

APPENDIX B

CHEMISTRY TABLES

TABLE E-1

PETROLEUM HYDROCARBONS IN SOIL
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Sample ID	Depth (mbg)	Date Sampled	BTEX Parameters (mg/kg)				Total Petroleum Hydrocarbons (mg/kg)					
			Benzene	Toluene	Ethyl-benzene	Xylenes	F1 ⁶	F2 ⁶	F3 ⁶		F3 ⁶	F4
							C ₆ -C ₁₀	>C ₁₀ -C ₁₆	>C ₁₆ -C ₂₁	>C ₂₁ -C ₃₂	>C ₁₆ -C ₃₄	>C ₃₄ -C ₅₀
CCME Tier 1 SQG/CWS for PHC in Surface/Sub-Surface Soil (residential guidelines, coarse-grained soil) ^{4,5}			0.03	0.37	0.082	11	30	150	300		300	2800
CCME Tier 2 SQG _{HH} for PHC in Surface Soil (residential, soil ingestion, coarse-grained soil) ⁶			110	22,000	10,000	150,000	-	-	-	-	-	-
CCME Tier 2 SQG _{HH} for PHC in Surface Soil (residential, direct soil contact, coarse-grained soil) ⁶			250	220,000	58,000	-	-	-	-	-	-	-
CCME Tier 2 SQG _{HH} for PHC in Surface Soil (residential, indoor air check - basement) ⁶			0.15	200	88	22	-	-	-	-	-	-
CCME Tier 2 SQG _{HH} for PHC in Surface Soil (residential, indoor air check - slab on grade) ⁶			0.095	120	55	14	-	-	-	-	-	-
CCME Tier 2 SQG _E for PHC in Surface Soil (residential, soil contact, coarse grained soil) ⁷			31	75	55	95	-	-	-	-	-	-
CCME Tier 1 SQG/CWS for PHC in Surface/Sub-Surface Soil (commercial guidelines, coarse-grained soil) ^{4,5}			0.03	0.37	0.082	11	320	260	1700		1700	3300
MW1-02-3	0-0.7	29-Nov-02	nd	nd	nd	nd	nd	nd		nd		
TP15-01-SA1	0-0.15	14-Dec-15	0.18	0.39	0.047	0.34	<10	<10	-	-	120	74
TP15-01-SA2	0.15-0.61	14-Dec-15	<0.020	<0.020	<0.020	<0.040	<10	<10	-	-	<50	<50
TP15-02-SA4	1.2-1.8	14-Dec-15	<0.020	<0.020	<0.020	<0.040	<10	<10	-	-	<50	<50
TP15-03-SA2	0.15-0.61	14-Dec-15	<0.020	<0.020	<0.020	<0.040	<10	<10	-	-	<50	<50
DUP 2: TP15-03 SA2 Field Dup	0.15-0.61	14-Dec-15	<0.020	<0.020	<0.020	<0.040	<10	<10	-	-	<50	<50
TP15-03-SA3	0.61-1.2	14-Dec-15	<0.040	<0.040	<0.040	<0.080	<20	<20	-	-	<100	<100
TP15-04-SA1	0-0.15	14-Dec-15	4.5	10	0.97	7.1	19	27	-	-	94	<50
TP15-05-SA2	0.15-0.61	14-Dec-15	<0.020	<0.020	<0.020	<0.040	<10	<10	-	-	<50	<50
TP15-06-SA1	0-0.15	14-Dec-15	0.069	0.17	0.027	0.20	<10	<10	-	-	<50	<50
TP15-06-SA4	1.2-1.8	14-Dec-15	<0.020	<0.020	<0.020	<0.040	<10	<10	-	-	<50	<50
TP15-07-SA2	0.15-0.61	14-Dec-15	<0.020	<0.020	<0.020	<0.040	<10	<10	-	-	<50	<50
TP16-02	0.6-1.2	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	<15	-	-
TP16-02	1.2-1.6	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	29	-	-
TP16-03	1.2-1.8	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	180	-	-
TP16-03	2.4-2.8	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	<15	-	-
TP16-04	1.2-1.8	15-Sep-16	0.56	1.2	0.095	0.99	5.7	<10	<10	<15	-	-
TP16-05	1.2-1.8	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	<15	-	-
TP16-05	1.8-2.4	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	<15	-	-
TP16-06	1.2-1.8	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	20	-	-
TP16-06	1.8-2.2	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	18	-	-
DUP#2: TP16-06 Field Dup	1.8-2.2	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	<15	-	-
TP16-07	1.8-2.0	15-Sep-16	<0.025	<0.025	<0.025	<0.050	<2.5	<10	<10	<15	-	-
	1.8-2.0	Lab-Dup	N/A	N/A	N/A	N/A	N/A	<10	<10	<15	-	-
TP6 SA2	0.6-1.2	14-Dec-16	<0.02	<0.02	<0.02	<0.04	<10	<10	-	-	<50	<50
TP7 SA2	0.9-1.5	14-Dec-16	<0.02	<0.02	<0.02	<0.04	<10	<10	-	-	<50	<50
TP8 SA3	1.2-1.5	14-Dec-16	<0.02	<0.02	<0.02	<0.04	<10	<10	-	-	<50	<50
MW17-01 SS1	(0.3-0.9)	24-Oct-17	0.0086	0.022	<0.010	<0.020	<10	<10	-	-	<50	<50
MW17-01 SS5	(2.4-3.0)	24-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
MW17-02 SS1	(1.8-2.4)	24-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
DUP 17-01: MW17-02 SS1 Field Dup	(1.8-2.4)	24-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
MW17-03 SS1	(0.3-0.9)	25-Oct-17	0.0067	0.025	<0.010	0.023	<10	<10	-	-	<50	<50
MW17-03 SS3	(1.5-1.8)	25-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
BH17-01 SS1	(0.3-0.9)	25-Oct-17	0.020	0.052	<0.010	0.031	<10	<10	-	-	<50	<50
BH17-03 SS1	(0.6-0.9)	25-Oct-17	8.3	16	1.4	13	65	14	-	-	75	<50
	(0.6-0.9)	Lab-Dup	8.5	16	1.4	13	64	-	-	-	-	-
DUP17-04: BH17-03-SS1 Field Dup	(0.6-0.9)	25-Oct-17	13	24	2.1	18	140	52	-	-	120	<50
BH17-03 SS2	(0.9-1.2)	25-Oct-17	7.6	17	1.2	10	40	67	-	-	160	<50
	(0.9-1.2)	Lab-Dup	7.5	13	1.2	10	40	N/A	-	-	N/A	N/A
BH17-04 SS3	(1.8-2.4)	27-Oct-17	0.019	0.045	<0.010	0.024	<10	<10	-	-	<50	<50
BH17-05 SS1	(0.6-0.9)	25-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
BH17-06 SS1	(0.6-0.9)	25-Oct-17	0.036	0.092	0.010	0.095	<10	<10	-	-	<50	<50
BH17-07 SS3	(1.2)	25-Oct-17	0.048	0.11	0.013	0.093	<10	<10	-	-	<50	<50
TP17-02-GS1	(0.3-0.6)	27-Oct-17	0.012	0.034	<0.010	0.021	<10	<10	-	-	<50	<50
TP17-03-GS1	(0.3-0.6)	27-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
TP17-04-GS1	(0.3-0.6)	27-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
	(0.3-0.6)	Lab-Dup	<0.0060	<0.020	<0.010	<0.020	<10	-	-	-	-	-
DUP17-06: TP17-04-GS1 Field Dup	(0.3-0.6)	27-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
TP17-05-GS1	(0.3-0.6)	27-Oct-17	0.0061	0.025	<0.010	<0.020	<10	<20	-	-	140	120
	(0.3-0.6)	Lab-Dup	-	-	-	-	-	-	-	-	-	370
	(0.3-0.6)	Lab-Dup	-	-	-	-	-	-	-	-	-	500
TP17-06-GS1	(0.3-0.6)	27-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
TP17-07-GS1	(0.3-0.6)	27-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
TP17-08-GS1	(0.3-0.6)	27-Oct-17	<0.0060	<0.020	<0.010	<0.020	<10	<10	-	-	<50	<50
TH18-01-GS1	(0-0.05)	13-Feb-18	<0.13	<0.13	<0.13	<0.25	<13	<500	1600	6100		
	(0-0.05)	Lab-Dup	<0.13	<0.13	<0.13	<0.25	<13	N/A	N/A	N/A		

Notes:

- mbg = metres below grade
- '-' = not analyzed or comparison of Tier 2 Guideline not required; N/A = not applicable
- Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory initiated QA/QC duplicate
- CCME Tier 1 CWS = Canadian Council of Ministers of the Environment Tier 1 Canada Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (2001, updated June 2012) for residential land use, coarse-grained, subsoil. (Used to evaluate F1-F4 parameters.)
- CCME SQGs = Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (residential, non-potable, coarse-grained soil). BTEX values based on 1×10^{-5} human health risk factor.
- CCME Tier 2 SQG_{HH} = Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for the Protection of Human Health in surface soil (on-line 2017). (residential, soil ingestion/direct soil contact/indoor air check basement/slab on grade, coarse-grained soil). BTEX values based on 1×10^{-5} human health risk factor.
- CCME Tier 2 SQG_E = Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for the Protection of Environmental Health in surface soil (on-line 2017). (residential, soil contact, coarse-grained soil). Eco soil contact values applicable only at depths of 0 - 1.5 mbg. Management limits are applicable at depths >3 mbg or at all depths if ecological pathway is removed. CCME does not specify for depths between 1.5 and 3 mbg.
- Samples collected in 2016 were analyzed using the Atlantic RBCA laboratory method (Atlantic RBCA (Risk-Based Corrective Action) Version 3 For Petroleum Impacted Sites in Atlantic Canada (July 2012; updated January 2015); however, this method enables direct comparison of site data to either Atlantic RBCA and/or the PHC CWS guidelines to promote harmonization and for the benefit of federal property managers.
- Surface soil = soil between 0 and 1.5 metres depth based on CCME guidance; subsurface soil guidelines not included in table as all deeper samples (>1.5 mbg) were below detection.
- <# = parameter concentration below laboratory's reportable detection limit
- Bold & Underlined** = parameter concentration exceeds the applicable Tier 1 residential standard
- Shaded** = parameter concentration exceeds the applicable Tier 1 commercial standard

