**	**21200**	**33100**	**29200**	**11300**	**5810**	**1240**	**786**	**1400**	**529**	-

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-53-3 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life
j Method detection limit (MDL) exceeds guideline
k Method detection limit (MDL) equivalent to guideline

Table 4. Dock and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	Location:					Chemical Fuel and Storage Area									
							Sample ID: TP02-51-1	TP02-53-1	TP02-53-2	TP02-53-3	TP02-55-1	TP02-57-3	TP02-58-1	TP02-58-3	TP02-60-1	TP02-61-1	TP02-63-1	TP02-65-1	TP02-65-2	TP02-66-1	TP02-68-1
							Sample Date: 2002-07-19	2002-07-26	2002-07-19	2002-07-19	2002-07-19	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-20
							Sample Depth (m): 0.0-0.15	0.0-0.15	0.8-1.2		0.0-0.15	2.0	0.0-0.2	2.0	0.0-0.2	0.0-0.15	0.0-0.15	0.0-0.2	1.0	0.0-0.2	0.0-0.2
							Field Screen [a] (ppm): na	0.8	60.2		1.3	274	0.2	2	1	na	na	1.1	1.7	na	na
							down gradient of fuel pump building	down gradient of TP02-50	down gradient of TP02-50	duplicate of TP02-53-2	down gradient of fuel tank farm	adjacent waste drum storage	down gradient of TP02-57	down gradient of TP02-57	adjacent ammonium nitrate storage	adjacent calcium chloride storage	adjacent propane storage yard	near shore line	near shore line	in surface drainage pathway of yard	area used to store copper sulphate
Non-Halogenated Volatiles			**CL**		**PL**																
Benzene (B)	ug/g	0.05	-	**5**	-	**0.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) surface [e,f]	ug/g	20	**330**	-	**130**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) subsoil [e,f]	ug/g	20	**700**	-	**350**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene (E)	ug/g	0.1	-	**20**	-	**1.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene (T)	ug/g	0.1	-	**14**	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
meta- & para-Xylene	ug/g	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ortho-Xylene	ug/g	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene [g]	ug/g	1	-	**21**	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extractable Hydrocarbons																					
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**	-	**450**	-	-	-	<25	**1130**	-		-		-	-	-	-	-	-	-
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**	-	**1500**	-	-	-	-	-	-	560	-	90	-	-	-	-	-	-	-
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**	-	**400**	-	-	-	<25	160	-		-		-	-	-	-	-	-	-
Fraction 3 (C16-34) subsoil [e,f,h]	ug/g	25	**3500**	-	**2500**	-	-	-	-	-	-	40	-	120	-	-	-	-	-	-	-
Fraction 4 (C34-50) surface [e,f]	ug/g	5	**3300**	-	**2800**	-	-	-	<5	<5	-		-		-	-	-	-	-	-	-
Fraction 4 (C34-50) subsoil [e,f]	ug/g	5	-	-	**10000**	-	-	-	-	-	-	5	-	50	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																					
Benzo(a)anthracene	ug/g	0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	ug/g	0.2	-	**1.4**	-	**0.7**	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	ug/g	0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	ug/g	0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	ug/g	0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	ug/g	0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	ug/g	0.1	-	**22**	-	**0.6**	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	ug/g	0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Pyrene	ug/g	0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-
Ethylene Glycol [i]			-	**960**	-	**960**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METALS																					
Antimony (Sb)	ug/g	1	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	<1	-
Arsenic (As)	ug/g	0.4	-	**12**	-	**12**	4.5	4.3	-	-	4.7	-	-	-	-	-	-	-	-	4.1	-
Barium (Ba)	ug/g	1	-	**2000**	-	**500**	100	-	-	-	-	-	-	-	-	-	-	-	-	57	-
Beryllium (Be)	ug/g	1	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	<1	-
Boron (B)	ug/g	0.5	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2.2	-
Cadmium (Cd)	ug/g	0.5	-	**22**	-	**10**	**23.5**	6.2	-	-	5.1	-	**16.4**	-	**12.7**	6.0	**10.5**	**42.0**	0.9	7.4	**20.8**
Chromium (Cr)	ug/g	1	-	**87**	-	**64**	31	-	-	-	-	-	-	-	-	-	-	-	-	22	-
Chromium (VI) [j]	ug/g	1	-	**1.4**	-	**0.4**		-	-	-	-	-	-	-	-	-	-	-	-	<1	-
Cobalt (Co)	ug/g	1	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	6	-
Copper (Cu)	ug/g	1	-	**91**	-	**63**	**67**	-	-	-	-	-	-	-	-	-	-	-	-	**835**	-
Lead (Pb)	ug/g	1	-	**260**	-	**140**	**242**	67	-	-	67	-	**110**	-	**234**	**398**	**2320**	**522**	19	**371**	**443**
Mercury (Hg)	ug/g	0.1	-	**24**	-	**6.6**	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Molybdenum (Mo)	ug/g	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	<1	-
Nickel (Ni)	ug/g	1	-	**50**	-	**50**	24	-	-	-	-	-	-	-	-	-	-	-	-	14	-
Selenium (Se)	ug/g	1	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	<1	-
Silver (Ag)	ug/g	1	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Thallium (Tl) [k]	ug/g	1	-	**1**	-	**1**	<1	-	-	-	-	-	-	-	-	-	-	-	-	<1	-
Vanadium (V)	ug/g	1	-	**130**	-	**130**	43	-	-	-	-	-	-	-	-	-	-	-	-	26	-
Zinc (Zn)	ug/g	1	-	**320**	-	**200**	**3710**	**2650**	-	-	**2170**	-	**3490**	-	**4000**	**2020**	**4330**	**12900**	**251**	**2400**	**8300**

Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use
Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

BOLD Concentration g
Concentration g

Notes:
- = Analysis not conducted, or r
< = Less than the detection limit

ıt conducted, or no guideline
ıe detection limit indicated.

