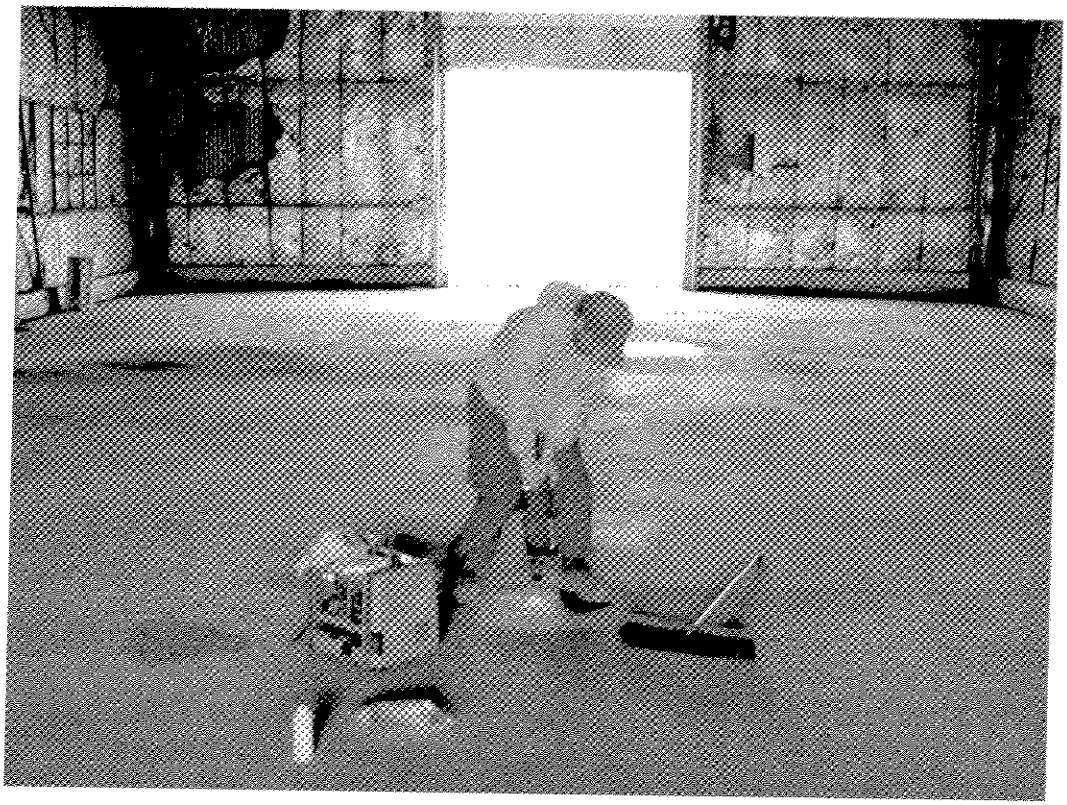
L. Miscellaneous Activities

Building B2 was used to store CEPA soil in 2003 and 2004. It was emptied in 2004 and this year 5 concrete samples were taken on 1 July 2005 from stained areas (Photograph III-16). Results are given in Table III-23. PCBs were only detected in one sample and at a low level of 1.1 ppm. Therefore no action was warranted.

Table III-23: Results of Analyses for PCBs in Concrete Samples From the Floor of Building B2.

Sample	PCBs (ng/g)	Comment
RI05-069	<1.0	Left of front door between front and 1st beam
RI05-070	1.1	Left side between 3rd and 4th beams
RI05-071	<1.0	Back quadrant center section
RI05-072	<1.0	Back quadrant right section
RI05-073	<1.0	Center of building



Photograph III-16: Sampling the Concrete Floor of Building B2 Which Previously Had Contained PCB Contaminated Soils and PCB Containing Transformers

In 2004, 21 plastic barrels were filled with waste materials and placed in sea-cans as part of the registered PCB storage facility. There was uncertainty as to the PCB concentration level of their contents, and so it was decided to analyse samples of the material in the barrels. Two barrels were mis-labelled and contained concrete from the Iqaluit cleanup of 1996. Analysis of the contents of the other 19 are shown in Table III-24. As the results were high, and well above 50 ppm PCBs, they were returned to the sea-cans and subsequently shipped off site as described in Chapter IV.

