

BI-WEEKLY STATUS REPORT

Cobble Hill Landfill Closure

PROJECT # : PRJ18074	File #: 18074- BWR-75
REPORT #: 76	Date: September 15, 2020
SHA REPRESENTATIVES: Dr. Tony Sperling, P.Eng. Scott Garthwaite Carly Wolfe, EIT Nicholas Lamm, P.Ag.	Owner: Cobble Hill Holdings Ltd. Contractor: Allterra Construction Ltd.

Semi Monthly Reporting Requirements SPO MO1701

Per SPO MO1701 Section 4:

Commencing in the month that closure activities commence pursuant to the approved Updated Final Closure Plan, the Named Parties must submit semi-monthly status reports, certified by a Qualified Professional. The reports must include the status of closure activities, inspection results, quality control and testing results, photographs which support/document the quality control and testing results, inspection reports and other supporting documents as needed to fully document all stages and components of the closure activities.

Per Condition 10 of June 26, 2019 Letter Re: Second Amended Spill Prevention Order MO1701, dated June 29, 2017 – Final Closure Plan:

Identification of any deviations from the quality management plan and the construction activities work plan and implementation schedule referenced in conditions 3 and 4 of this approval; The results of inspections, repairs, quality controls and testing, in accordance with the quality management plan referenced in condition 5 of this approval; The planned activities (and associated timing) for the next reporting cycle; and The environmental monitoring program laboratory reports and tabulated results (Quarterly Only-Submitted quarterly, reviewed annually by others). Copies of all soil relocation documentation as required in condition 7 of this approval.

Status reports must be submitted by the 15th and 30th of each month (or the next business day thereafter if the 15th or 30th of the month is not a business day) until closure activities have been completed. Submissions must be made electronically to the following email inbox:
EnvironmentalCompliance@gov.bc.ca.

1. Status of Closure Activities

- Final closure plan reported to be substantially complete as of Friday August 28th, 2020.
- Minor deficiencies were addressed this reporting period including:
 - Rip-rap placed in ditches were restructured to provide a V-shaped design.
 - Check dams were installed in the drainage ditch at the western side of the PEA to mitigate wash of cobble through ditch works.
 - A ditch at the toe of the north slope was extended eastward.
 - Large truck tires were placed around stand pipes to provide vegetative protection and a small footprint for sampling or clean out activities.
- DroneX surveyed the site on September 11th, 2020.

2. Inspection Results

- Permanent Encapsulation Area (PEA): Liner has been covered and can no longer be inspected. Cover system appears to be in good condition.
- Soil Management Area (SMA): The SMA is empty and clean and appears to be in good condition.
- Cut-off ditch upland of PEA: All works are in good condition, ditch still performing well.
- Pictures detailing inspection results are shown at the end of this report.

3. Results of Inspections, Repairs, Quality Controls and Testing, in Accordance with the Quality Management Plan

- See photos at the end of this report.

4. Identification of Any Deviations from the Quality Management Plan and the Construction Activities Work Plan and Implementation Schedule

☒ NO DEVIATIONS OCCURRED THIS REPORTING PERIOD ☐ DEVIATIONS OCCURRED THIS REPORTING PERIOD	Notes:
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5. The Planned Activities (and associated timing) for the Next Reporting Cycle

- Construction wrap up report to be submitted to the Ministry on or before September 30th, 2020.

6. Environmental Monitoring Program Laboratory Reports and Tabulated Results

- Sampling occurred as per the Site's approved Revised EMP this reporting period.
- Water samples were submitted to the laboratory for analysis. Results were analysed by CARO analytical. A qualifier was noted on the laboratory report for samples MW6, MW2, MW3D stating "The reporting limit has been increased due to matrix interference." Due to this increase in the method detection limit, concentrations for specific PAHs in groundwater were undetermined. Therefore, SHA recommends that a re-sampling event for those specific PAHs would be beneficial.
- SHA is currently working on a schedule for a resampling event specific to wells MW6, 5D, 3D, and 2. This event should capture the low flow season prior to first fall flush.
- Seepage blanket wells (SB-1 to 4) were found to be dry during the sampling event.
- The Certificate of Analysis for the sampling round is attached.
- SW-1 water quality results are attached.