TABLE E-2

POLYCYCLIC AROMATIC HYDROCARBONS IN SOIL
 Public Services and Procurement Canada
 Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
 Stantec Consulting Ltd. Project No. 121414846

Parameter	B(a)P PEF	Concentration (mg/kg)																			
		Guidelines			Lab-Dup				Field Dup												
		CCME Human Health Residential Guidelines (SQG _{HH}) ^{5,6}	CCME Environmental Health Residential Guidelines (SQG _E) ⁵	CCME Environmental Health Commercial Guidelines (SQG _C)	MW1-02-3	MW4-02-1	MW4-02-2	06TP-177	TP15-01-SA1	TP15-01-SA2	TP15-02-SA4	TP15-03-SA2	DUP 2: TP15-03-SA2	TP15-03-SA3	TP15-04-SA1	TP15-05-SA2	TP15-06-SA1	TP15-06-SA4	TP15-07-SA2		
Non-Carcinogenic PAHs						Lab-Dup				Field Dup											
1-Methylnaphthalene	-	-	-	-	-	-	-	-	-	0.19	0.17	<0.010	<0.010	<0.010	0.032	0.015	1.8	<0.010	0.12	<0.010	<0.010
2-Methylnaphthalene	-	-	-	-	-	-	-	-	-	0.25	0.26	<0.010	<0.010	<0.010	0.051	0.024	2.8	<0.010	0.18	<0.010	<0.010
Acenaphthene	-	-	-	-	0.02	0.02	0.01	0.09	0.11	0.013	<0.010	<0.010	0.014	0.089	<0.010	0.031	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphthylene	-	-	-	-	nd	nd	0.01	0.11	nd	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	-	-	2.5	32	0.04	0.04	0.01	0.29	0.26	0.062	<0.010	<0.010	0.02	0.13	0.01	0.065	<0.010	<0.010	<0.010	<0.010	<0.010
Fluoranthene	-	-	50	180	0.24	0.21	0.03	0.53	0.83	0.31	0.014	0.043	0.12	0.56	0.089	0.41	<0.010	0.17	<0.010	<0.010	<0.010
Fluorene	-	-	-	-	0.02	0.02	0.02	0.16	0.12	0.021	<0.010	<0.010	0.012	0.092	<0.010	<0.040	<0.010	<0.010	<0.010	<0.010	<0.010
Naphthalene	-	-	0.6 ⁸	22	0.15	0.17	0.46	11.20	0.20	0.19	<0.010	<0.010	<0.010	0.06	0.02	2.3	<0.010	0.13	<0.010	<0.010	<0.010
Perylene	-	-	-	-	-	-	-	-	0.07	0.056	<0.010	<0.010	<0.010	0.049	<0.010	0.038	<0.010	0.018	<0.010	<0.010	<0.010
Phenanthrene	-	-	5 ⁸	50	0.25	0.21	0.20	6.19	1.1	0.22	<0.010	0.03	0.12	0.77	0.07	0.87	<0.010	0.14	<0.010	<0.010	<0.010
Pyrene	-	-	10 ⁸	100	0.23	0.19	0.03	0.63	0.69	0.27	0.014	0.036	0.094	0.51	0.072	0.35	<0.010	0.14	<0.010	<0.010	<0.010
Carcinogenic PAHs																					
Benzo[a]anthracene	0.1	-	1 ⁸	10	0.11	0.11	0.02	0.44	0.37	0.16	<0.010	0.015	0.053	0.26	0.032	0.16	<0.010	0.074	<0.010	<0.010	<0.010
Benzo[a]pyrene	1	-	20	72	0.11	0.1	0.02	0.26	0.29	0.2	<0.010	0.018	0.038	0.22	0.023	0.1	<0.010	0.069	<0.010	<0.010	<0.010
Benzo[e]pyrene	-	-	-	-	0.08	0.08	0.01	0.29	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo[b]fluoranthene	0.1	-	1 ⁸	10	-	-	-	-	0.22	0.3	<0.010	0.02	0.043	0.17	0.051	0.13	<0.010	0.087	<0.010	<0.010	<0.010
Benzo[g,h,i]perylene	0.01	-	-	-	0.07	0.07	0.01	0.18	0.14	0.18	<0.010	0.015	0.019	0.099	0.018	0.056	<0.010	0.051	<0.010	<0.010	<0.010
Benzo[j]fluoranthene	0.1	-	-	-	-	-	-	-	-	0.15	<0.010	<0.010	0.02	0.11	0.027	0.069	<0.010	0.042	<0.010	<0.010	<0.010
Benzo[b+k]fluoranthene	0.1	-	1 ⁸	10	0.19	0.16	0.02	0.44	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo[k]fluoranthene	0.1	-	1 ⁸	10	-	-	-	-	0.22	0.13	<0.010	<0.010	0.025	0.11	0.026	0.062	<0.010	0.042	<0.010	<0.010	<0.010
Chrysene	0.01	-	-	-	0.13	0.13	0.04	0.54	0.38	0.25	<0.010	0.022	0.057	0.28	0.059	0.22	<0.010	0.097	<0.010	<0.010	<0.010
Dibenz[a,h]anthracene	1	-	1 ⁸	10	0.01	0.01	nd	0.06	nd	0.046	<0.010	<0.010	<0.010	0.034	<0.010	0.017	<0.010	0.015	<0.010	<0.010	<0.010
Indeno[1,2,3-c,d]pyrene	0.1	-	1 ⁸	10	0.07	0.07	0.01	0.11	0.19	0.15	<0.010	<0.010	0.018	0.096	0.022	0.044	<0.010	0.044	<0.010	<0.010	<0.010
B[a]P TPE ⁷	-	5.3	-	-	0.159	0.146	0.0276	0.4262	0.40	0.34	0.01	0.03	0.06	0.33	0.04	0.17	0.01	0.11	0.01	0.01	0.01
		Sample Depth:				0-0.7				0-0.6				0-0.6							
		Date Sampled:				2002				2002				31-Jul-04				14-Dec-15			

Notes:

1. RDL = laboratory's reportable detection limit
2. <# = parameter concentration below laboratory's reportable detection limit
3. "-" = no guideline available
4. Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory initiated QA/QC duplicate
5. Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health for residential land use (2010). As Per CCME recommendation, soil samples are compared against the SQG for the protection of human health and environmental health separately.
6. CCME Canadian Soil Quality Guideline for Protection of Human Health based on carcinogenic effects for PAHs with 10-5 incremental lifetime cancer risk (2010).
7. B[a]P PEF = Benzo(a)pyrene Potency Equivalent Factor; B[a]P TPE = Benzo(a)pyrene Total Potency Equivalent concentration. The B[a]P TPE is calculated by multiplying the concentration of each PAH in the sample by it B[a]P PEF and summing the products. If the concentration is less than the RDL, 1/2 RDL is used in the B[a]P TPE calculations.
8. CCME Interim or Provisional SQG (1991 and subsequent updates)
9. Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health. PAH Factsheet (2008, revised 2010). Table 2, commercial.
10. **Bold & Underlined** = parameter concentration exceeds the applicable residential guideline