ıng results are measured based on a 'dry headspace' method.
based on the more stringent site-specific exposure pathway of those for
ɔil contact, nutrient cycling, or soil ingestion
ydrocarbon Canada-Wide Standards (PHC CWS)
vironmental Quality Guidelines (CEQG)
dependant upon depth of sample (surface, subsoil >1.5 m depth).
lependent on median grain size of soil analyzed (Fine ≤75 µm,
ım). Median grain size of soil sampled is coarse.

g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-53-3 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life
j Method detection limit (MDL) exceeds guideline
k Method detection limit (MDL) equivalent to guideline

a Field screening results are me
b Guideline is based on the mos
ecological soil contact, nutrie
c Petroleum Hydrocarbon Cana
d Canadian Environmental Qua
e Guideline is dependant upon
f Guideline is dependent on me
Coarse >75 µm). Median gra

Table 4. Dock and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	Location:											
							Sample ID:	TP02-69-3	TP02-70-1	TP02-70-2	TP02-72-1	TP02-72-2	SS02-055	SS02-029-1	SS02-032-1	SS02-032-2	SS02-033-1	SS02-045-1	SS02-046-1
							Sample Date:	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-20	2002-07-26	2002-07-26	2002-07-26	2002-07-25	2002-07-26	2002-07-26	2002-07-26
							Sample Depth (m):	2.0	0.0-0.15	2.0	0.0-0.1	2.0	0.1-0.2	0.0-0.03	0.0-0.05	0.05-0.2	0.0-0.05	0.0-0.03	0.0-0.03
							Field Screen [a] (ppm)	481	10.1	10	5.3	3.4	8.2	na	na	na	na	na	na
								down gradient of TP02-53 >10m from shore	down gradient of TP02-53	down gradient of TP02-53	west side of tank farm	west side tank farm	at bent fuel line from dock to mill	transect perpen-dicular to road below mill, east	transect, west of road	75 m west of SS02-029	25 m west of SS02-032	transect on crest of hill between dock & mill	25 m west of SS02-045 on northeast side of road
Non-Halogenated Volatiles			**CL**		**PL**														
Benzene (B)	ug/g	0.05	-	**5**	-	**0.5**		<0.05	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) surface [e,f]	ug/g	20	**330**	-	**130**	-		-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) subsoil [e,f]	ug/g	20	**700**	-	**350**	-		250	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene (E)	ug/g	0.1	-	**20**	-	**1.2**		<0.1	-	-	-	-	-	-	-	-	-	-	-
Toluene (T)	ug/g	0.1	-	**14**	-	**1.4**		<0.1	-	-	-	-	-	-	-	-	-	-	-
meta- & para-Xylene	ug/g	0.2	-	-	-	-		<0.2	-	-	-	-	-	-	-	-	-	-	-
ortho-Xylene	ug/g	0.1	-	-	-	-		0.2	-	-	-	-	-	-	-	-	-	-	-
Total Xylene [g]	ug/g	1	-	**21**	-	**1**		<0.4	-	-	-	-	-	-	-	-	-	-	-
Extractable Hydrocarbons																			
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**	-	**450**	-		-	-	-	-	-	140	-	-	-	-	-	-
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**	-	**1500**	-		760	-	<25	-	<25	-	-	-	-	-	-	-
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**	-	**400**	-		-	-	-	-	-	<25	-	-	-	-	-	-
Fraction 3 (C16-34) subsoil [e,f,h]	ug/g	25	**3500**	-	**2500**	-		70	-	<25	-	<25	-	-	-	-	-	-	-
Fraction 4 (C34-50) surface [e,f]	ug/g	5	**3300**	-	**2800**	-		-	-	-	-	-	-	-	-	-	-	-	-
Fraction 4 (C34-50) subsoil [e,f]	ug/g	5	-	-	**10000**	-		<10	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																			
Benzo(a)anthracene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	ug/g	0.2	-	**1.4**	-	**0.7**		<0.1	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	ug/g	0.1	-	**22**	-	**0.6**		<0.1	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	-	-	-	-	-	-	-
Pyrene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	-	-	-	-	-	-	-
Ethylene Glycol [i]			-	**960**	-	**960**		-	-	-	-	-	-	-	-	-	-	-	-
METALS																			
Antimony (Sb)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	ug/g	0.4	-	**12**	-	**12**		-	-	-	-	-	-	-	-	-	-	-	4.3
Barium (Ba)	ug/g	1	-	**2000**	-	**500**		-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	ug/g	0.5	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	ug/g	0.5	-	**22**	-	**10**		-	**35.0**	1.0	**13.5**	1.4	-	**13.9**	**17.2**	3.3	**14.0**	**17.1**	**21.5**
Chromium (Cr)	ug/g	1	-	**87**	-	**64**		-	-	-	-	-	-	-	-	-	-	-	-
Chromium (VI) [j]	ug/g	1	-	**1.4**	-	**0.4**		-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	ug/g	1	-	**91**	-	**63**		-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	ug/g	1	-	**260**	-	**140**		-	**1050**	36	**445**	46	-	**674**	**610**	**161**	**492**	**708**	**702**
Mercury (Hg)	ug/g	0.1	-	**24**	-	**6.6**		-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	ug/g	1	-	**50**	-	**50**		-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl) [k]	ug/g	1	-	**1**	-	**1**		-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	ug/g	1	-	**130**	-	**130**		-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	ug/g	1	-	**320**	-	**200**		-	**9930**	**325**	**4470**	**488**	-	**5740**	**7210**	**1040**	**6880**	**6710**	**13600**

greater than or equal to the CCME generic soil guideline for Parkland (PL) land use
greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

no guideline
: indicated.

easured based on a 'dry headspace' method.
e stringent site-specific exposure pathway of those for
nt cycling, or soil ingestion
da-Wide Standards (PHC CWS)
lity Guidelines (CEQG)
depth of sample (surface, subsoil >1.5 m depth).
dian grain size of soil analyzed (Fine ≤75 µm,
ain size of soil sampled is coarse.

g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-53-3 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life
j Method detection limit (MDL) exceeds guideline
k Method detection limit (MDL) equivalent to guideline