7. Copies of All Soil Relocation Documentation

- Origin site land use was assessed via Technical Guidance 10 on Contaminated Sites. Soil quality was confirmed per letters of assurance provided by CSAP to BC ENV.

8. Leachate Volumes Over Reporting Period

- Total Leachate Collected: 5.28 m³
- Total Leachate Stored: 66.05 m³
- Total Leachate Transferred: 0 m³

9. Pictures

Nicholas Lamm from SHA was on-site on September 11th, 2020 to complete a site inspection, pictures below.



Picture #1: Looking north at crest of PEA.



Picture #2: Looking northeast at crest of PEA.



Picture #3 (left): Surface water ditch at southwest crest of PEA.

Picture #4 (right): Surface water ditch at west crest of PEA.



Picture #5 (left): Surface water ditch with check dams at west side of PEA.

Picture #6 (right): Surface water ditch running east west along north midslope of PEA.



Picture #7 (left): Tires placed around stand pipe.



Picture #8 (right): Surface water ditch extended eastward at toe of north slope.



Picture #9: Large rip rap placed in surface water ditch at toe of north slope.

Report prepared by:

Carly Wolfe, EIT

Report Reviewed by:

Dr. Tony Sperling, P.Eng. *September 15, 2020*



Note: Report prepared by Sperling Hansen Associates Inc. If those in attendance have additions or objections to these notes, they should report back to Sperling Hansen Associates (SHA) within 3 days of receipt, otherwise, these notes will be considered a complete and accurate permanent record of this reporting period.

Attachments:

2020-07-31 SW-1 Analytical Results

2020-07-31 SW-1 COA

2020-08-28 MW19-1, MW19-2, MW-3S, MW-01S, MW-01D, MW-02, MW-3D, MW-5S, MW5-D, MW-06 COA

2020-08-28 MW19-1, MW19-2, MW-3S, MW-01S, MW-01D, MW-02, MW-3D, MW-5S, MW5-D, MW-06 Analytical Results

Cobble Hill Landfill Closure Site Inspection Report 2020-09-09

Cobble Hill Landfill Closure Site Inspection Report 2020-09-10

Analytical Table Footnotes: Leachate and Surface Water

	All concentrations in mg/L, except pH or as indicated.
"<"	less than the laboratory detection limit indicated.
"-"	means not analyzed or no standard or guideline applies.
*	RPDs are not normally calculated where one or more concentrations are less than five times RDL.
(1)	Guideline of 15 mg/L Pt for Drinking Water. Once background levels are established, colour should also not exceed 5 mg/L above background, to protect for Aquatic Life. This is considered a clearwater system (background less than 20 mg/L Pt.)
(2)	Nitrite BCAWWQG Guideline is Chloride dependent
(3)	Standard is calculated based on the hardness dependent BCAWWQG formula, and has been calculated and shown for each individual result
(4)	pH-dependent maximum where instant pH < 6.5
<u>BOLD, UNDERLINE</u>	Laboratory Detection Limit exceeds one or more applicable Standard
BOLD, BLUE SHADING	Concentration greater than BCAWWQG Guideline
BOLD, BEIGE SHADING	Concentration greater than BCAWWQG Chronic Guideline
BOLD, GREEN SHADING	Concentration greater than BC Ministry of Environment Drinking Water Sources