TABLE E-2

POLYCYCLIC AROMATIC HYDROCARBONS IN SOIL
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Parameter	B(a)P PEF	Concentration (mg/kg)																				
		Guidelines			Field Dup																	
		CCME Human Health Residential Guidelines (SQG _{HH}) ^{5,6}	CCME Environmental Health Residential Guidelines (SQG _E) ⁵	CCME Environmental Health Commercial Guidelines (SQG _E)	TP16-02	TP16-02	TP16-03	TP16-03	TP16-04	TP16-05	TP16-05	TP16-06	TP16-06	DUP#2: TP16-06	TP16-07	TP6 SA1	TP6 SA2	TP7 SA1	TP7 SA2	TP8 SA1	TP8 SA3	
Non-Carcinogenic PAHs																						
1-Methylnaphthalene	-	-	-	-	<0.010	<0.010	<0.010	<0.010	0.13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.019	<0.010	<0.010	<0.010	<0.010	<0.010	
2-Methylnaphthalene	-	-	-	-	<0.010	<0.010	<0.010	<0.010	0.18	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.018	<0.010	<0.010	<0.010	<0.010	<0.010	
Acenaphthene	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.026	<0.010	<0.010	<0.010	<0.010	<0.010	
Acenaphthylene	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.12	<0.010	<0.010	<0.010	<0.010	<0.010	
Anthracene	-	-	2.5	32	<0.010	<0.010	0.091	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.1	<0.010	<0.010	<0.010	<0.010	<0.010	
Fluoranthene	-	-	50	180	0.028	0.04	0.68	<0.010	0.045	<0.010	<0.010	0.039	<0.010	0.02	0.011	0.99	0.05	0.016	<0.010	0.038	<0.010	
Fluorene	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.047	<0.010	<0.010	<0.010	<0.010	<0.010	
Naphthalene	-	-	0.6 ⁸	22	<0.010	<0.010	<0.010	<0.010	0.16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.035	<0.010	<0.010	<0.010	<0.010	<0.010	
Perylene	-	-	-	-	<0.010	<0.010	0.5	<0.010	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.1	<0.010	<0.010	<0.010	<0.010	<0.010	
Phenanthrene	-	-	5 ⁸	50	0.014	0.024	0.26	<0.010	0.072	<0.010	<0.010	0.025	<0.010	0.013	<0.010	0.67	0.021	0.015	<0.010	0.034	<0.010	
Pyrene	-	-	10 ⁸	100	0.027	0.036	0.54	<0.010	0.052	<0.010	<0.010	0.035	<0.010	0.017	<0.010	0.76	0.044	0.015	<0.010	0.03	<0.010	
Carcinogenic PAHs																						
Benzo[a]anthracene	0.1	-	1 ⁸	10	0.015	0.019	0.24	<0.010	0.028	<0.010	<0.010	0.016	<0.010	<0.010	<0.010	0.34	0.025	<0.010	<0.010	0.014	<0.010	
Benzo[a]pyrene	1	-	20	72	0.014	0.016	0.11	<0.010	0.042	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	0.39	0.026	<0.010	<0.010	0.016	<0.010	
Benzo[e]pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	
Benzo[b]fluoranthene	0.1	-	1 ⁸	10	0.017	0.02	0.098	<0.010	0.05	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.43	0.03	<0.010	<0.010	0.015	<0.010	
Benzo[g,h,i]perylene	0.01	-	-	-	0.013	0.015	0.044	<0.010	0.04	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.31	0.02	<0.010	<0.010	<0.010	<0.010	
Benzo[j]fluoranthene	0.1	-	-	-	<0.010	<0.010	0.069	<0.010	0.029	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.23	0.016	<0.010	<0.010	<0.010	<0.010	
Benzo[b+k]fluoranthene	0.1	-	1 ⁸	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Benzo[k]fluoranthene	0.1	-	1 ⁸	10	<0.010	<0.010	0.062	<0.010	0.024	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.22	0.016	<0.010	<0.010	<0.010	<0.010	
Chrysene	0.01	-	-	-	0.017	0.024	0.24	<0.010	0.068	<0.010	<0.010	0.019	<0.010	<0.010	<0.010	0.46	0.027	<0.010	<0.010	0.02	<0.010	
Dibenz[a,h]anthracene	1	-	1 ⁸	10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.077	<0.010	<0.010	<0.010	<0.010	<0.010	
Indeno[1,2,3-c,d]pyrene	0.1	-	1 ⁸	10	0.01	<0.010	0.044	<0.010	0.028	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.28	0.019	<0.010	<0.010	<0.010	<0.010	
B[a]P TPE ⁷	-	5.3	-	-	0.025	0.027	0.169	0.01	0.064	0.01	0.01	0.021	0.013	0.013	0.01	0.625	0.042	0.01	0.01	0.026	0.013	
Sample Depth:					0.6-1.2	1.2-1.8	1.2-1.8	2.4-2.8	1.2-1.8	1.2-1.8	1.8-2.4	1.2-1.8	1.8-2.2		1.8-2.0	0.3-0.6	0.6-1.2	0.3-0.9	0.9-1.5	0.15-0.3	1.2-1.5	
Date Sampled:					15-Sep-16	15-Sep-16	15-Sep-16	14-Dec-16	14-Dec-16	14-Dec-16	14-Dec-16	14-Dec-16	14-Dec-16									

Notes:

1. RDL = laboratory's reportable detection limit
2. <# = parameter concentration below laboratory's reportable detection limit
3. "-" = no guideline available
4. Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory initiated QA/QC duplicate
5. Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health for residential land use (2010). As Per CCME recommendation, soil samples are compared against the SQG for the protection of human health and environmental health separately.
6. CCME Canadian Soil Quality Guideline for Protection of Human Health based on carcinogenic effects for PAHs with 10-5 incremental lifetime cancer risk (2010).
7. B[a]P PEF = Benzo(a)pyrene Potency Equivalent Factor; B[a]P TPE = Benzo(a)pyrene Total Potency Equivalent concentration. The B[a]P TPE is calculated by multiplying the concentration of each PAH in the sample by it B[a]P PEF and summing the products. If the concentration is less than the RDL, 1/2 RDL is used in the B[a]P TPE calculations.
8. CCME Interim or Provisional SQG (1991 and subsequent updates)
9. Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health. PAH Factsheet (2008, revised 2010). Table 2, commercial.
10. **Bold & Underlined** = parameter concentration exceeds the applicable residential guideline

TABLE E-2

POLYCYCLIC AROMATIC HYDROCARBONS IN SOIL
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Parameter	B(a)P PEF	Concentration (mg/kg)																					
		Guidelines			Field Dup																	Lab-Dup	
		CCME Human Health Residential Guidelines (SQG _{HH}) ^{5,6}	CCME Environmental Health Residential Guidelines (SQG _E) ⁵	CCME Environmental Health Commercial Guidelines (SQG _E)	MW17-01 SS1	MW17-02 SS1	DUP 17-01 MW17-02 SS1	MW17-03 SS1	BH17-02-SS1	BH17-04 SS1	BH17-04 SS3	TP17-02 -GS1	TP17-03 -GS1	TP17-04 -GS1	DUP17-06 TP17-04 -GS1	TP17-05 -GS1	TP17-06 -GS1	TP17-07 -GS1	TP17-08 -GS1	TH18-01-GS1			
Non-Carcinogenic PAHs		Field Dup																	Lab-Dup				
1-Methylnaphthalene	-	-	-	-	0.035	<0.010	<0.010	0.022	0.034	<0.010	<0.010	0.026	<0.010	<0.010	<0.010	0.023	<0.010	<0.010	<0.010	0.13			
2-Methylnaphthalene	-	-	-	-	0.054	<0.010	<0.010	0.026	0.033	0.016	0.012	0.032	<0.010	<0.010	<0.010	0.022	<0.010	<0.010	<0.010	0.10			
Acenaphthene	-	-	-	-	0.056	<0.010	<0.010	<0.010	0.058	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.030	<0.010	<0.010	<0.010	0.17			
Acenaphthylene	-	-	-	-	<0.010	<0.010	<0.010	<0.010	0.040	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.078	<0.010	<0.010	<0.010	<0.050			
Anthracene	-	-	2.5	32	0.10	<0.010	<0.010	<0.010	0.16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.11	<0.010	<0.010	<0.010	0.14			
Fluoranthene	-	-	50	180	0.40	<0.010	<0.010	0.064	0.79	0.030	0.026	0.037	<0.010	<0.010	0.015	0.86	<0.010	0.036	0.044	<0.010	0.47		
Fluorene	-	-	-	-	0.044	<0.010	<0.010	<0.010	0.090	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.046	<0.010	<0.010	<0.010	0.22			
Naphthalene	-	-	0.6 ⁸	22	0.079	<0.010	<0.010	0.016	0.033	0.011	<0.010	0.025	<0.010	<0.010	<0.010	0.027	<0.010	<0.010	<0.010	<0.050			
Perylene	-	-	-	-	0.035	<0.010	<0.010	<0.010	0.064	0.017	0.013	<0.010	<0.010	<0.010	<0.010	0.065	<0.010	<0.010	<0.010	0.35			
Phenanthrene	-	-	5 ⁸	50	0.38	<0.010	<0.010	0.067	0.67	0.011	0.014	0.035	<0.010	<0.010	0.017	0.51	<0.010	0.017	0.033	<0.010	0.59		
Pyrene	-	-	10 ⁸	100	0.32	<0.010	<0.010	0.054	0.59	0.035	0.028	0.034	<0.010	<0.010	<0.010	0.70	<0.010	0.029	0.035	<0.010	0.62		
Carcinogenic PAHs		Field Dup																	Lab-Dup				
Benzo[a]anthracene	0.1	-	1 ⁸	10	0.16	<0.010	<0.010	0.028	0.34	0.023	0.019	0.019	<0.010	<0.010	<0.010	0.38	<0.010	0.015	0.021	<0.010	0.32		
Benzo[a]pyrene	1	-	20	72	0.14	<0.010	<0.010	0.028	0.26	0.054	0.052	<0.010	<0.010	<0.010	<0.010	0.39	<0.010	0.017	<0.010	<0.010	0.42		
Benzo[e]pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Benzo[b]fluoranthene	0.1	-	1 ⁸	10	0.12	<0.010	<0.010	0.027	0.28	0.056	0.060	0.021	<0.010	<0.010	<0.010	0.37	<0.010	0.019	0.021	<0.010	0.76		
Benzo[g,h,i]perylene	0.01	-	-	-	0.095	<0.010	<0.010	0.017	0.21	0.051	0.050	<0.010	<0.010	<0.010	<0.010	0.22	<0.010	0.013	0.014	<0.010	1.1		
Benzo[j]fluoranthene	0.1	-	-	-	0.067	<0.010	<0.010	0.014	0.15	0.034	0.035	<0.010	<0.010	<0.010	<0.010	0.21	<0.010	<0.010	0.012	<0.010	0.17		
Benzo[b+k]fluoranthene	0.1	-	1 ⁸	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Benzo[k]fluoranthene	0.1	-	1 ⁸	10	0.065	<0.010	<0.010	0.013	0.14	0.027	0.028	<0.010	<0.010	<0.010	<0.010	0.20	<0.010	<0.010	<0.010	<0.010	0.15		
Chrysene	0.01	-	-	-	0.18	<0.010	<0.010	0.038	0.38	0.047	0.047	0.025	<0.010	<0.010	<0.010	0.46	<0.010	0.021	0.023	<0.010	1.6		
Dibenz[a,h]anthracene	1	-	1 ⁸	10	0.021	<0.010	<0.010	<0.010	0.049	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	0.083	<0.010	<0.010	<0.010	<0.010	0.21		
Indeno[1,2,3-c,d]pyrene	0.1	-	1 ⁸	10	0.075	<0.010	<0.010	0.015	0.19	0.041	0.038	<0.010	<0.010	<0.010	<0.010	0.22	<0.010	<0.010	0.012	<0.010	0.24		
B[a]P TPE ⁷	-	5.3	-	-	0.212	0.013	0.013	0.043	0.425	0.084	0.076	0.0158	0.013	0.013	0.013	0.618	0.013	0.027	0.017	0.013	0.821		
Sample Depth:					(0.3-0.9)	(1.8-2.4)	(1.8-2.4)	(0.3-0.9)	(0.3-0.9)	(0.6-0.9)	(1.8-2.4)	(0.3-0.6)	(0.3-0.6)	(0.3-0.6)	(0.3-0.6)	(0.3-0.6)	(0.3-0.6)	(0.3-0.6)	(0.3-0.6)	(0.3-0.6)	(0-0.05)		
Date Sampled:					24-Oct-17	24-Oct-17	24-Oct-17	25-Oct-17	24-Oct-17	24-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	13-Feb-18		