Table III-24: Results of Analyses for PCBs in Material in Plastic Drums in the PCB Registered Storage Facility

Sample	PCB Concentration (ppm)
RI05-261	1100
RI05-262	2300
RI05-263	7.0
RI05-264	430
RI05-265	300
RI05-266	1400
RI05-267	1000
RI05-268	220
RI05-269	1100
RI05-270	53
RI05-271	370
RI05-273	250
RI05-274	1200
RI05-275	1700
RI05-276	85
RI05-277	250
RI05-281	270
RI05-283	650
RI05-284	54

Fuel was observed to be seeping from the ground into ocean below the location of the beach dump in 2004. The seepage area was below the high water line from a fracture in the rock cliff face and the hydrocarbon was identified as gasoline. Contaminated soil was removed from the beach dump this year as reported in Chapter II, section I. As a result of this excavation, the beach dump area was reduced to exposed bedrock as shown in Photograph II-22. Test pits were dug earlier and did not find any TPH. The hydrocarbon must therefore already be in the fractured rock.

M. Quality Control Data

The ASU is accredited by the Canadian Association for Environmental and Analytical Laboratories (CAEAL), for specific tests listed in the scope of accreditation approved by the SCC. Quality control was maintained through the analysis of standards, duplicates, and blanks. The Mobile Laboratory was operated as a CAEAL accredited laboratory even though for logistic and financial reasons it was not officially so. Thus, for instance, validation runs were completed on both field GCs prior to actual analysis and records such as daily balance checks were maintained. Most tables are self explanatory and show good control of the quality of results. Results presented here are for all the analyses presented in this report's seven chapters. The results for PCBs and TPH, for which a large number of analyses were conducted, are discussed below. The ASU report for the lake water analysis is also given at the end of this chapter.

1. PCB Quality Control/Quality Assurance

Samples were analyzed for PCBs by the GC/ECD method in the laboratories at Resolution Island and Queen's University. Table III-25 gives the results for blanks and spiked QA/QC soil samples. Spikes were higher than acceptable in some runs but results for these runs were carefully checked to ensure that they were interpreted conservatively and rerun if necessary. The relative standard deviations given in Table III-26 for laboratory duplicates demonstrate that the analyses were effective. The average of 10 %, as would be expected, is lower than for the average of 22 % for the field duplicate results given in Table III-27. These values indicate good reproducibility for both sampling and analysis. Table III-30 gives the results for blanks and spiked QA/QC water samples; duplicate data was not obtained since the sample volumes required for these analyses (800 mL) are large. Table III-32 gives the results for blanks and spiked QA/QC plant samples.

2. *TPH Quality Control/Quality Assurance*

The corresponding tables for TPH follow those for PCBs. Table III-33 presents the results for blanks and spiked QA/QC soil samples. The relative standard deviations given in Tables III-34 and III-35 for laboratory duplicates demonstrate that the analyses indicate good precision. The averages of 9 % and 2 % are lower than for the average of 19 % and 19 % for the field duplicate results given in Tables III-36 and II-37 respectively. Table III-38 gives the gives the results for blanks and spiked QA/QC water samples and Table III-39 for duplicate water samples.

Table III-25: PCB Concentrations in Blank and Spiked QA/QC Soil and Other Solid Samples

Sample	Units	PCB Concentrations (ppm)
Blank	µg/g	<1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0,
Control	µg/g	6.3, 5.9, 4.0, 7.2, 7.1, 7.6, 5.0, 5.2, 5.0, 4.5, 3.2, 4.4, 6.8, 5.0, 5.2, 5.2, 5.3, 5.4, 5.2, 5.5, 5.6, 6.3, 5.8, 4.6, 4.8, 4.7, 4.8, 5.4, 5.4, 4.5, 5.0, 5.5, 5.2, 5.8, 5.2, 5.0, 5.9, 5.5, 3.9, 5.7, 5.6, 4.9, 7.4, 7.3, 6.1, 6.5, 7.0, 7.0, 6.6, 5.5, 7.7, 7.0, 6.6
Control Target	µg/g	5.0

Table III-26: PCB Concentrations in Laboratory Duplicate Soil and Other Solid Analysis