Table 4. Dock and Related Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b]		FEDERAL CCME GUIDELINES [b]		Location:	Road to dock													
							Sample ID:	SS02-046-2	SS02-047-1	SS02-047-2	SS02-048-1	SS02-049-1	RD02-01-1	RD02-02-1	RD02-04-1	RD02-04-2	RD02-05-1	RD02-05-2	RD02-06-1	RD02-06-2	RD02-06-3	RD02-06-4
							Sample Date:	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26	2002-07-26
							Sample Depth (m):	0.05-0.15	0.0-0.5	0.05-0.15	0.00.05	0.0-0.03	0.0-0.1	0.0-0.1	0.0-0.1	0.1-0.5	0.0-0.1	0.1-0.5	0.0-0.1	0.1-0.2	0.2-0.3	0.3-0.4
							Field Screen [a] (ppm)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
			PHC CWS [c]	CEQG [d]	PHC CWS [c]	CEQG [d]		detectable concentrate odour	east road ditch	increased clay content	50 m west of SS02-047 on west side of road	25 m west of SS02-048	road between dock and mill	road between dock and mill	road between dock and mill	road between dock and mill	road between dock and mill	road between dock and mill	road between dock and mill	road between dock and mill	road between dock and mill	road between dock and mill
Non-Halogenated Volatiles			**CL**		**PL**																	
Benzene (B)	ug/g	0.05	-	**5**	-	**0.5**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) surface [e,f]	ug/g	20	**330**	-	**130**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 (C6-10) subsoil [e,f]	ug/g	20	**700**	-	**350**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene (E)	ug/g	0.1	-	**20**	-	**1.2**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene (T)	ug/g	0.1	-	**14**	-	**1.4**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
meta- & para-Xylene	ug/g	0.2	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ortho-Xylene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene [g]	ug/g	1	-	**21**	-	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extractable Hydrocarbons																						
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**	-	**450**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**	-	**1500**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**	-	**400**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 3 (C16-34) subsoil [e,f,h]	ug/g	25	**3500**	-	**2500**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 4 (C34-50) surface [e,f]	ug/g	5	**3300**	-	**2800**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 4 (C34-50) subsoil [e,f]	ug/g	5	-	-	**10000**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Benzo(a)anthracene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	ug/g	0.2	-	**1.4**	-	**0.7**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	ug/g	0.1	-	**22**	-	**0.6**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene	ug/g	0.1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Glycol [i]			-	**960**	-	**960**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METALS																						
Antimony (Sb)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	ug/g	0.4	-	**12**	-	**12**		-	5.2	-	-	-	-	-	3.9	3.9	4.2	5.0	3.7	4.9	3.9	4.1
Barium (Ba)	ug/g	1	-	**2000**	-	**500**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	ug/g	0.5	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	ug/g	0.5	-	**22**	-	**10**		<0.5	**15.9**	0.5	**33.2**	**26.4**	**52.4**	**44.5**	**20.5**	7.9	**26.0**	**21.1**	8.6	**44.4**	**16.5**	4.8
Chromium (Cr)	ug/g	1	-	**87**	-	**64**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (VI) [j]	ug/g	1	-	**1.4**	-	**0.4**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	ug/g	1	-	**91**	-	**63**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	ug/g	1	-	**260**	-	**140**		16	**690**	23	**839**	**711**	**783**	**1270**	**432**	**988**	**967**	**989**	**227**	**915**	**308**	40
Mercury (Hg)	ug/g	0.1	-	**24**	-	**6.6**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	ug/g	1	-	**50**	-	**50**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	ug/g	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl) [k]	ug/g	1	-	**1**	-	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	ug/g	1	-	**130**	-	**130**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	ug/g	1	-	**320**	-	**200**		114	**9140**	155	**14300**	**13500**	**22700**	**18300**	**6430**	**16300**	**10100**	**11600**	**5250**	**15800**	**4850**	**1520**

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-53-3 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life
j Method detection limit (MDL) exceeds guideline
k Method detection limit (MDL) equivalent to guideline

Table 5. Tailings Disposal Facility, Summary of Analytical Results for Metals in Soil

Gartner Lee

Parameter	Units	MDL	CCME Guidelines CEQG [a,b] CL	CCME Guidelines CEQG [a,b] PL	Location:	Tailings Line Road												
					Sample ID:	TP02-120-1	TP02-120-2	TP02-122-1	TP02-123-1	TP02-124-1	TP02-125-1	TP02-125-2	TP02-127-1	TP02-128-1	TP02-129-1	TP02-129-2	TP02-130-1	TP02-130-2
					Sample Date:	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24
					Sample Depth (m):	0.0-0.1	0.1-0.6	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.1-0.6	0.0-0.1	0.0-0.1	0.0-0.1	0.1-0.6	0.0-0.1	0.1-0.3
						SE of town, along road to tailings pond	permafrost at 1.1 m depth	near toe of ledge, surface dust from	tailings spill area	below centre of ledge in drainage path	east of ledge, no tailings dust	between road and creek	down gradient of dump pond	down gradient of dump pond	tailings spill area	no tailings at depth	tailings spill area	0.3 m to bedrock
Arsenic (As)	ug/g	0.4	**12**	**12**		-	-	-	6.6	-	-	-	-	-	-	-	-	-
Antimony (Sb)	ug/g	1		-		-	-	-	2	-	-	-	-	-	-	-	-	-
Barium (Ba)	ug/g	1	**2000**	**500**		-	-	-	26	-	-	-	-	-	-	-	-	-
Beryllium (Be)	ug/g	1		-		-	-	-	<1	-	-	-	-	-	-	-	-	-
Boron (B)	ug/g	0.5		-		-	-	-	<0.5	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	ug/g	0.5	**22**	**10**		4.2	3.6	3.8	4.2	3.2	<0.5	<0.5	0.6	0.7	0.7	<0.5	2.5	1.3
Chromium (Cr)	ug/g	1	**87**	**64**		-	-	-	17	-	-	-	-	-	-	-	-	-
Chromium^{VI} [c]	ug/g	1	**1.4**	**0.4**		-	-	-	<1	-	-	-	-	-	-	-	-	-
Cobalt (Co)	ug/g	1		-		-	-	-	10	-	-	-	-	-	-	-	-	-
Copper (Cu)	ug/g	1	**91**	**63**		-	-	-	47	-	-	-	-	-	-	-	-	-
Lead (Pb)	ug/g	1	**260**	**140**		**144**	**102**	125	**219**	56	29	19	18	39	**147**	22	137	68
Mercury (Hg)	ug/g	0.1	**24**	**6.6**		-	-	-	0.2	-	-	-	-	-	-	-	-	-
Molydenum (Mo)	ug/g	1		-		-	-	-	<1	-	-	-	-	-	-	-	-	-
Nickel (Ni)	ug/g	1	**50**	**50**		-	-	-	12	-	-	-	-	-	-	-	-	-
Sellenium (Se)	ug/g	1		-		-	-	-	<1	-	-	-	-	-	-	-	-	-
Silver (Ag)	ug/g	1		-		-	-	-	2	-	-	-	-	-	-	-	-	-
Thallium (Tl) [d]	ug/g	1	**1**	**1**		-	-	-	<1	-	-	-	-	-	-	-	-	-
Vanadium (V)	ug/g	1	**130**	**130**		-	-	-	13	-	-	-	-	-	-	-	-	-
Zinc (Zn)	ug/g	1	**320**	**200**		**1720**	**1410**	**1690**	**1870**	**2350**	139	96	162	182	**263**	49	**651**	**516**

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) Land Use
Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) Land Use

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

a Canadian Environmental Quality Guidelines (CEQG)
b Guideline is based on the more stringent site-specific exposure pathway of those for Ecological Soil Contact, Nutrient Cycling, or Soil Ingestion
c Method detection limit (MDL) exceeds guideline
d Method detection limit (MDL) equivalent to guideline

Table 5. Tailings Disposal Facility, Summary of Analytical Results for Metals in Soil