Notes:

1. RDL = laboratory's reportable detection limit
2. <# = parameter concentration below laboratory's reportable detection limit
3. "-" = no guideline available
4. Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory initiated QA/QC duplicate
5. Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health for residential land use (2010). As Per CCME recommendation, soil samples are compared against the SQG for the protection of human health and environmental health separately.
6. CCME Canadian Soil Quality Guideline for Protection of Human Health based on carcinogenic effects for PAHs with 10-5 incremental lifetime cancer risk (2010).
7. B[a]P PEF = Benzo(a)pyrene Potency Equivalent Factor; B[a]P TPE = Benzo(a)pyrene Total Potency Equivalent concentration. The B[a]P TPE is calculated by multiplying the concentration of each PAH in the sample by it B[a]P PEF and summing the products. If the concentration is less than the RDL, 1/2 RDL is used in the B[a]P TPE calculations.
8. CCME Interim or Provisional SQG (1991 and subsequent updates)
9. Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health. PAH Factsheet (2008, revised 2010). Table 2, commercial.
10. **Bold & Underlined** = parameter concentration exceeds the applicable residential guideline

TABLE E-3 METALS IN SOIL

Public Services and Procurement Canada
 Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
 Stantec Consulting Ltd. Project No. 121414846

Parameters	CCME Residential Guidelines (mg/kg) SQG _{HH}	CCME Residential Guidelines (mg/kg) SQG _E	CCME Commercial Guidelines (mg/kg)	Sample ID & Depth																				
				MW1-02-03 (0-0.7)	MW4-02-1 (0-0.6)	MW4-02-2 (0-0.6)	TP15-01-SA1 (0-0.15)	TP15-01-SA2 (0.15-0.61)	TP15-02-SA4 (1.2-1.8)	TP15-03-SA2 (0.15-0.61)	DUP 2: TP15-03-SA2 (0.15-0.61)	TP15-03-SA3 (0.61-1.2)	TP15-04-SA1 (0-0.15)	TP15-05-SA2 (0.15-0.61)	TP15-06-SA1 (0-0.15)	TP15-06-SA4 (1.2-1.8)	TP15-07-SA2 (0.15-0.61)	TP6 SA1 (0.3-0.6)	TP6 SA2 (0.6-1.2)	TP7 SA1 (0.3-0.9)	TP7 SA2 (0.9-1.5)	TP8 SA1 (0.15-0.3)	TP8 SA3 (1.2-1.5)	
				Date Sampled:	2002	2002	2002	14-Dec-15	14-Dec-15	14-Dec-15	14-Dec-15	Field Dup	14-Dec-15	14-Dec-15	14-Dec-15	14-Dec-15	14-Dec-15	14-Dec-15	14-Dec-15	14-Dec-16	Lab-Dup	14-Dec-16	14-Dec-16	14-Dec-16
Aluminum	-	-	-	14600	12100	10600	10000	14000	12000	21000	19000	5500	7400	19000	14000	10000	12000	17000	18000	14000	15000	10000	13000	14000
Antimony	20	20	40	<0.1	nd	0.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	12	17	12	<u>22</u>	10	485	15	32	15	13	12	6	49	9.5	16	19	14	8.5	11	13	13	14	18	12
Barium	500	-	2000	36	100	57	25	26	19	47	48	37	76	57	47	13	18	47	42	33	12	17	21	16
Beryllium	4	4	8	0.3	0.5	0.4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Bismuth	-	-	-	<1	nd	nd	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	-	-	-	<1	4	2	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	14	10	22	0.2	nd	0.1	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Calcium	-	-	-	1810	1010	2420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	220	64	87	22	18	17	18	21	17	25	24	7.1	12	23	23	15	18	16	16	18	17	13	17	19
Cobalt	50	50	300	9.3	9.6	8.3	7.7	13	6.1	9.8	9.0	2.1	5.9	7.3	8.1	9.4	13	5.1	5.8	11	2.9	7.5	2.9	11
Copper	1100	63	91	24	19	42	24	33	14	16	14	10	41	16	22	21	23	14	14	17	7.3	17	12	21
Iron	-	-	-	26100	25100	30900	21000	38000	18000	28000	26000	7900	54000	25000	24000	18000	20000	21000	23000	22000	23000	18000	33000	22000
Lead	140	300	260	44.2	11.3	123	54	25	16	19	17	42	58	15	55	15	25	49	48	19	16	12	37	17
Lithium	-	-	-	21.0	23	18.1	22	28	16	27	26	4.6	10	22	19	16	19	16	17	21	14	17	10	23
Magnesium	-	-	-	4900	4160	3800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	484	702	419	450	710	290	640	580	110	410	350	560	380	420	170	170	620	130	380	130	500
Mercury	6.6	12	24	-	-	-	0.14	<0.10	<0.10	0.11	0.13	0.13	0.12	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.1	<0.10	<0.10	0.11	<0.10
Molybdenum	10	10	40	0.8	0.8	3.6	<2.0	2	<2.0	<2.0	<2.0	<2.0	8.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	200	45	89	20	21	22	21	25	15	20	19	6.2	16	20	21	18	22	13	13	20	9.8	17	14	22
Phosphorus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	-	-	-	1000	1750	1210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rubidium	-	-	-	11.2	13.5	10.2	8.8	11	8.4	18	18	4.6	4.2	9.6	14	8.4	15	7.6	8	9.3	5.1	6.3	8.2	10
Selenium	80	1	2.9	<u>2</u>	nd	<u>2</u>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<u>1.6</u>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<u>1.3</u>	<1.0
Silicon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	20	20	40	<0.1	nd	nd	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Sodium	-	-	-	160	140	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium	-	-	-	10	13	17	16	11	9.4	<5.0	<5.0	<5.0	29	6.9	11	7.2	6.7	<5.0	<5.0	5.2	<5.0	5.8	<5.0	6.9
Sulphur	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium	-	-	-	0.2	0.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	1	1.4	1	0.1	0.2	0.5	<0.10	0.13	<0.10	0.16	0.15	<0.10	0.18	0.10	0.14	<0.10	0.14	<0.10	<0.10	0.1	<0.10	<0.10	0.12	<0.10
Tin	50	50	300	<0.1	nd	nd	2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	23	500	33	0.8	0.7	0.7	0.71	1.3	0.54	0.80	0.75	0.24	0.43	0.61	0.78	0.53	0.52	0.54	0.57	0.73	0.53	0.54	0.64	0.64
Vanadium	-	130	130	25	21	30	35	21	16	34	32	13	24	20	48	13	15	29	30	21	28	13	90	15
Zinc	-	200	360	77	84	64	380	52	38	61	55	16	23	46	77	40	50	66	63	60	26	38	38	49

- Notes:
- <# or nd = parameter concentration below laboratory's reportable detection limit
 - mbg = metres below grade
 - '-' = no guideline available
 - CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (on-line 2017); Residential and Commercial land use guidelines*
 - Bold** = parameter concentration exceeds the referenced human health guideline
 - Underlined = parameter concentration exceeds the referenced environmental health guideline
 - Shaded = parameter concentration exceeds the referenced commercial guidelines
 - Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory initiated QA/QC duplicate
 - <100 = RDL exceeds guidelines

TABLE E-3 METALS IN SOIL

Public Services and Procurement Canada
 Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
 Stantec Consulting Ltd. Project No. 121414846