Sample Number (prefix: RI05-)	PCB Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
002	<1.0; <1.0	0.0	0
068	10.0; 10.5	0.4	3
027	19; 21	1.4	7
093	<1.0; <1.0	0.0	0
190	3.1; 3.0	0.1	2
310	<1.0; <1.0	0.0	0
121	32; 27	3.5	12
132	8.3; 5.1	2.3	34
146	4.2; 4.5	0.2	5
148	74; 77	2.1	3
147	49; 61	8.5	15
287	150; 79	50	44
302	13.0; 12.8	0.1	1
113	1.3; 1.2	0.1	6
117	1.0; 1.2	0.1	13
220	2.4; 1.3	0.8	42
069	<1.0; <1.0	0.0	0
268	228; 204	17	8
277	260; 238	16	6
283	673; 635	27	4
138	2.5; 3.1	0.4	15
346	<1.0; <1.0	0.0	0
Average RSD	-	-	10

Table III-27: PCB Concentrations in Field Duplicate Soil and Other Solid Analysis

Sample Number (prefix: RI04-)	PCB Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
008	4.4; 3.6	0.6	14
050	1.9; 1.4	0.4	21
060	3.5; 4.1	0.4	11
130	<1.0; <1.0	0.0	0
100	2.7; 3.1	0.3	10
200	1.6; <1.0	0.8	74
110	36; 27	6.4	20
150	590; 240	247	60
160	2.6; 1.6	0.7	34
210	1.6; 1.1	0.4	26
250	<1.0; <1.0	0.0	0
280	<1.0; <1.0	0.0	0
290	<1.0; <1.0	0.0	0
310	<1.0; <1.0	0.0	0
170	4.5; 3.8	0.5	12
046	1.5; 1.9	0.3	17
080	1.4; 1.4	0.0	0
070	<1.0; 1.3	0.6	63
270	72; 35	26	49
Average RSD	-	-	22

Table III-28: PCB Concentrations in Low Level Laboratory Duplicate Soil Analysis

Sample Number (prefix: RI05-)	PCB Concentrations (ppb)	Standard Deviation	Relative Standard Deviation (RSD) (%)
1006	128; 135	5	4
1231	37; 40	2	6
1107	13.2; 11.2	1	12
Average RSD	-	-	7

Table III-29: PCB Concentrations in Blank and Spiked Low Level Soil Analyses

Sample	Units	PCB Concentrations
Blank	ppb	<3.0; <3.0; <3.0; <3.0; <3.0
Control	ppb	19.1; 14.0; 16.9
Control Target	ppb	20.0

Table III-30: PCB Concentrations in Blank and Spiked QA/QC Water Samples

Sample	Units	PCB Concentrations (ppb)								
Blank	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Control	µg/L	0.088	0.097; 0.093	0.087	0.10	0.054	0.094	0.063	0.11	0.035; 0.078
Control Target	µg/L	0.10	0.10	0.10	0.10	0.050	0.10	0.063	0.10	0.063

Table III-31: PCB Concentrations in Duplicate Water Samples

Sample Number (prefix: RI05-)	PCB Concentrations (ppb)	Standard Deviation	Relative Standard Deviation (RSD) (%)
W039	1.10; 0.69	0.29	32
W048	<0.020; <0.020	0	0

Table III-32: PCB Concentrations in Blank and Spiked QA/QC Plant Samples

Sample	Units	PCB Concentrations	
Blank	ng/g	<3.0	<3.0
Control	ng/g	320	200
Control Target	ng/g	400	200

Table III-33: TPH Concentrations in Blank and Spiked QA/QC Soil Samples

Sample	Units	TPH Concentrations (ppm)					
Blank	ppm	<40	<40	<40	<40	<40	<40
Control	ppm	130	127	146	1760	163	560
Control Target	ppm	168	166	157	1820	160	500

Sample	Units	TPH Concentrations (ppm)					
Blank	ppm	<40	<40	<40	<40	<40	<40
Control	ppm	141	158	153	154	307	291
Control Target	ppm	166	166	166	159	300	300

Table III-34: TPH (Fuel) Soil Concentrations in Laboratory Duplicate Analysis

Sample Number (prefix: RI05-)	TPH Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
1115	<40, <40	0	0
1001	<40, <40	0	0
1007	974; 1490	365	30
1172	8170; 7290	622	8
1180	9980; 8690	912	10
1190	3910; 4570	467	11
707	2900; 3100	141	5
723	2700; 2900	141	5
1051	<40, <40	0	0
730	815; 1090	194	20