Table 1: Analytical Results for Nutrients in Surface Water			SHA-SW-1
Laboratory ID	BC DRINKING WATER QUALITY GUIDELINES	BC FRESHWATER AQUATIC LIFE WATER QUALITY GUIDELINES	0073181-01
Sample ID			SW1
Date Sampled/Time			2020-07-30
Physical Tests			
Total Dissolved Solids (mg/L)	-	-	372
Total Suspended Solids (mg/L)	-	25 mg/L above background (24-hr during clear flow)	<2.0
pH	7-10.5	6.5-9	7.86
Conductivity (uS/cm)	-	-	575
Hardness (as CaCO3)	-	-	286
Turbidity (NTU)	Δ1 NTU	8 NTU above background (24-hr during clear flow)	0.5
Anions and Nutrients mg/L			
Alkalinity Bicarbonate (as CaCO3)	<10 high sensitivity to acid inputs 10-20 moderate sensitivity to acid inputs >20 low sensitivity to acid inputs		223
Alkalinity Carbonate (as CaCO3)			<1.0
Acid Sensitivity			
Chloride (Cl)	250 mg/L	600 mg/L (instant max), 150 mg/L (30-day average)	11.8
Fluoride (F)	1.5 mg/L (instant max) 1.0 mg/L (30-day average)	0.4 (Hardness <10mg/L)	<0.10
		Hardness-Dependent AW (Hardness is >10mg/L) ⁽³⁾	0.31
Nitrate (as N)	45 mg/L	32.8 mg/L (instant maximum) 3.0 mg/L (30-day average)	0.113
Nitrite (as N) ⁽²⁾	3 mg/L	Cl > 10 mg/L 0.6 mg/L (MAX), 0.2 mg/L (30-day average)	<0.010
Sulfate (SO4) H 0-30 mg/L	500 mg/L	128 mg/L 30-day average)	
H 31 - 75 mg/L		218 mg/L (30-day average)	
H 76 - 180 mg/L		309 mg/L (30-day average)	
H 181 - 250 mg/L		429 mg/L (30-day average)	91.3
H > 250 mg/L		TBD	

Notes: Refer to Table Endnotes (attached)

Table 2: Analytical Results for Total Metals in Surface Water				SHA-SW-1
Laboratory ID	BC DRINKING WATER QUALITY GUIDELINES	BC FRESHWATER AQUATIC LIFE WATER QUALITY GUIDELINES	0073181-01	
Sample ID			SW1	
Date Sampled/Time			2020-07-30	
Physical Tests				
Hardness (as CaCO3) (mg/L)	-	-	286	
pH	7-10.5	6.5-9	7.86	
Total Metals (mg/L)				
Aluminum (Al)-Total	0.2	-	0.0311	
Antimony (Sb)-Total	-	-	0.00022	
Arsenic (As)-Total	0.01	0.005	<0.00050	
Barium (Ba)-Total	-	-	0.0188	
Beryllium (Be)-Total	-	-	<0.00010	
Bismuth, total	-	-	<0.00010	
Boron (B)-Total	5	1.2	<0.0500	
Cadmium (Cd)-Total	-	-	0.000011	
Calcium (Ca)-Total	-	-	96.6	
Chromium (Cr)-Total	-	-	0.00118	
Chromium (Cr(III))	-	-	-	
Chromium (Cr(VI))	-	-	-	
Cobalt (Co)-Total	-	0.110 (Short Term), 0.004 (Long Term Average)	<0.00010	
Copper (Cu)-Total	0.5	Hardness-Dependent ⁽¹⁾	0.00263	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (instant max)	0.0118	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (30-d average)	0.0020	
Iron (Fe)-Total	-	1	0.025	
Lead (Pb)-Total	0.01	Hardness-Dependent ⁽¹⁾	<0.00020	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (instant max)	0.3100	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (30-d average)	0.0150	
Lithium (Li)-Total	-	-	0.00016	
Magnesium (Mg)-Total	-	-	13.4	
Manganese (Mn)-Total	-	Hardness-Dependent ⁽¹⁾	0.0173	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (instant max)	3.7	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (30-d average)	1.9	
Mercury (Hg)-Total	0.001	0.00002		
Molybdenum (Mo)-Total	0.25	≤1 (instant max) 2 (30-d average)	0.00095	
Nickel (Ni)-Total	-	0.025 (Hardness-Dependent ⁽¹⁾ BCAWWQG to protect AW H<60mg/L)	0.00105	
		Calculated Hardness-Dependent ⁽¹⁾ BCAWWQG to protect AW 60≤H≤180 mg/L CaCO3	0.150	
Phosphorus(P)-Total	-	-	<0.050	
Potassium (K)-Total	-	-	0.87	
Selenium (Se)-Total	0.01	0.002	<0.00050	
Silicon (Si)-Total	-	-	7.2	
Silver (Ag)-Total	-	HARDNESS <100mg/L 0.0001 (SHORT TERM), 0.00005 (LONG TERM), HARDNESS >100mg/L 0.003 (SHORT TERM), 0.0015 (LONG TERM)	<0.000050	
Sodium (Na)-Total	-	-	9.09	
Strontium (Sr)-Total	-	-	0.266	
Sulfur (S)-Total	-	-	33.3	
Tellurium (Te)-Total	-	-	<0.00050	
Thallium (Tl)-Total	-	-	<0.000020	
Thorium (Th)-Total	-	-	<0.00010	
Tin (Sn)-Total	-	-	<0.00020	
Titanium (Ti)-Total	-	-	<0.0050	
Tungsten (W)-Total	-	-	<0.0010	
Uranium (U)-Total	-	-	0.00202	
Vanadium (V)-Total	-	-	<0.0010	
Zinc (Zn)-Total	5.0	Hardness >90 mg/L	<0.0040	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (instant max)	0.180	
		Hardness-Dependent BCAWQG to protect AW ⁽¹⁾ (30-d average)	0.150	
Zirconium (Zr)-Total	-	-	<0.00010	