Parameters	CCME Residential Guidelines (mg/kg) SQG ^{HH}	CCME Residential Guidelines (mg/kg) SQG _E	CCME Commercial Guidelines (mg/kg)	Sample ID & Depth																		
				MW17-01 SS1 (0.3-0.9)	MW17-02 SS1 (1.8-2.4)	DUP 17-01 MW17-02 SS1 (1.8-2.4)	MW17-03 SS1 (0.3-0.9)	BH17-02-SS1 (0.3-0.9)	BH17-04 SS1 (0.6-0.9)		BH17-04 SS3 (1.8-2.4)	BH17-07 SS2 (0.8-0.9)	TP17-02-GS1 (0.3-0.6)	TP17-03-GS1 (0.3-0.6)	TP17-04-GS1 (0.3-0.6)	TP17-04-GS2 (0.9-1.0)	DUP17-06 TP17-04 GS1 (0.3-0.6)	TP17-05-GS1 (0.3-0.6)	TP17-06-GS1 (0.3-0.6)	TP17-07-GS1 (0.3-0.6)	TP17-08-GS1 (0.3-0.6)	TH18-01-GS1 (0-0.05)
				Date Sampled:	24-Oct-17	24-Oct-17	Field Dup	25-Oct-17	24-Oct-17	24-Oct-17	Lab-Dup	27-Oct-17	25-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	26-Oct-17	Field Dup	27-Oct-17	27-Oct-17	27-Oct-17
Aluminum	-	-	-	13000	13000	13000	11000	13000	9400	9100	9900	13000	15000	11000	12000	9800	12000	15000	19000	19000	14000	2480
Antimony	20	20	40	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2
Arsenic	12	17	12	24	15	15	9.4	14	25	25	23	14	17	12	13	14	13	9.4	9.1	12	14	-
Barium	500	-	2000	22	87	70	25	42	19	18	17	34	26	8.6	25	18	32	41	11	20	13	8
Beryllium	4	4	8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	0.1
Bismuth	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1
Boron	-	-	-	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	9
Cadmium	14	10	22	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.33	<0.30	0.52	0.30	<0.30	<0.30	<0.30	1.0
Calcium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29200
Chromium	220	64	87	17	22	22	12	18	16	16	13	21	18	15	15	14	15	9.2	17	20	16	10
Cobalt	50	50	300	7.9	12	12	3.5	7.5	8.1	7.8	8.9	8.6	4.5	12	8.1	7.8	7.7	2.1	1.8	6.5	4.4	<10
Copper	1100	63	91	19	21	22	10	24	18	17	18	20	14	27	20	15	21	52	5.8	29	15	20
Iron	-	-	-	21000	27000	27000	15000	21000	18000	18000	21000	24000	20000	20000	19000	17000	20000	9500	26000	22000	19000	5830
Lead	140	300	260	28	18	22	28	48	16	17	17	34	49	18	32	16	36	270	14	37	15	61
Lithium	-	-	-	18	24	23	10	17	16	15	17	18	17	17	19	18	19	4.9	26	23	16	3
Magnesium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1220
Manganese	-	-	-	340	740	740	150	360	430	400	440	420	230	460	360	350	350	43	93	280	190	48.0
Mercury	6.6	12	24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.25	<0.10	<0.10	<0.10	<0.10	0.19	<0.10	<0.10	<0.10	-
Molybdenum	10	10	40	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3.1
Nickel	200	45	89	19	24	23	12	18	18	17	18	19	13	24	18	16	18	11	5.0	21	15	11
Phosphorus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250
Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	411
Rubidium	-	-	-	7.8	13	11	5.8	6.8	7.5	7.9	7.0	11	7.3	4.6	8.5	8.2	8.7	5.6	6.3	6.6	5.6	-
Selenium	80	1	2.9	<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	1.5	<1.0	<1.0	<1.0	-
Silicon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	280
Silver	20	20	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1
Sodium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2170
Strontium	-	-	-	9.1	12	9.0	<5.0	8.1	8.0	8.3	8.2	10	7.1	5.5	9.7	7.5	12	<5.0	<5.0	<5.0	<5.0	88
Sulphur	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3580
Tellurium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	1	1.4	1	<0.10	0.11	0.10	<0.10	<0.10	0.11	<0.10	0.11	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	-
Tin	50	50	300	<2.0	<2.0	<2.0	<2.0	2.4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	20	<2.0	<2.0	<2.0	<4
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103
Uranium	23	500	33	0.65	0.69	0.81	0.50	0.65	0.50	0.50	0.50	0.61	0.53	0.51	0.52	0.49	0.55	1.0	0.57	0.82	0.56	<100
Vanadium	-	130	130	20	25	26	20	18	13	12	13	25	21	9.8	18	13	20	28	26	18	21	40
Zinc	-	200	360	55	71	68	21	70	40	40	41	49	48	73	160	94	200	41	26	68	35	144

- Notes:**
- <# or nd = parameter concentration below laboratory's reportable detection limit
 - mbg = metres below grade
 - '-' = no guideline available
 - 'CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (1999; last updated 2012); Residential and Commercial land use guidelines*
 - Bold** = parameter concentration exceeds the referenced human health guideline
 - Underlined = parameter concentration exceeds the referenced environmental health guideline
 - Shaded** = parameter concentration exceeds the referenced commercial guidelines
 - Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory initiated QA/QC duplicate
 - <100 = RDL exceeds guidelines

TABLE E-5

POLYCHLORINATED BYPHENYLS IN SOIL

Public Services and Procurement Canada

Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS

Stantec Consulting Ltd. Project No. 121414846

Parameter	CCME Residential Guidelines (mg/kg)	CCME Commercial Guidelines (mg/kg)	Sample ID & Depth									
			BH17-02 -SS1 (0.3-0.9)	TH17-08 -GS1 (0.3-0.6)	TH17-09 -GS1 (0.3-0.6)	TH17-10 -GS1 (0.3-0.6)	TH17-11 -GS1 (0.3-0.6)	DUP17-08	TH17-12 -GS1 (0.3-0.6)	TH18-01-GS1 (0-0.05)		
Date sampled:			24-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	27-Oct-17	13-Feb-18	Lab-Dup
Aroclor 1016	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Aroclor 1221	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Aroclor 1232	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Aroclor 1248	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Aroclor 1242	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Aroclor 1254	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Aroclor 1260	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total PCB	1.3	33	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	N/A

Notes:

1. <# = parameter concentration below laboratory's reportable detection limit
2. "-" = no guideline available; N/A = not applicable
3. CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (on-line 2017); Commercial and Residential land use

TABLE E-6

INORGANICS IN SOIL
 Public Services and Procurement Canada
 Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
 Stantec Consulting Ltd. Project No. 121414846

Parameter	UNITS	RDL	CCME Commercial Guidelines	Sample ID & Depth													
				MW17-01 SS1 (0.3-0.9)	MW17-01 SS5 (2.4-3.0)	MW17-02 SS1 (1.8-2.4)	DUP 17-01 MW17-02 SS1	MW17-03 SS1 (0.3-0.9)	MW17-03 SS3 (1.5-1.8)		BH17-01 SS1 (0.3-0.9)		BH17-04 SS1 (0.6-0.9)	BH17-06 SS1 (0.6-0.9)		TP17-03-GS1 (0.3-0.6)	
Sampling Date				24-Oct-17	24-Oct-17	24-Oct-17	Field Dup	25-Oct-17	25-Oct-17	Lab-Dup	25-Oct-17	Lab-Dup	24-Oct-17	25-Oct-17	Lab-Dup	27-Oct-17	Lab-Dup
Fraction of Organic Carbon	g/g	0.00050	-	0.014	0.0061	<0.00050	<0.00050	0.040	0.0017	N/A	0.0075	N/A	N/A	0.018	N/A	0.0024	N/A
Moisture	%	1.0	-					17	N/A	N/A	N/A	N/A	6.3	N/A	N/A	5.5	4.8
Total Organic Carbon	mg/kg	500	-	14000	6100	<500	<500	40000	1700	1500	7500	7000	N/A	18000	16000	2400	2600

Notes:

- <# = parameter concentration below laboratory's reportable detection limit
- "-" = no guideline available; not applicable
- CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* - No guideline available
- Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory initiated QA/QC duplicate

TABLE E-7 PETROLEUM HYDROCARBONS IN GROUNDWATER
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Sample ID	Date Sampled	Groundwater Elevation ¹	BTEX Parameters (µg/L)						Total Petroleum Hydrocarbons (µg/L)				
			Benzene	Toluene	Ethyl-Benzene	o-Xylene	p+m-Xylene	Xylenes	F1		F2	F3	F4
									C ₆ -C ₁₀	C ₆ -C ₁₀ - BTEX	>C ₁₀ -C ₁₆	>C ₁₆ -C ₃₄	>C ₃₄ -C ₅₀
CCME Water Quality Guidelines (protection of aquatic life (marine))			110	215	25								
FIGQG (Eco)⁵ - Marine Life			200	8900	11000	-	-	-	-	-	-	-	-
FIGQG (Eco)⁵ - Soil Organisms Direct Contact			61000	59000	20000	-	-	31000	7100	-	1800	-	-
FIGQG (Human Health)⁶ - Inhalation			140	74000	16000	-	-	3900	810	-	1500	-	-
MW1-02-03	2002		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26-Oct-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	10-Nov-17	95.63	<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW15-01 DUP #1 (MW15-01)	12-Sep-16	95.83	<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	Field Dup		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW15-01 MWDUP-01(MW15-01)	Lab-Dup	96.22	<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	N/A	N/A	N/A
	26-Oct-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW15-01 DUP1(MW15-01)	Field Dup	95.39	<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	9-Nov-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW15-02	Lab-Dup	95.78	<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	N/A	N/A	N/A
	Field Dup		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	12-Sep-16		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW15-03	26-Oct-17	95.36	<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	Lab-Dup		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	N/A	N/A	N/A
	10-Nov-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW15-04	12-Sep-16	95.35	<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	26-Oct-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	10-Nov-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW17-01	26-Oct-17	95.86	<0.20	0.55	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	9-Nov-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW17-02	26-Oct-17	95.93	<0.20	0.38	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	9-Nov-17		<0.20	0.29	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
MW17-03	26-Oct-17	96.21	<0.20	0.23	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200
	9-Nov-17		<0.20	<0.20	<0.20	<0.20	<0.40	<0.40	<25	<25	<100	<200	<200

Notes:

- Elevations are referenced to an assumed benchmark of 100.00 m (fire hydrant located near the Site gate).
- "-" = no standard available; N/A = not applicable
- Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory QA/QC duplicate
- CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life (Marine)* (on-line 2017)
- FIGQG = Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (2012); Tier 2 pathway specific criteria for Direct Contact with Soil Organisms and for the Protection of Marine Aquatic Life, residential land use, coarse grained soil
- FIGQG = Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (2012); Tier 2 pathway specific criteria for vapour intrusion/indoor inhalation by humans, residential land use, coarse grained soil
- <# = parameter concentration below laboratory's reportable detection limit

TABLE E-8

POLYCYCLIC AROMATIC HYDROCARBONS IN GROUNDWATER
 Public Services and Procurement Canada
 Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
 Stantec Consulting Ltd. Project No. 121414846