Gartner Lee					Location:	Saddle											Between Town and Mill			
					Sample ID:	DUST02-01	DUST02-02	DUST02-03	DUST02-04	TP02-139-1	TP02-140-1	TP02-140-2	TP02-141-1	TP02-142-1	TP02-143-1	TP02-144-1	TP02-131A-1	TP02-132-1	TP02-136-1	TP02-138-1
					Sample Date:	2002-07-16	2002-07-16	2002-07-16	2002-07-16	2002-07-25	2002-07-25	2002-07-25	2002-07-25	2002-07-25	2002-07-25	2002-07-25	2002-07-24	2002-07-24	2002-07-24	2002-07-24
					Sample Depth (m):	0	0	0	0	0.0-0.1	0.0-0.1	0.1-0.6	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Parameter	**Units**	**MDL**	**CCME Guidelines CEQG [a,b] CL**	**CCME Guidelines CEQG [a,b] PL**		on surface at east side of saddle	on surface at west side of saddle	on surface part way down saddle	at foot of hill	above tailings test cell	above TP02-139	bedrock at 1.1 m	east side of saddle	east side of saddle in depression	west side of saddle	west side of saddle	east of road to mill	in drainage path	in creek	adjacent creek at west edge of pipeline
Arsenic (As)	ug/g	0.4	**12**	**12**		9.7	-	-	7.5	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	ug/g	1		-		5	-	-	4	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	ug/g	1	**2000**	**500**		12	-	-	14	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	ug/g	1		-		<1	-	-	<1	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	ug/g	0.5		-		<0.5	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	ug/g	0.5	**22**	**10**		6.7	6.8	**12.3**	5.3	0.7	0.6	0.6	0.8	8.3	0.6	<0.5	1.3	1.8	**23.8**	4.6
Chromium (Cr)	ug/g	1	**87**	**64**		5	-	-	7	-	-	-	-	-	-	-	-	-	-	-
Chromium^{VI} [c]	ug/g	1	**1.4**	**0.4**		<1	-	-	<1	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	ug/g	1		-		35	-	-	28	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	ug/g	1	**91**	**63**		**108**	-	-	**96**	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	ug/g	1	**260**	**140**		**934**	**905**	**822**	**933**	41	67	41	57	**536**	73	29	122	107	**265**	98
Mercury (Hg)	ug/g	0.1	**24**	**6.6**		<0.1	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-
Molydenum (Mo)	ug/g	1		-		<1	-	-	<1	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	ug/g	1	**50**	**50**		20	-	-	20	-	-	-	-	-	-	-	-	-	-	-
Sellenium (Se)	ug/g	1		-		<1	-	-	<1	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	ug/g	1		-		4	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl) [d]	ug/g	1	**1**	**1**		<1	-	-	<1	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	ug/g	1	**130**	**130**		14	-	-	19	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	ug/g	1	**320**	**200**		**3210**	**3640**	**6430**	**2310**	**235**	**237**	**201**	**484**	**4710**	185	120	**501**	**655**	**19800**	**2120**

BOLD Concentration greater than or equal to CCME generic soil guideline for Parkland (PL) Land Use
Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) Land Use

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

a Canadian Environmental Quality Guidelines (CEQG)
b Guideline is based on the more stringent site-specific exposure pathway of those for Ecological Soil Contact, Nutrient Cycling, or Soil Ingestion
c Method detection limit (MDL) exceeds guideline
d Method detection limit (MDL) equivalent to guideline

Table 6. Solid Waste Disposal Facility, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME PHC CWS[c]	FEDERAL CCME CEQG[d]	FEDERAL CCME PHC CWS[c]	FEDERAL CCME CEQG[d]	Location:	Landfill											Land Farm	
							Sample ID:	TP02-93-2	TP02-94-1	TP02-95-1	TP02-95-2	TP02-96-1	TP02-96-2	TP02-97-2	TP02-98-2	TP02-99-2	TP02-100-2	TP02-101-1	TP02-101-2	LFC02-1	LFC02-2
							Sample Date:	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22
							Sample Depth (m):	0.8	0.0-0.1	0.0-0.1	0.8	0.0-0.1	0.8	0.8	0.85	0.85	0.75	0.0-0.1	0.9	0.3	0.6
							Field Screen[a] (ppm)	88.2	47.2	7.5	3.5	2.9	4.9	7.8	2.5	2.6	2.6	5.1	5.7	177	783
								toe of landfill, west side	toe of landfill, northwest	toe of landfill, northwest	toe of landfill, northwest	toe of landfill, north	toe of landfill, north	toe of landfill, north	toe of landfill, north	toe of landfill, northeast	down gradient of land farm northeast	down gradient of land farm east	down gradient of land farm east	within cell	within cell
Non-Halogenated Volatiles			**CL**		**PL**																
Benzene	ug/g	0.05	-	**5**	-	**0.5**		<0.05	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	0.10
Fraction 1 (C6-10) surface[e,f]	ug/g	20	**330**	-	**130**	-		<20	-	-	-	-	<20	<20	-	-	-	-	-	-	**2300**
Fraction 1 (C6-10) subsoil[e,f]	ug/g	20	**700**	-	**350**	-			-	-	-	-	-	-	-	-	-	-	-	-	
Ethylbenzene	ug/g	0.1	-	**20**	-	**1.2**		<0.1	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	**3**
Toluene	ug/g	0.1	-	**14**	-	**1.4**		<0.1	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	**4**
meta- & para- Xylene	ug/g	0.2	-	-	-	-		<0.2	-	-	-	-	<0.2	<0.2	-	-	-	-	-	-	**24**
ortho-Xylene	ug/g	0.1	-	-	-	-		<0.1	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	**19**
Total Xylene[g]	ug/g		-	**21**	-	**1**		<0.3	-	-	-	-	<0.3	<0.3	-	-	-	-	-	-	**43**
Extractable Hydrocarbons								-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 2 (C10-16) surface[e,f,h]	ug/g	25	**760**	-	**450**	-		<25	<25	-	<25	-	<25	<25	<25	<25	<25	-	<25	240	**3110**
Fraction 2 (C10-16) subsoil[e,f,h]	ug/g	25	**2000**	-	**1500**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 3 (C16-34) surface[e,f,h]	ug/g	25	**1700**	-	**400**	-		<25	<25	-	<25	-	<25	<25	<25	<25	<25	-	<25	90	180
Fraction 3 (C16-34) subsoil	ug/g	25	**3500**	-	**2500**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 4 (C34-50) surface[e,f]	ug/g	5	**3300**	-	**2800**	-		<10	<10	-	-	-	<10	<10	-	<10	-	-	-	-	<10
Fraction 4 (C34-50) subsoil[e,f]	ug/g	5		-	**10000**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals								-	-	-	-	-	-	-	-	-	-	-	-		
Arsenic (As)	ug/g	0.4	-	**12**	-	**12**		-	-	-	-	-	-	-							
Cadmium (Cd)	ug/g	0.5	-	**22**	-	**10**		-	-	<0.5	-	<0.5	-	-				<0.5			
Lead (Pb)	ug/g	1	-	**260**	-	**140**		-	-	13	-	8	-	-				14			
Zinc (Zn)	ug/g	1	-	**320**	-	**200**				131		51						121			

BOLD

Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

Notes:

- = Analysis not conducted, or no guideline

< = Less than the detection limit indicated.

a Field screening results are measured based on a 'dry headspace' method.

b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion

c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)

d Canadian Environmental Quality Guidelines (CEQG)

e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).

f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.

g Total Xylene calculated as the sum of meta, para and ortho Xylenes

h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-05-2 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.