Table 3: Analytical Results for Dissolved Metals in Surface Water			SHA-SW-1
Laboratory ID	BC DRINKING WATER QUALITY GUIDELINES	BC FRESHWATER AQUATIC LIFE WATER QUALITY GUIDELINES	0073181-01
Sample ID			SW1
Date Sampled/Time			2020-07-30
Physical Tests			
Hardness (as CaCO3) (mg/L)	-	-	286
pH	7-10.5	6.5-9	7.86
Dissolved Metals (mg/L)			
Aluminum (Al)-Dissolved	-	0.05 (30-day average where median pH > 6.5) 0.1 (maximum where instantaneous pH > 6.5) *** indicates pH-dependent maximum where instant pH ≤ 6.5	<0.0050
		pH/Hardness Dependent BCAWQG to protect AW ⁽⁴⁾ (instant max)	0.100
		pH/Hardness Dependent BCAWQG to protect AW ⁽⁴⁾ (30-d Mean)	0.050
Antimony (Sb)-Dissolved	-	-	<0.00020
Arsenic (As)-Dissolved	-	-	<0.00050
Barium (Ba)-Dissolved	-	-	0.0163
Beryllium (Be)-Dissolved	-	-	<0.00010
Bismuth (Bi)-Dissolved	-	-	<0.00010
Boron (B)-Dissolved	-	-	0.0585
Cadmium (Cd)-Dissolved	-	Hardness-Dependent ⁽³⁾	<0.000010
	-	Calculated Hardness-Dependent ⁽³⁾ BCAWWQG to protect AW (short-term max) $e[1.03 * \ln(Hss) - 5.274]$ ug/L H<455mg/L	0.00170
	-	Calculated Hardness-Dependent BCAWQG to protect AW ⁽³⁾ (long-term max) $e[0.736 * \ln(Hss) - 4.943]$ ug/L H<285mg/L	0.00046
Calcium (Ca)-Dissolved	-	up to 4, highly sensitive to acid inputs 4 to 8, moderately sensitive over 8 low sensitivity	93.1
			Low
Chromium (Cr)-Dissolved	-	-	0.00114
Cobalt (Co)-Dissolved	-	-	<0.00010
Copper (Cu)-Dissolved	-	-	0.00236
Iron (Fe)-Dissolved	-	0.35	<0.010
Lead (Pb)-Dissolved	-	-	<0.00020
Lithium, dissolved	-	-	0.00021
Magnesium (Mg)-Dissolved	-	-	12.9
Manganese (Mn)-Dissolved	-	-	0.00152
Mercury (Hg)-Dissolved	-	-	-
Molybdenum (Mo)-Dissolved	-	-	0.00085
Nickel (Ni)-Dissolved	-	-	0.00098
Phosphorus (P)-Dissolved	-	-	<0.050
Potassium (K)-Dissolved	-	-	0.77
Selenium (Se)-Dissolved	-	-	<0.00050
Silicon (Si)-Dissolved	-	-	7.1
Silver (Ag)-Dissolved	-	-	<0.000050
Sodium (Na)-Dissolved	-	-	8.2
Strontium (Sr)-dissolved	-	-	0.243
Sulfur (S)-Dissolved	-	-	36
Tellurium (Te)-Dissolved	-	-	<0.00050
Thallium (Tl)-Dissolved	-	-	<0.000020
Thorium (Th)-Dissolved	-	-	<0.00010
Tin (Sn)-Dissolved	-	-	<0.00020
Titanium (Ti)-Dissolved	-	-	<0.0050
Tungsten (W)-Dissolved	-	-	<0.0010
Uranium (U)-Dissolved	-	-	0.00183
Vanadium (V)-Dissolved	-	-	<0.0010
Zinc (Zn)-Dissolved	-	-	<0.0040
Zirconium (Zr)-Dissolved	-	-	<0.00010