Parameter	RDL	CCME Water Quality Guidelines (protection of aquatic life (marine)) (µg/L)	Tier 2 FIGQG Residential Guidelines - Inhalation (Coarse Grained) (µg/L)	Tier 2 FIGQG Residential Guidelines - Marine Life (Coarse Grained) (µg/L)	Tier 2 FIGQG Residential Guidelines Soil Organisms Direct Contact (Coarse Grained) (µg/L)	Sample ID															
						MW1-02-03			MW4-02-1	MW4-02-2	MW15-01					MW15-02					
						Date Sampled:	2002	26-Oct-17	10-Nov-17	2002	2002	15-Dec-15	13-Sep-16	DUP #1 Field Dup	26-Oct-17	MW DUP-01 Field Dup	9-Nov-17	DUP1 Field Dup	15-Dec-15	13-Sep-16	26-Oct-17
Non-Carcinogenic PAHs																					
1-Methylnaphthalene	0.05	-	6200	-	-	-	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.058	<0.050	<0.050
2-Methylnaphthalene	0.05	-	6200	-	-	-	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.058	<0.050	<0.050
Acenaphthene	0.01	-	-	-	-	nd	<0.010	<0.010	nd	nd	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.012	<0.010	<0.010
Acenaphthylene	0.01	-	-	-	-	nd	<0.010	<0.010	nd	nd	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.012	<0.010	<0.010
Anthracene	0.01	-	-	-	25	nd	<0.010	<0.010	nd	nd	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.044	<0.012	<0.010	<0.010
Fluoranthene	0.01	-	-	-	240	nd	<0.010	<0.010	0.01	nd	0.055	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.15	<0.012	0.016	<0.010
Fluorene	0.01	-	-	12	-	nd	<0.010	<0.010	nd	nd	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.012	<0.010	<0.010
Naphthalene	0.2	1.4	600	1.4	-	0.01	<0.20	<0.20	0.02	nd	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.23	<0.20	<0.20
Perylene	0.01	-	-	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.028	<0.012	<0.010	<0.010
Phenanthrene	0.01	-	-	-	-	0.02	<0.010	<0.010	0.02	0.01	0.036	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.084	<0.012	0.017	<0.010
Pyrene	0.01	-	-	-	-	nd	<0.010	<0.010	0.01	nd	0.043	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.16	<0.012	0.018	<0.010
Carcinogenic PAHs																					
Benzo[a]anthracene	0.01	-	-	-	-	nd	<0.010	<0.010	nd	nd	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.065	<0.012	0.012	<0.010
Benzo[a]pyrene	0.01	-	-	0.010	1.8	nd	<0.010	<0.010	nd	nd	0.032	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.1	<0.017	0.018	<0.010
Benzo[e]pyrene	-	-	-	-	-	nd	-	-	nd	0.01	-	-	-	-	-	-	-	-	-	-	-
Benzo[b]fluoranthene	0.01	-	-	-	-	-	<0.010	<0.010	-	-	0.025	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.13	<0.018	0.021	0.014
Benzo[g,h,i]perylene	0.01	-	-	-	-	nd	<0.010	<0.010	nd	nd	0.021	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.091	0.016	0.014	0.011
Benzo[b+k]fluoranthene	0.01	-	-	-	-	nd	-	-	nd	0.01	-	-	-	-	-	-	-	-	-	-	-
Benzo[j]fluoranthene	0.01	-	-	-	-	-	<0.010	<0.010	-	-	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.066	<0.012	0.011	<0.010
Benzo[k]fluoranthene	0.01	-	-	-	-	-	<0.010	<0.010	-	-	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.068	<0.012	0.013	<0.010
Chrysene	0.01	-	-	0.10	-	nd	<0.010	<0.010	nd	nd	0.035	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.17	<0.023	0.023	0.014
Dibenz[a,h]anthracene	0.01	-	-	-	-	nd	<0.010	<0.010	nd	nd	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.022	<0.012	<0.010	<0.010
Indeno[1,2,3-c,d]pyrene	0.01	-	-	-	-	nd	<0.010	<0.010	nd	0.01	0.019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.075	<0.012	0.015	<0.010

Notes:

- Elevations are referenced to an assumed benchmark of 100.00 m (fire hydrant located near the Site gate).
- RDL = laboratory's reportable detection limit
- <# = parameter concentration below laboratory's reportable detection limit
- "-" = no guideline available
- CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Environmental and Human Health* (on-line 2017); Residential land use guidelines
- FIGQG = Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (2012); Tier 2 pathway specific criteria for Direct Contact with Soil Organisms and for the Protection of Marine Aquatic Life, residential land use, coarse grained soi
- FIGQG = Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (2012); Tier 2 pathway specific criteria for vapour intrusion/indoor inhalation by humans, residential land use, coarse grained soi
- Bold** = parameter concentration exceeds the referenced Tier 1 guideline
- Underlined = parameter concentration exceeds the referenced guideline for the protection of marine life

TABLE E-8

POLYCYCLIC AROMATIC HYDROCARBONS IN GROUNDWATER
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Parameter	RDL	CCME Water Quality Guidelines (protection of aquatic life (marine)) (µg/L)	Tier 2 FIGQG Residential Guidelines - Inhalation (Coarse Grained) (µg/L)	Tier 2 FIGQG Residential Guidelines - Marine Life (Coarse Grained) (µg/L)	Tier 2 FIGQG Residential Guidelines Soil Organisms Direct Contact (Coarse Grained) (µg/L)	Sample ID														
						MW15-03					MW15-04				MW17-01		MW17-02		MW17-03	
						Date Sampled:	15-Dec-15	13-Sep-16	26-Oct-17	Lab Dup	10-Nov-17	15-Dec-15	13-Sep-16	26-Oct-17	10-Nov-17	26-Oct-17	9-Nov-17	26-Oct-17	9-Nov-17	26-Oct-17
Non-Carcinogenic PAHs																				
1-Methylnaphthalene	0.05	-	6200	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.057	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-Methylnaphthalene	0.05	-	6200	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.057	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphthylene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	0.01	-	-	-	25	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Fluoranthene	0.01	-	-	-	240	<0.010	<0.010	<0.010	<0.010	<0.010	0.026	<0.011	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Fluorene	0.01	-	-	12	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Naphthalene	0.2	1.4	600	1.4	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.23	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Perylene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Pyrene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.029	<0.011	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Carcinogenic PAHs																				
Benzo[a]anthracene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.02	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[a]pyrene	0.01	-	-	0.010	1.8	<0.010	<0.010	<0.010	<0.010	<0.010	0.03	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[e]pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo[b]fluoranthene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.035	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[g,h,i]perylene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.034	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[b+k]fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo[j]fluoranthene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[k]fluoranthene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chrysene	0.01	-	-	0.10	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.034	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Dibenz[a,h]anthracene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Indeno[1,2,3-c,d]pyrene	0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.025	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

Notes:

- Elevations are referenced to an assumed benchmark of 100.00 m (fire hydrant located near the Site gate).
- RDL = laboratory's reportable detection limit
- <# = parameter concentration below laboratory's reportable detection limit
- "-" = no guideline available
- CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Environmental and Human Health* (on-line 2017); Residential land use guidelines
- FIGQG = Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (2012); Tier 2 pathway specific criteria for Direct Contact with Soil Organisms and for the Protection of Marine Aquatic Life, residential land use, coarse grained soi
- FIGQG = Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (2012); Tier 2 pathway specific criteria for vapour intrusion/indoor inhalation by humans, residential land use, coarse grained soi
- Bold** = parameter concentration exceeds the referenced Tier 1 guideline
- Underlined = parameter concentration exceeds the referenced guideline for the protection of marine life