Sample Number (prefix: RI05-)	TPH Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
729	150; 165	11	7
1113	710; 860	106	14
1217	2770; 2330	311	12
1016	766; 654	79	11
1044	2220; 1870	247	12
1088	830; 780	35	4
Average RSD	-	-	9

Table III-35: TPH (Lubricating Oil and Grease) Soil Concentrations in Laboratory Duplicate Analysis

Sample Number (prefix: RI05-)	TPH Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
1001	8460; 8160	212	3
1007	<40; <40	0	0
1172	5720; 5270	318	6
1180	<40, <40	0	0
1190	576; 530	33	6
707	200; 220	14	7
723	240; 220	14	6
1051	<40, <40	0	0
730	<40, <40	0	0
729	<40, <40	0	0
1113	<40, <40	0	0
1217	<40, <40	0	0
1016	<40, <40	0	0
Average RSD	-	-	2

Table III-36: TPH (Fuel) Soil Concentrations in Field Duplicate Analysis

Sample Number (prefix: RI05-)	TPH Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
720	3900; 3700	141	4
710	2900; 3200	212	7
700	4200; 2100	1485	47
1200	2530; 3350	580	20
Average RSD	-	-	19

Table III-37: TPH (Lubricating Oil and Grease) Soil Concentrations in Field Duplicate Analysis

Sample Number (prefix: RI05-)	TPH Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
720	160; 170	7	4
710	170; 300	92	39
700	83; 51	23	34
1200	<40; <40	0	0
Average RSD	-	-	19

Table III-38: TPH Concentrations in Blank and Spiked QA/QC Water Samples

Sample	Units	TPH Concentrations (ppm)								
Blank	µg/mL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Control	µg/mL	3.8	3.8	3.4	18.0	18.0	18.8	20.0	4.5	4.2
Control Target	µg/mL	4.8	4.8	4.8	20.0	20.0	20.5	20.5	4.8	4.8

Table III-39: TPH Water Concentrations in Laboratory Duplicate Analysis

Sample Number (prefix: RI05-)	TPH Concentrations (ppm)	Standard Deviation	Relative Standard Deviation (RSD) (%)
W035	<1.0; <1.0	0	0
W033	<1.0; <1.0	0	0
W048	1.0; 1.1	0.07	7
W037	<1.0; <1.0	0	0
W044	<1.0; <1.0	0	0
W009	1.9; 2.1	0.14	7
W041	<1.0; <1.0	0	0
W040	<1.0; <1.0	0	0
Average RSD	-	-	2

Table III-40: Metal Water Concentrations in Laboratory Blank Determinations

Parameter	Units	Blank						
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cadmium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

Table III-41: Metal Water Concentrations in QC Control Samples

Parameter	Units	QC							QC Target
Arsenic	mg/L	1.18	1.32	1.23	1.22	1.17	1.30	1.25	1.20
Cadmium	mg/L	0.39	0.41	0.40	0.39	0.39	0.41	0.40	0.40
Chromium	mg/L	0.40	0.40	0.40	0.39	0.40	0.42	0.40	0.40
Cobalt	mg/L	2.13	2.21	2.20	2.15	2.18	2.27	2.25	2.20
Copper	mg/L	2.10	2.27	2.20	2.15	2.18	2.26	2.18	2.20
Lead	mg/L	2.12	2.31	2.33	2.19	2.37	2.21	2.21	2.20
Nickel	mg/L	2.10	2.22	2.21	2.21	2.26	2.16	2.24	2.20
Zinc	mg/L	1.19	1.29	1.27	1.22	1.24	1.30	1.25	1.20

Table III-42: Metal Water Concentrations in Laboratory Duplicate Analysis (ppb)

Parameter	RI05-W035		RI05-W005		RI05-W054	
Arsenic	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt	0.030	0.030	<0.003	<0.003	<0.003	<0.003
Copper	0.048	0.049	<0.005	<0.005	<0.005	0.018
Lead	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	0.142	0.138	0.018	0.018	<0.005	<0.005
Zinc	0.080	0.081	0.018	0.014	<0.010	<0.010