Table 7. Miscellaneous Access Facilities, Summary of Analytical Results in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME		FEDERAL CCME		Location:	Stolport air strip			
							Sample ID:	TP02-103-1	TP02-104-1	TP02-104-2	TP02-104-3	TP02-105-2
							Sample Date:	2002-07-22	2002-07-22	2002-07-22	2002-07-22	2002-07-22
							Sample Depth (m):	0.0-0.15	0.0-0.15	0.7-0.9	1.3	1.1
							Field Screen [a] (ppm)	3.1	43.2	181	13.8	40.7
			PHC CWS[c]	CEQG [d]	PHC CWS[c]	CEQG [d]		apron adjacent air strip	area of surface staining at former AST	former AST	former AST	down gradient of TP02-104
Non-Halogenated Volatiles			**CL**		**PL**							
Fraction 1 (C6-10) surface [e,f]	ug/g	20	**330**	-	**130**	-		-	-	-	-	-
Fraction 1 (C6-10) subsoil [e,f]	ug/g	20	**700**	-	**350**	-		-	-	-	-	-
Polycyclic Aromatic Hydrocarbons												
Fraction 2 (C10-16) surface [e,f,g]	ug/g	25	**760**	-	**450**	-		-	**7750**	**2240**	<25	<25
Fraction 2 (C10-16) subsoil [e,f,g]	ug/g	25	**2000**	-	**1500**	-		-	-	-	-	-
Fraction 3 (C16-34) surface [e,f,g]	ug/g	25	**1700**	-	**400**	-		-	**4990**	*770*	<25	<25
Fraction 3 (C16-34) subsoil [e,f,g]	ug/g	25	**3500**	-	**2500**	-		-	-	-	-	-
Fraction 4 (C34-50) surface [e,f]	ug/g	5	**3300**	-	**2800**	-		-	-	-	<10	-
Fraction 4 (C34-50) subsoil [e,f]	ug/g	5		-	**10000**	-		-	-	-	-	-
Polycyclic Aromatic Hydrocarbons												
Ethylene Glycol [g]	ug/g	10			**960**	-		-	<10	-	-	-
METALS												
Cadmium (Cd)	ug/g	0.5	-	**22**	-	**10**		3.1	-	-	-	-
Lead (Pb)	ug/g	1	-	**260**	-	**140**		**9350**	-	-	-	-
Zinc (Zn)	ug/g	1	-	**320**	-	**200**		**926**	-	-	-	-

BOLD

Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use
Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-05-2 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.

Table 8. Mine Workings, Summary of Analytical Results for Hydrocarbons in Soil

Gartner Lee

Parameter	Units	MDL	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	FEDERAL CCME GUIDELINES [b] PHC CWS [c]	FEDERAL CCME GUIDELINES [b] CEQG [d]	Location: Ocean View	Ocean View	Ocean View	Ocean View	West Adit	Anfo Plant	Anfo Plant	17 North	39 North	39 North	K-Baseline	K-Baseline	K-Baseline	K-Baseline	K-Baseline	K-Baseline
							Sample ID: TP02-01-3	TP02-02-2	TP02-02-3	SS02-012	SS02-024	SS02-015	SS02-017	SS02-014	TP02-07-3	SS02-013	TP02-03-3	TP02-04-2	TP02-04-3	TP02-05-2	TP02-05-3	TP02-06-3
							Sample Date: 1900-03-20	2002-07-16	2002-07-16	2002-07-19	2002-07-21	2002-07-17	2002-07-17	2002-07-17	2002-07-19	2002-07-19	2002-07-16	2002-07-16	2002-07-16	2002-07-19	2002-07-19	2002-07-19
							Sample Depth (m): 1.0	0.5-1.0	1.8	0.0-0.1	0.0-0.15	0.0-0.1	0.0-0.1	0.0-0.1	1.0	0.0-0.1	2.0	0.3-0.5		0.4-0.8	1.6	1.8
							Field Screen [a] (ppm): 489	18.9	1.8	9.7	383	154	9.5	261	173	123	144	171		243	229	198
							former AST	former AST	former AST	existing AST refuse station	existing AST	existing AST	former UST	existing AST at core shack	existing AST	existing AST refuse station	former AST	former AST	duplicate of TP02-04-2	former AST	former AST	area of surface staining
Non-Halogenated Volatiles			**CL**		**PL**																	
Benzene	ug/g	0.05		**5**	-	**0.5**	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-
Fraction 1 (C6-10) surface [e,f]	ug/g	20	**330**		**130**	-	-	-	-	-	-	-	-	-	**360**	-	-	-	-	-	-	-
Fraction 1 (C6-10) subsoil [e,f]	ug/g	20	**700**		**350**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/g	0.1		**20**	-	**1.2**	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
Toluene	ug/g	0.1		**14**	-	**0.8**	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
meta- & para-Xylene	ug/g	0.2			-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
ortho-Xylene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
Total Xylene [g]	ug/g	1		**21**	-	**1**	-	-	-	-	-	-	-	-	<.3	-	-	-	-	-	-	-
Extractable Hydrocarbons																						
Fraction 2 (C10-16) surface [e,f,h]	ug/g	25	**760**		**450**	-	**5150**	160	-	**1280**	**1780**	**9420**	**500**	**17280**	**540**	**8470**	-	**2710**	**5350**	**7080**	-	-
Fraction 2 (C10-16) subsoil [e,f,h]	ug/g	25	**2000**		**1500**	-	-	-	360	-	-	-	-	-	-	-	**4880**	-		-	**8560**	**5830**
Fraction 3 (C16-34) surface [e,f,h]	ug/g	25	**1700**		**400**	-	70	90	-	150	**5760**	**530**	56	**870**	130	**480**	-	50	110	100	-	-
Fraction 3 (c16-34) subsoil [e,f,h]	ug/g	25	**3500**		**2500**	-	-	-	1320	-	-	-	-	-	-	-	40	-		-	110	90
Fraction 4 (c34-50) surface [e,f]	ug/g	5	**3300**		**2800**	-	-	-	-	-	-	-	-	-	20	-	-	-		<5	-	-
Fraction 4 (c34-50) subsoil [e,f]	ug/g	5			**10000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Benzo(a)anthracene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Benzo(a)pyrene	ug/g	0.2		**1.4**	-	**0.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-
Benzo(b)fluoranthene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Benzo(k)fluoranthene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Dibenzo(a,h)anthracene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Indeno(1,2,3-c,d)pyrene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Naphthalene	ug/g	0.1		**22**	-	**0.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.1**	-	-
Phenanthrene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Pyrene	ug/g	0.1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Ethylene Glycol [i]	ug/g	10		**960**	-	**960**	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-