TABLE E-9

METALS IN GROUNDWATER
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Parameters	CCME Water Quality Guidelines (protection of aquatic life (marine)) (µg/L)	Tier 2 FIGQG Residential Guidelines - Marine Life (Coarse Grained) (µg/L)	Sample ID																					
			MW1-02-03			MW4-02-1	MW4-02-2	MW15-01	MW DUP-01 MW15-01	MW15-01	DUP1 MW15-01	MW15-02		MW15-03		MW15-04			MW17-01		MW17-02		MW17-03	
			2002	26-Oct-17	10-Nov-17	2002	2002	26-Oct-17	Field Dup	9-Nov-17	Field Dup	26-Oct-17	9-Nov-17	26-Oct-17	10-Nov-17	26-Oct-17	Lab-Dup	10-Nov-17	26-Oct-17	9-Nov-17	26-Oct-17	9-Nov-17	26-Oct-17	9-Nov-17
Aluminum	-	-	54	5.3	7.1	58	1030	8.5	8.8	12	12	35	16	33	30	55	-	50	11	99	9.9	110	20	23
Antimony	-	-	nd	<1.0	<1.0	nd	0.1	<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
Arsenic	12.5	12.5	nd	<1.0	<1.0	nd	0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.5	-	2.3	2.0	2.1	<1.0	<1.0	1.8	<1.0
Barium	-	500 ^{ab}	22	11	9.0	12	24	13	13	13	12	41	30	20	14	27	-	22	95	82	26	40	12	14
Beryllium	-	100 ^{ab}	nd	<1.0	<1.0	nd	nd	<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
Bismuth	-	-	nd	<2.0	<2.0	nd	nd	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	-	5000	14	<50	<50	14	11	65	60	56	58	<50	<50	68	<50	61	-	52	220	310	<50	<50	<50	<50
Cadmium	0.12	0.12	0.1	0.091	0.075	0.2	0.2	0.023	0.018	0.019	0.024	0.024	0.024	0.19	0.14	0.074	-	0.062	0.29	0.036	0.029	0.098	0.017	0.067
Calcium	-	-	8470	13000	14000	6100	6400	18000	18000	18000	18000	4400	4700	19000	15000	26000	-	26000	35000	34000	18000	17000	19000	19000
Chromium	-	56	3	<1.0	<1.0	1	3	<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
Cobalt	-	-	6.1	<0.40	0.44	25.7	10.9	0.69	0.64	0.64	0.62	1.0	2.5	28	23	8.0	-	9.1	38	8.1	3.2	5.5	33	29
Copper	-	2 ^{ab}	4	2.8	<2.0	6	12	2.9	3.5	2.8	2.7	3.1	3.2	3.5	2.2	<2.0	-	<2.0	<2.0	<2.0	8.8	13	<2.0	<2.0
Iron	-	-	370	<50	<50	1380	1920	<50	<50	<50	<50	<50	<50	<50	<50	320	-	690	3800	6800	<50	140	160	1900
Lead	-	2	0.5	<0.50	<0.50	2	6.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	0.63	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	-	-	0.4	-	-	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	-	-	570	1500	1500	720	820	3500	3600	3700	3600	1200	1400	3500	2700	4300	-	4200	47000	78000	1900	2800	1800	1900
Manganese	-	-	718	2200	1500	4140	1090	27	28	19	18	17	35	2000	1500	1300	-	1900	2100	940	310	350	140	620
Mercury	0.016	0.016	-	<0.013	<0.013	-	-	<0.013	<0.013	<0.013	<0.013	0.038	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Molybdenum	-	-	1.1	<2.0	<2.0	0.6	0.4	<2.0	<2.0	<2.0	<2.0	<2.0	5.3	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	7.4	5.9	5.2	<2.0
Nickel	-	83 ^{ab}	4	<2.0	<2.0	5	18	3.7	3.9	3.6	3.5	3.2	5.3	2.7	2.3	3.4	-	3.8	7.7	3.0	2.8	5.5	2.2	2.8
Phosphorus	-	-	-	<100	<100	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100
Potassium	-	-	1620	1900	1800	930	1340	1800	1700	1900	1800	2300	2100	2600	2200	2800	-	2500	23000	25000	2100	2100	2900	1900
Rubidium	-	-	3	-	-	2.6	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	-	54	nd	<1.0	<1.0	nd	nd	<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
Silver	-	1.5	nd	<0.10	0.17	nd	nd	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.16	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	-	-	124000	150000	150000	31300	11000	11000	11000	11000	11000	6000	7500	55000	43000	45000	-	45000	460000	690000	12000	13000	64000	58000
Strontium	-	-	42	53	53	22	27	71	69	74	71	29	29	90	70	130	-	120	340	480	38	55	69	74
Tellurium	-	-	nd	-	-	nd	nd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	-	-	nd	<0.10	<0.10	nd	nd	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	-	-	nd	<2.0	<2.0	nd	0.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	-	-	-	<2.0	<2.0	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	4.7	<2.0	<2.0
Uranium	-	-	nd	<0.10	<0.10	nd	0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	0.23	0.14
Vanadium	-	-	nd	<2.0	<2.0	nd	1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Zinc	-	10	41	68	14	14	103	6.5	6.5	6.3	5.7	7.4	9.1	17	11	24	-	11	28	27	7.8	24	6.0	9.6

- Notes:**
- <# or nd = parameter concentration below laboratory's reportable detection limit
 - '-' = no guideline available
 - Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory QA/QC duplicate
 - 'CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Environmental and Human Health* (on-line 2017); Residential land use guidelines
 - 'FIGQG = Federal Interim Groundwater Quality Guidelines for Commercial and Residential Land Uses (Marine Life)
 - adopted from BC Contaminated Sites Regulation
 - 10x factor for dilution in surface water was removed from guideline value
 - Bold & Underlined** = parameter concentration exceeds the CCME Water Quality Guidelines (protection of aquatic life (marine))
 - Shaded** = parameter concentration exceeds the Tier 1 FIGQGs (Residential, Commercial Coarse Grained)

TABLE E-10

GENERAL CHEMISTRY IN GROUNDWATER
 Public Services and Procurement Canada
 Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
 Stantec Consulting Ltd. Project No. 121414846

Parameter	Units	CCME Water Quality Guidelines (protection of aquatic life (marine)) (µg/L)	Tier 2 FIGQGs (Marine Life Coarse Grained) (mg/L)	Sample ID																						
				MW1-02-03		MW15-01		MW DUP-01		MW15-01		DUP1		MW15-02			MW15-03			MW15-04		MW17-01		MW17-02		MW17-03
Date Sampled:				26-Oct-17	10-Nov-17	26-Oct-17	Lab-dup	Field Dup	9-Nov-17	Field Dup	26-Oct-17	9-Nov-17	Lab-Dup	26-Oct-17	10-Nov-17	Lab-Dup	26-Oct-17	10-Nov-17	26-Oct-17	9-Nov-17	26-Oct-17	9-Nov-17	26-Oct-17	9-Nov-17	26-Oct-17	9-Nov-17
Anion Sum	me/L	-	-	7.75	7.64	1.79	N/A	1.81	1.88	1.84	0.650	0.750	N/A	4.70	3.27	N/A	4.23	4.34	27.1	39.4	1.68	2.07	4.54	4.13		
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	63	64	28	N/A	28	33	30	8.7	11	N/A	32	29	N/A	32	36	62	56	61	78	97	85		
Calculated TDS	mg/L	-	-	450	450	110	N/A	110	110	110	56	62	N/A	260	190	N/A	240	250	1600	2300	98	110	250	240		
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	<1.0	<1.0	<1.0	N/A	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	<1.0	<1.0	N/A	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	-	-	7.30	7.36	1.69	N/A	1.68	1.73	1.69	0.640	0.730	N/A	3.72	2.91	N/A	3.70	3.70	26.4	39.2	1.62	1.73	3.94	3.76		
Hardness (CaCO ₃)	mg/L	-	-	38	40	59	N/A	59	60	59	16	18	N/A	62	48	N/A	83	82	280	400	52	54	54	56		
Ion Balance (% Difference)	%	-	-	2.99	1.87	2.87	N/A	3.72	4.16	4.25	0.780	1.35	N/A	11.6	5.83	N/A	6.68	7.96	1.46	0.230	1.82	8.95	7.08	4.69		
Langelier Index (@ 20°C)	N/A	-	-	-2.03	-1.91	-1.94	N/A	-2.05	-1.62	-1.92	-3.24	-3.00	N/A	-2.48	-2.56	N/A	-2.33	-2.11	-1.42	-1.81	-0.749	-1.03	-0.629	-0.986		
Langelier Index (@ 4°C)	N/A	-	-	-2.28	-2.16	-2.19	N/A	-2.30	-1.87	-2.17	-3.49	-3.25	N/A	-2.73	-2.81	N/A	-2.58	-2.36	-1.66	-2.05	-1.00	-1.28	-0.878	-1.24		
Nitrate (N)	mg/L	200	16	0.12	0.14	0.90	N/A	0.92	0.98	1.1	0.17	0.13	N/A	0.13	0.17	N/A	0.073	<0.050	<0.050	<0.050	0.13	<0.050	0.42	0.23		
Saturation pH (@ 20°C)	N/A	-	-	8.55	8.52	8.64	N/A	8.65	8.58	8.62	9.73	9.60	N/A	8.63	8.74	N/A	8.48	8.43	8.28	8.39	8.31	8.22	8.14	8.19		
Saturation pH (@ 4°C)	N/A	-	-	8.80	8.77	8.89	N/A	8.90	8.83	8.87	9.98	9.85	N/A	8.88	8.99	N/A	8.73	8.68	8.52	8.64	8.57	8.47	8.39	8.44		
Total Alkalinity (Total as CaCO ₃)	mg/L	-	-	63	64	28	N/A	28	33	30	8.7	11	11	32	29	N/A	32	36	62	56	61	78	98	85		
Dissolved Chloride (Cl)	mg/L	-	-	210	200	24	N/A	25	24	24	5.9	7.2	7.4	120	75	N/A	110	110	860	1300	10	13	78	74		
Colour	TCU	-	-	<5.0	<5.0	<5.0	N/A	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	N/A	<5.0	16	76 (2)	10	<5.0	<5.0	6.8	5.9		
Nitrate + Nitrite	mg/L	-	-	0.12	0.14	0.90	N/A	0.92	0.98	1.1	0.17	0.13	0.13	0.17	0.17	N/A	0.073	<0.050	<0.050	<0.050	0.13	<0.050	0.42	0.25		
Nitrite (N)	mg/L	-	-	<0.010	<0.010	<0.010	N/A	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	N/A	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.015		
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	0.059	<0.050	<0.050	<0.050	<0.050	0.058	<0.050	<0.050	<0.050	N/A	0.23	0.17	0.17	<0.050	<0.050	0.57	0.50	<0.050	<0.050	<0.050	<0.050		
Total Organic Carbon (C)	mg/L	-	-	2.0	2.6	1.4	N/A	1.2	1.9	2.0	<5.0	7.1	N/A	<5.0	1.7	1.8	<5.0	2.3	6	5.3	5.1	8.6	<5.0	5.4		
Orthophosphate (P)	mg/L	-	-	<0.010	<0.010	<0.010	N/A	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	N/A	<0.010	<0.010	0.011	<0.010	<0.010	<0.010	<0.010	<0.010		
pH	pH	7-8.7	7-8.7	6.52	6.60	6.70	N/A	6.60	6.96	6.70	6.49	6.60	N/A	6.15	6.19	N/A	6.15	6.32	6.86	6.58	7.56	7.19	7.51	7.20		
Reactive Silica (SiO ₂)	mg/L	-	-	7.7	7.6	6.8	N/A	6.8	6.1	6.7	16	17	17	7.8	6.9	N/A	9.1	9.0	12	17	8.3	9.6	8.1	9.0		
Dissolved Sulphate (SO ₄)	mg/L	-	-	32	28	23	N/A	23	23	22	14	15	15	32	27	N/A	22	20	81 (2)	130	7.6	6.4	18	16		
Turbidity	NTU	-	-	8.6	1.3	13	N/A	15	3.0	2.4	180	63	N/A	50	0.91	N/A	52	1.1	80	21	260	370	96	25		
Conductivity	uS/cm	-	-	900	870	200	N/A	200	200	200	82	85	N/A	540	350	N/A	460	460	3100	4300	180	180	480	400		
Sodium	mg/L	-	-	150	150	11	N/A	11	11	11	6	7.5	N/A	55	43	N/A	45	45	460	690	12	13	64	58		