Table III-43: Metal Soil Concentrations in Blank and Reference Material (ppm)

Parameter	Blank					MESS-3					Target
As	<1.0	<1.0	<1.0	<1.0	<1.0	16.9	16.3	16.9	17.3	16.0	13.9-17.3
Cd	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-
Co	<5.0	<5.0	<5.0	<5.0	<5.0	12.6	12.1	12.9	13.0	11.8	10.7-13.7
Cr	<20	<20	<20	<20	<20	46	47	43	40	41	30.8-49.5
Cu	<3.0	<3.0	<3.0	<3.0	<3.0	31.2	33.6	33.9	35.2	29.2	29.8-37.4
Ni	<5.0	<5.0	<5.0	<5.0	<5.0	39.3	38.5	39.5	37.0	37.1	35.0-40.8
Pb	<10	<10	<10	<10	<10	17	17	19	19	18	16.6-20.5
Zn	<15	<15	<15	<15	<15	140	129	145	133	129	125-147

Table III-44: Metal Soil Concentrations in Laboratory Duplicate Analysis (ppm)

	RI05-220		RI05-230		RI05-040		RI05-035		RI05-337		RI05-1231	
Arsenic	-	-	-	-	1.5	1.1	1.1	1.2	2.0	1.3	<1.0	<1.0
Cadmium	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	-	-	-	-	42	32	45	46	55	44	38	44
Cobalt	-	-	-	-	6.9	5.4	17.0	18.0	21.1	16.4	22.6	23.7
Copper	65	44	150	260	70	56	82	85	103	83	73	76
Lead	239	238	183	162	<10	<10	14	15	54	16	12	13
Nickel	-	-	-	-	34	26	85	87	88	72	78	80
Zinc	215	232	297	285	43	31	164	170	92	73	206	216

Table III-45: Data for Barrel Blank and Quality Control Samples

	PCB	Chlorine
	ug/g	ug/g
Blank	<2.0; <2.0; <2.0	<100; <100; <100
Control	55; 55; 57; 54; 52; 54; 55	975; 997; 970; 965; 940; 975; 935
Control Target	50	970

Table III-46: Replicate Analysis Results for Barrel Contents

Sample	PCBs	Chlorine	Chromium	Lead	Cadmium
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
RI05-J002	<2.0; <2.0	4738; 4701	-	-	-
RI05-J021	-	-	<10; <10	160; 183	<2.0; <2.0
RI05-J022		<1000; <1000	-	-	-
RI05-J51	-	13000; 13000	-	-	-
RI05-J054	<2.0; <2.0	-	-	-	-
RI05-J055	<2.0; <2.0	-	-	-	-

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Client: DIAND

Method: Standard Methods

Report I.D. RI Lake Water ASU8412
Date Submitted: 18-July-05
Date Analysis Initiated: 18-July-05
Date Reported: 4-Aug- 05
Matrix: Water

Parameter	Units	RI05-W004	BLANK	QC	QC TARGET
Copper	mg/L	0.018	<0.005	2.17	2.20
Iron	mg/L	0.09	<0.05	14.9	16.0
Lead	mg/L	<0.005	<0.005	2.23	2.20
Manganese	mg/L	0.113	<0.05	2.23	2.20
Mercury	mg/L	<0.0001	<0.0001	0.0022	0.0020
Cadmium	mg/L	<0.001	<0.001	0.39	0.40
Nickel	mg/L	0.082	<0.005	2.16	2.20
Chromium	mg/L	<0.005	<0.005	0.40	0.40
Cobalt	mg/L	0.018	<0.005	2.16	2.20
Zinc	mg/L	0.044	<0.010	1.23	1.20
Phenols	ug/L	<1.0	<1.0	10.0	10.0
pH	-	4.64	-	7.00	7.00
TSS	mg/L	<4.0	<2.0	-	-
Nitrate	mg/L	<0.05	<0.05	5.21	5.00
Nitrite	mg/L	<0.05	<0.05	5.25	5.00
Oil and Grease	mg/L	<1.0	<1.0	14.9	15.6
BOD	mg/L	<3	<3	142	200
Faecal Coliforms	Cts/100 mL	0	0	-	-

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