BOLD Concentration greater than or equal to the CCME generic soil guideline for Parkland (PL) land use

Concentration greater than or equal to the CCME generic soil guideline for Commercial (CL) land use

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

a Field screening results are measured based on a 'dry headspace' method.
b Guideline is based on the more stringent site-specific exposure pathway of those for ecological soil contact, nutrient cycling, or soil ingestion
c Petroleum Hydrocarbon Canada-Wide Standards (PHC CWS)
d Canadian Environmental Quality Guidelines (CEQG)
e Guideline is dependant upon depth of sample (surface, subsoil >1.5 m depth).
f Guideline is dependent on median grain size of soil analyzed (Fine ≤75 µm, Coarse >75 µm). Median grain size of soil sampled is coarse.
g Total Xylene calculated as the sum of meta, para and ortho Xylenes
h Use of the guideline requires that PAHs be subtracted from the fraction. Based on the results for sediment sample TP02-05-2 it is assumed that PAHs form a small percentage of the fractions 2 and 3 for the samples not analyzed for PAHs.
i Guideline based on an exposure pathway to aquatic life

Table 9. Mine Workings, Summary of Analytical Results for Metals in Soils

Gartner Lee					Location:	Road to Area 14			Treatment and Retention Ponds							
					Sample ID:	TP02-145	TP02-146	TP02-147	SS02-002-1	SS02-002-2	SS02-003-1	SS02-003-2	SS02-021	SS02-022	SS02-023
					Sample Date:	2002-07-26	2002-07-26	2002-07-26	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21	2002-07-21
					Sample Depth (m):	0.0-1.0	0.0-0.6	0.0-0.25	0-0.1	0.15-0.25	0-0.1	0.2-0.3	0.0-0.1	0.0-0.1	0.0-0.1
Parameter	**Units**	**MDL**	**CCME Guidelines**			road fill	road fill	grab sample from shale stockpile	at drainage junction from ponds	end of discharge pipeline	at toe of retention pond, oxidized	at toe of retention pond	15 m east of SS02-003	25 m down gradient of SS02 003	25 m down gradient of SS02 022
			CEQG [a,b]	**CEQG [a,b]**											
			CL	**PL**											
Arsenic (As)	ug/g	0.4	**12**	**12**		-	-	-	-	-	7.9	-	-	-	-
Antimony (Sb)	ug/g	1		**-**		-	-	-	-	-	3	-	-	-	-
Barium (Ba)	ug/g	1	**2000**	**500**		-	-	-	-	-	26	-	-	-	-
Beryllium (Be)	ug/g	1		**-**		-	-	-	-	-	<1	-	-	-	-
Boron (B)	ug/g	0.5		**-**		-	-	-	-	-	<0.5	-	-	-	-
Cadmium (Cd)	ug/g	0.5	**22**	**10**		**61.0**	0.6	<0.5	6.2	3.3	**46.1**	4.2	4.4	6.5	5.2
Chromium (Cr)	ug/g	1	**87**	**64**		-	-	-	-	-	14	-	-	-	-
Chromium[VI] [c]	ug/g	1	**1.4**	**0.4**		-	-	-	-	-	<1	-	-	-	-
Cobalt (Co)	ug/g	1		**-**		-	-	-	-	-	8	-	-	-	-
Copper (Cu)	ug/g	1	**91**	**63**		-	-	-	-	-	10	-	-	-	-
Lead (Pb)	ug/g	1	**260**	**140**		**1120**	50	16	**242**	98	**6770**	**227**	**241**	**435**	**230**
Mercury (Hg)	ug/g	0.1	**24**	**6.6**		-	-	-	-	-	0.5	-	-	-	-
Molybdenum (Mo)	ug/g	1		**-**		-	-	-	-	-	1	-	-	-	-
Nickel (Ni)	ug/g	1	**50**	**50**		-	-	-	-	-	10	-	-	-	-
Selenium (Se)	ug/g	1		**-**		-	-	-	-	-	<1	-	-	-	-
Silver (Ag)	ug/g	1		**-**		-	-	-	-	-	11	-	-	-	-
Thallium (Tl) [d]	ug/g	1	**1**	**1**		-	-	-	-	-	<1	-	-	-	-
Vanadium (V)	ug/g	1	**130**	**130**		-	-	-	**-**	**-**	26	**-**	**-**	**-**	**-**
Zinc (Zn)	ug/g	1	**320**	**200**		**25000**	197	156	**2100**	**987**	**16800**	**1150**	**1330**	**2000**	**1210**

BOLD Concentration greater than or equal to CCME generic soil guideline for Parkland (PL) Land Use

Concentration greater than or equal to CCME generic soil guideline for Comercial (CL) Land Use

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

a Canadian Environmental Quality Guidelines (CEQG)
b Guideline is based on the more stringent site-specific exposure pathway of those for Ecological Soil Contact, Nutrient Cycling, or Soil Ingestion
c Method detection limit (MDL) exceeds guideline
d Method detection limit (MDL) equivalent to guideline

Table 10. Mine Workings, Summary of Analytical Results Metals in Sediment

Gartner Lee			Location:	Twin Lakes Creek						
			Sample ID:	SED02-3	SED02-4	SED02-5	SED02-6	SED02-7	SED02-8	SED02-9
			Sample Date:	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24	2002-07-24
			Sample Depth (m):	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
			FEDERAL CCME GUIDELINES	downstream of Twin lakes, above mineralization	upstream of waste rock in creek	downstream of waste rock in creek	downstream of 9S waste rock dump	within area of mineralized bedrock	upstream of waste rock, at mineralized outcrop	downstream of waste rock
			CEQG[a] Freshwater							
PARAMETER	**units**	**MDL**	*ISQG*[b]	**PEL**[c]						
METALS										
As	ug/g	0.4	*5.9*	**17**	4.7				3.3		5.5
Cd	ug/g	0.5	*0.6*	**3.5**	<0.5	*1.1*	**12.4**	**10.8**	**5.0**	**3.9**	**37.5**
Pb	ug/g	1	*35*	**91.3**	73	*49*	*89*	**1100**	**138**	**146**	**4580**
Zn	ug/g	1	*123*	**315**	*156*	**432**	**5310**	**4810**	**1940**	**1760**	**8450**
Ag	ug/g	1			<1				<1		3
B	ug/g	0.5			<0.5				0.7		0.6
Ba	ug/g	1			24				39		12
Be	ug/g	1			<1				<1		<1
Co	ug/g	1			3				21		10
Cr	ug/g	1	*37.3*	**90**	6				21		27
Cr(VI)	ug/g	1			<1				<1		<1
Cu	ug/g	1	*35.7*	**197**	9				*39*		*50*
Sb	ug/g	1			<1				1		2
Hg	ug/g	0.1	*0.17*	**0.486**	0.6				**0.9**		*0.3*
Mo	ug/g	1			<1				1		4
Ni	ug/g	1			4				23		18
Se	ug/g	1			<1				<1		<1
Tl	ug/g	1			<1				<1		<1
V	ug/g	1			13				68		53

Associated ALS files: P6911, P7047

BOLD Concentration greater than or equal to CCME Guideline from freshwater sediments

Notes:
< = Less than the detection limit indicated.
- = Analysis not conducted.