Notes:

- Elevations are referenced to an assumed benchmark of 100.00 m (description of benchmark).
- RDL = laboratory's reportable detection limit
- nd = parameter not detected above RDL; nd (0.1) = parameter not detected above the elevated RDL
- '-' = no guideline available
- lab dup = laboratory QA/QC duplicate
- 'CCME Guidelines = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Environmental and Human Health* (on-line 2017); Residential land use guidelines
- FIGQG = Federal Interim Groundwater Quality Guidelines for Commercial and Residential Land Uses (Marine Life)
 - adopted from BC Contaminated Sites Regulation
 - 10x factor for dilution in surface water was removed from guideline value
 * Refer to Federal Interim Groundwater Quality Guidelines Memo (2016)
- AO = aesthetic objective
- Bold & Underlined** = parameter concentration exceeds the referenced GCDWQ Guidelines
- Shaded = parameter concentration exceeds the Tier 1 FIGQGs (Residential/Commercial Coarse Grained)

TABLE E-11 PETROLEUM HYDROCARBONS IN SEDIMENT
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Sample ID & Depth (mbg)	Date Sampled	BTEX Parameters (mg/kg or ppm)				Total Petroleum Hydrocarbons (mg/kg or ppm)						
		Benzene	Toluene	Ethyl-Benzene	Xylenes	CWS Fraction				TPH	Reached Baseline at C50?	F4G Grav. Heavy Hydrocarbons
						F1 C ₆ -C ₁₀	F2 >C ₁₀ -C ₁₆	F3 >C ₁₆ -C ₃₄	F4 >C ₃₄			
CCME Sediment Quality Guidelines PEL		-	-	-	-	-	-	-	-	-	-	-
Tier 1 EQS - Marine		1.2	1.4	1.2	1.3	-	-	-	-	15 (gas) 25 (fuel oil) 43 (lube) 500 (max)	-	-
SED 17-01	10-Nov-17	0.0071	<0.020	<0.010	<0.020	<10	15	290	120	310	No	440
SED 17-02	10-Nov-17	<0.018	0.063	<0.030	<0.060	<30	63	2800	1200	2878	No	3800
	Lab-Dup	-	-	-	-	-	-	-	-	-	-	4100
SED 17-03	10-Nov-17	<0.012	<0.040	<0.020	<0.040	<20	<40	540	260	570	No	750
SED 17-04	10-Nov-17	<0.030	<0.10	<0.050	<0.10	<50	62	2300	1100	2387	No	2600
SED 17-DUP1	10-Nov-17	<0.030	<0.10	<0.050	<0.10	<50	58	3500	1700	3583	No	4500

Notes:

1. "-" = no standard available or not analyzed
2. Field Dup = blind QA/QC field duplicate; Lab Dup = laboratory QA/QC duplicate
3. <# = parameter concentration below laboratory's reportable detection limit
4. CCME Sediment Quality Guidelines for the Protection of Freshwater Aquatic Life (online 2017), PEL = Probable effect level
5. Tier 1 EQS = Tier 1 Environmental Quality Standards For Sediment. From Nova Scotia's Contaminated Sites Regulations (July 2013) Notification of Contamination Protocol, Table 2; Marine
'TPH' has been calculated by adding the F1 to F3 fraction concentrations (including 1/2 the RDL if the concentration was below the RDL)
All the samples were compared to the Tier 1 EQS for TPH for lube oil

TABLE E-12

POLYCYCLIC AROMATIC HYDROCARBON IN SEDIMENT
Public Services and Procurement Canada
Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Parameter	Concentration (mg/kg)						
	CCME PEL Marine Guidelines	Tier 1 EQS - Marine	Sample ID				
			SED17-01	SED17-02	SED17-03	SED17-04	SED17-DUP 01
Date Sampled:			25-Oct-17	25-Oct-17	25-Oct-17	25-Oct-17	25-Oct-17
Non-Carcinogenic PAHs							
1-Methylnaphthalene	-	-	0.054	0.076	<0.010	<0.010	<0.010
2-Methylnaphthalene	0.201	0.201	0.065	0.11	<0.010	<0.010	<0.010
Acenaphthene	0.0889	0.0889	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphthylene	0.128	0.128	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	0.245	0.245	0.076	0.061	0.026	<0.010	<0.010
Fluoranthene	1.494	1.494	0.59	0.76	0.33	0.54	0.60
Fluorene	0.144	0.144	0.046	0.050	<0.010	<0.010	<0.010
Naphthalene	0.391	0.391	0.056	0.055	<0.010	<0.010	<0.010
Perylene	-	-	0.040	<0.010	0.093	<0.010	<0.010
Phenanthrene	0.544	0.544	0.29	0.51	0.10	0.19	0.35
Pyrene	1.398	1.398	0.52	0.63	0.30	0.48	0.51
Carcinogenic PAHs							
Benzo[a]anthracene	0.693	0.693	0.18	0.24	0.18	0.23	0.22
Benzo[a]pyrene	0.763	0.763	0.18	0.27	0.29	0.22	0.24
Benzo[b]fluoranthene	-	4.5	0.19	0.26	0.22	0.27	0.35
Benzo[g,h,i]perylene	-	3.2	0.13	0.16	0.24	0.20	0.25
Benzo[j]fluoranthene	-	4.5	0.12	0.14	0.13	0.14	0.21
Benzo[k]fluoranthene	-	4.5	0.091	0.15	0.12	0.13	0.17
Chrysene	0.846	0.846	0.30	0.32	0.23	0.37	0.44
Dibenz[a,h]anthracene	0.135	0.135	0.049	<0.010	0.048	<0.010	<0.010
Indeno[1,2,3-c,d]pyrene	-	0.88	0.099	0.12	0.18	0.12	0.19

Notes:

1. "-" = no standard available or not analyzed
2. Lab-Dup = laboratory QA/QC duplicate
3. CCME Sediment Quality Guidelines for the Protection of Marine Aquatic Life, (online 2017)
4. PEL = Probable effect level
5. Tier 1 EQS = Tier 1 Environmental Quality Standards For Sediment. From Nova Scotia's Contaminated Sites Regulations (July 2013)
Notification of Contamination Protocol, Table 2; Marine
6. <# = parameter concentration below laboratory's reportable detection limit

TABLE E-13

METALS IN SEDIMENT

Public Services and Procurement Canada

Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS
Stantec Consulting Ltd. Project No. 121414846

Parameters	CCME PEL Marine Guidelines (mg/kg)	Tier 1 EQS - Marine	Sample ID				
			SED17-01	SED17-02	SED17-03	SED17-04	SED17- DUP 01
Date Sampled:			25-Oct-17	25-Oct-17	25-Oct-17	25-Oct-17	Field Dup
Aluminum	-	-	8300	8000	9100	1900	3000
Antimony	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	41.6	41.6	19	20	13	7.4	8.8
Barium	-	-	53	73	17	17	40
Beryllium	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
Bismuth	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	-	-	<50	<50	<50	120	110
Cadmium	4.2	4.2	1.4	0.82	0.35	<0.30	<0.30
Chromium	160	160	42	55	22	12	19
Cobalt	-	-	4.9	3.6	5.3	1.0	1.3
Copper	108	108	92	91	33	42	56
Iron	-	-	19000	11000	19000	2500	3700
Lead	112	112	110	170	39	38	61
Lithium	-	-	21	23	28	4.7	6.4
Manganese	-	-	140	140	210	27	43
Mercury	0.7	0.7	0.20	0.42	<0.10	0.12	0.18
Molybdenum	-	-	27	8.4	11	6.7	7.4
Nickel	-	-	35	35	23	9.8	15
Rubidium	-	-	7.2	7.3	8.8	2.3	3.1
Selenium	-	-	1.0	1.6	<1.0	<1.0	<1.0
Silver	-	2.2	11	7.8	2.4	2.6	3.5
Strontium	-	-	79	71	30	110	100
Thallium	-	-	0.20	0.16	0.11	<0.10	<0.10
Tin	-	-	18	26	6.9	5.5	7.7
Uranium	-	-	8.8	10	2.9	8.6	11
Vanadium	-	-	330	140	58	72	81
Zinc	271	271	870	340	400	100	87

Notes:

1. "-" = no standard available or not analyzed
2. Field Dup = blind QA/QC field duplicate
3. CCME Sediment Quality Guidelines for the Protection of Freshwater Aquatic Life, (online 2017)
4. <# = parameter concentration below laboratory's reportable detection limit
5. PEL = Probable effect level
6. **Bold and Underlined** = parameter concentration exceeds the CCME marine guideline
7. Shaded = parameter concentration exceeds the Tier 1 EQS (marine)

TABLE E-14

SEDIMENT INORGANIC CHEMISTRY

Public Services and Procurement Canada

Lot 1S-A and Lot 1S-B (PID No. 41323742 and 41393398), Shannon Park, Dartmouth, NS

Stantec Consulting Ltd. Project No. 121414846

Parameter	UNITS	RDL	CCME PEL Marine Guidelines (mg/kg)	Sample ID				
				SED17-01	SED17-02	SED17-03	SED17-04	SED17-DUP 01
Sampling Date				25-Oct-17	25-Oct-17	25-Oct-17	25-Oct-17	25-Oct-17
Fraction of Organic Carbon	g/g	0.00050	-	0.099	0.12	0.083	0.21	0.22
Moisture	%	1.0	-					
Total Organic Carbon	mg/kg	500	-	99000	120000	83000	210000	220000

Notes:

1. RDL = laboratory's reportable detection limit
2. <# = parameter not detected above RDL
3. "-" = no guideline available; not applicable
4. CCME Sediment Quality Guidelines for the Protection of Marine Aquatic Life (CCME Online 2016) - no guideline available