[a] CEQG - Canadian Environmental Quality Guidelines
[b] *ISQG* - Interim Sediment Quality Guidelines (dry weight)
[c] **PEL** - Probable Effect Levels (dry weight)

Table 11. Summary of Analytical Results in Groundwater and Surface Seeps

Gartner Lee					Groundwater									Surface Water	
Sample ID:					TP02-81	TP02-82	TP02-DUP	TP02-88	TP02-95	TP02-97	TP02-100	TP02-101	TP02-102	LF-WSEEP	S-SEEP
Sample Date:					2002-07-27	2002-07-27	2002-07-27 duplicate of TP02-82	2002-07-27	2002-07-27	2002-07-27	2002-07-27	2002-07-27	2002-07-27	2002-07-27	2002-07-27
Federal Guidelines															
PARAMETER	**UNITS**	**MDL**	**CEQG FWAL[a]** (Surface Water)	**CEQG FWAL X 10[b]** (Groundwater)											
Volatile Petroleum Hydrocarbons															
Benzene	ug/L	0.5	370	3700	-	<0.5	-	<0.5	-	-	<0.5	<0.5	-	<0.5	-
Toluene	ug/L	0.5	2.0	20	-	<0.5	-	<0.5	-	-	<0.5	<0.5	-	<0.5	-
Ethylbenzene	ug/L	0.5	90	900	-	<0.5	-	<0.5	-	-	<0.5	<0.5	-	<0.5	-
m/p-xylene	ug/L	1.0	-	-	-	<1.0	-	<1.0	-	-	<1.0	<1.0	-	<1.0	-
o-xylene	ug/L	0.5	-	-	-	<0.5	-	<0.5	-	-	<0.5	<0.5	-	<0.5	-
Total Petroleum Hydrocarbons															
GRO (<C10)	mg/L	0.2	-	-	-	<0.2	-	<0.2	-	-	<0.2	<0.2	-	<0.2	-
DRO (C10-C24)	mg/L	0.2	-	-	0.4	<0.2	-	1.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
GRO + DRO	mg/L	0.2	-	-	-	<0.2	-	1.8	-	-	<0.2	<0.2	-	<0.2	-
INORGANICS					**dissolved**	**dissolved**	**dissolved**	**dissolved**	**dissolved**	**dissolved**	**dissolved**	**dissolved**	**dissolved**	**dissolved**	**total**
Silver (Ag)	mg/L	0.0001	0.0001	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**0.0002**	<0.0001
Arsenic (As)	mg/L	0.001	0.0050	0.050	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.002	<0.001
Boron (B)	mg/L	0.02	-	-	<0.02	<0.02	<0.05	<0.02	<0.02	0.39	<0.02	<0.02	<0.02	0.99	<0.05
Barium (Ba)	mg/L	0.01	-	-	0.01	<0.01	<0.01	0.02	0.04	0.04	0.05	0.02	0.02	0.06	0.02
Beryllium (Be)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca)	mg/L	1	-	-	197	129	124	39	77	434	59	30	36	66	63
Cadmium (Cd)	mg/L	0.0001	0.000017	0.00017	**0.0009**	**0.0041**	**0.0033**	**0.0005**	<0.0001	**0.0005**	**0.0003**	<0.0001	<0.0001	**0.0015**	<0.0001
Cobalt (Co)	mg/L	0.0002	-	-	0.0050	0.0079	0.0063	0.0009	0.0004	0.0031	0.0027	<0.0002	<0.0002	0.0067	0.0005
Chromium (Cr)	mg/L	0.001	.0089	0.089	0.010	0.003	0.001	0.002	0.002	0.001	0.004	0.001	0.001	0.002	0.004
Chromium^{VI}	mg/L	0.05	.001	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Copper (Cu)	mg/L	0.001	0.002-0.004	0.02-0.04	0.002	0.002	0.002	0.001	0.002	0.025	0.008	0.002	0.001	**0.073**	0.001
Hardness as CaCO3	mg/L	1	-	-	895	619	577	172	386	1760	312	161	189	272	306
Antimony (Sb)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	0.015	<0.001
Lead (Pb)	mg/L	0.001	0.001-0.007	0.01-0.07	0.003	0.009	0.009	0.003	<0.001	0.001	0.033	<0.001	<0.001	0.003	<0.001
Magnesium (Mg)	mg/L	1	-	-	98	72	65	18	47	165	40	21	24	26	36
Mercury (Hg)	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	<0.0001
Molybdenum (Mo)	mg/L	0.005	0.073	0.73	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.009	0.007
Nickel (Ni)	mg/L	0.005	0.025-0.150	0.25-1.50	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.021	<0.005
pH			6.5-9	6.5-9	7.16	7.24	-	7.85	8.30	7.65	8.00	8.02	7.90	7.67	7.12
Potassium (K)	mg/L	1	-	-	2	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/L	0.001	0.001	0.01	0.002	0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	**0.006**	<0.001
Sodium (Na)	mg/L	2	-	-	3	4	-	<2	4	74	4	<2	5	-	-
Sulphate (SO_4)	mg/L	1	-	-	651	504	-	80	143	1030	228	91	89	1340	265
Thallium (Tl)	mg/L	0.001	0.0008	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium (V)	mg/L	0.001	-	-	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	<0.001	<0.001	0.001
Zinc (Zn)	mg/L	0.005	0.03	0.3	**1.30**	**6.97**	**6.99**	**0.438**	<0.005	0.076	0.119	<0.005	<0.005	**0.974**	**0.036**
Total Ammonia (NH_3[d])	mg/L	0.02	varies	varies	-	0.06	-	-	-	-	-	-	-	-	-
Nitrite (NO_2)	mg/L	0.10	-	-	-	<0.10	-	-	-	-	-	-	-	-	-
Nitrate (NO_3)	mg/L	0.10	-	-	-	2.76	-	-	-	-	-	-	-	-	-
Phosphate (PO_4)	mg/L	0.03	-	-	-	<0.03	-	-	-	-	-	-	-	-	-

BOLD Concentration greater than or equal to Federal Guideline.

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

a Canadian Environmental Quality Guidelines (CEQG) for the protection of Freshwater Aquatic Life (FWAL)
b CEQG for FWAL miltiplied by ten as a reference for groundwater quality
c Guideline varies with hardness
d Guideline for "unionized" ammonia is calculated from the total concentration based on pH and temperature

Table 12. Summary of Analytical Results for Iron, Lead, and Zinc in Soil and Sediment from On-Site Laboratory

Gartner Lee Sample ID	On-Site Laboratory			External Laboratory	
	% Zinc$_{(AAS)}$	% Lead$_{(AAS)}$	% Iron$_{(AAS)}$	% Zinc	% Lead
SS02-001	0.23	0.01	1.07		
SS02-002	0.41	0.01	1.74	0.21	0.0242
SS02-003	1.13	0.23	8.24	1.68	0.677
SS02-004	0.3	<0.01	1.75		
SS02-005	0.36	<0.01	2.23		
SS02-006	0.22	0.01	3.76		
SS02-007	0.25	0.03	2.51		
SS02-008	0.46	<0.01	4.3		
SS02-009	0.5	<0.01	5.33		
SS02-010	0.46	0.02	7.83		
SS02-011	0.56	0.04	2.68		
SED02-001	1.1	0.07	15.22		
SED02-002	1.21	0.05	4.78		
TPO2-14-1	0.22	0.02	1.73		
TPO2-14-2	0.03	0.01	2.03		
TPO2-15-1	0.30	0.03	2.05	0.986	0.125
TPO2-15-2	0.04	<0.01	1.92	0.138	0.0141
TPO2-16-1	0.26	0.03	2.02		
TPO2-16-2	0.05	<0.01	2.65		
TPO2-17-1	0.27	0.03	1.65		
TPO2-17-2	0.03	<0.01	1.68		
TPO2-18-1	0.52	0.06	2.28		
TPO2-18-2	0.02	0.01	2.11		
TPO2-19-1	0.71	0.08	2.20		
TPO2-19-2	0.02	0.01	1.69		
TPO2-20-1	0.28	0.03	1.80		
TPO2-20-2	0.02	0.01	1.85		
TPO2-21-1	0.18	0.01	1.44		
TPO2-21-2	0.03	0.01	2.09		
TPO2-22-1	0.37	0.05	1.38	4.1	0.433
TPO2-22-2	0.02	0.01	1.95		
TPO2-23-1	0.61	0.06	1.89		
TPO2-23-2	0.02	0.01	1.92		
TPO2-24-1	1.44	0.25	2.00		
TPO2-24-2	0.02	0.01	1.82		
TPO2-25-1	3.44	0.26	2.19		
TPO2-25-2	0.63	0.11	3.12		
TPO2-26-1	6.38	0.25	2.08		
TPO2-26-2	0.07	<0.01	1.6		
TPO2-27-1	1.68	0.31	1.35	3.08	0.278
TPO2-27-2	0.03	0.01	1.91	2.12	0.169
TPO2-28-1	0.93	0.09	1.67	3.31	0.291
TPO2-28-2	0.02	0.01	1.34		
TPO2-29-1	1.58	0.17	1.75	2.92	0.294
TPO2-29-2	0.02	0.01	1.64		
TPO2-30-1	0.51	0.05	1.20		
TPO2-30-2	0.02	0.01	1.79		
TPO2-31-1	0.41	0.03	1.57		
TPO2-31-2	0.09	0.04	1.86		
TPO2-32-1	0.19	0.01	1.67		
TPO2-32-2	0.02	0.01	1.76		
TPO2-33-1	15.51	1.05	3.39		

Table 12. Summary of Analytical Results for Iron, Lead, and Zinc in Soil and Sediment from On-Site Laboratory

Gartner Lee Sample ID	On-Site Laboratory			External Laboratory	
	% Zinc$_{(AAS)}$	% Lead$_{(AAS)}$	% Iron$_{(AAS)}$	% Zinc	% Lead
TPO2-33-2	0.22	0.02	1.69		
TPO2-34-1	7.76	0.94	2.82		
TPO2-34-2	0.03	0.01	1.66		
TPO2-35-1	7.58	0.49	2.68		
TPO2-35-2	0.41	0.07	1.55		
TPO2-36-1	1.76	0.18	1.75		
TPO2-36-2	0.23	0.07	1.77	0.581	0.144
TPO2-37-1	5	0.36	2.24		
TPO2-37-2	0.05	0.01	1.89		
TPO2-38-1	2.62	0.14	2.02		
TPO2-38-2	0.14	0.01	1.72	0.124	0.0093
TPO2-39-1	0.18	0.03	1.82		
TPO2-39-2	0.05	0.01	1.99		
TPO2-40-1	2.67	0.19	2.15		
TPO2-40-2	0.03	0.01	1.75		
TPO2-41-1	0.75	0.05	1.83		
TPO2-41-2	0.04	0.01	1.93		
TPO2-42-1	2.14	0.15	1.76		
TPO2-42-2	0.03	0.01	1.49		
TPO2-43-1	1.71	0.08	1.83		
TPO2-43-2	0.04	0.01	1.96		
TPO2-44-1	1.39	0.06	2.07		
TPO2-44-2	0.04	0.01	1.68	0.0786	0.0039
TPO2-45-1	0.58	0.04	1.75		
TPO2-45-2	0.03	0.01	1.82		
TPO2-46-1	1.41	0.04	1.86		
TPO2-46-2	0.03	0.01	1.53	0.14	0.003
TPO2-47-1	4.9	0.38	2.03		
TPO2-47-2	0.03	0.01	1.82	0.0529	0.0024
TPO2-48-1	0.31	0.04	1.86		
TPO2-48-2	0.01	0.01	1.57		
TPO2-49-1	1.02	0.09	1.69		
TPO2-49-2	0.03	0.01	1.61		
TPO2-50-1	0.37	0.05	1.82		
TPO2-50-2	0.07	0.01	2.03		
TPO2-51-1	0.25	0.021	1.95	0.371	0.0242
TPO2-51-2	0.03	0.01	1.75		
TPO2-52-1	0.25	0.03	1.8		
TPO2-52-2	0.03	0.01	1.9		
TPO2-53-1	0.06	0.01	1.83	0.265	0.0067
TPO2-53-2	0.04	0.01	1.69		
TPO2-54-1	0.04	0.01	1.68		
TPO2-54-2	0.06	0.01	2.26		
TPO2-55-1	0.04	0.01	1.64		
TPO2-55-2	0.03	0.01	2.09		
TPO2-56-1	0.06	0.01	1.95		
TPO2-56-2	0.04	0.01	2.54		
TPO2-57-1	0.1	0.01	1.49		
TPO2-57-2	0.03	0.01	1.55		