Notes: Refer to Table Endnotes (attached)

Table 4: Analytical Results for Hydrocarbons and PAHs in Surface Water			SHA-SW-1
Laboratory ID	BC DRINKING WATER QUALITY GUIDELINES	BC FRESHWATER AQUATIC LIFE WATER QUALITY GUIDELINES	0073181-01
Sample ID			SW1
Date Sampled/ Time			2020-07-30
Hydrocarbons ug/L			
LEPH	-	-	<250
HEPH	-	-	<250
Polycyclic Aromatic			
Acenaphthene	-	6 (LONG TERM)	<0.050
Acenaphthylene	-	-	<0.200
Acridine	-	3 (LONG TERM), 0.05 (PHOTOTOXIC)	<0.050
Anthracene	-	4 (LONG TERM), 0.1 (PHOTOTOXIC)	<0.010
Benz(a)anthracene	0.01	0.1 (LONG TERM), 0.1 (PHOTOTOXIC)	<0.010
Benzo(a)pyrene	-	0.01 (LONG TERM)	<0.010
Benzo(b)fluoranthene	-	-	-
Benzo(b+j)fluoranthene	-	-	<0.050
Benzo(g,h,i)perylene	-	-	<0.050
Benzo(k)fluoranthene	-	-	<0.050
2-Chloronaphthalene			<0.100
Chrysene	-	-	<0.050
Dibenz(a,h)anthracene	-	-	<0.010
Fluoranthene	-	4 (LONG TERM), 0.2 (PHOTOTOXIC)	<0.030
Fluorene	-	12 (LONG TERM)	<0.050
Indeno(1,2,3-c,d)pyrene	-	-	<0.050
1-Methylnaphthalene			<0.100
2-Methylnaphthalene			<0.100
Naphthalene	-	1 (LONG TERM)	<0.200
Phenanthrene	-	0.3 (LONG TERM)	<0.100
Pyrene	-	0.02 (PHOTOTOXIC)	<0.020
Quinoline	-	-	<0.050

Notes: Refer to Table Endnotes (attached)

CERTIFICATE OF ANALYSIS

REPORTED TO Allterra Construction
2158 Millstream Road
Victoria, BC V9B 6H4

ATTENTION Todd Mizuik

PO NUMBER P15-06 SIRM

PROJECT P17-932

PROJECT INFO

WORK ORDER 0073181

RECEIVED / TEMP 2020-07-31 12:00 / 14°C

REPORTED 2020-08-12 15:54

COC NUMBER no #

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at nyipp@caro.ca

Authorized By:

Nicole Yipp
Team Lead, Client Service



1-888-311-8846 | www.caro.ca

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
P17-932

WORK ORDER REPORTED 0073181
2020-08-12 15:54

Analyte	Result	RL	Units	Analyzed	Qualifier
SW1 (0073181-01) Matrix: Water Sampled: 2020-07-30 09:50					
Anions					
Chloride	11.8	0.10	mg/L	2020-08-01	
Fluoride	< 0.10	0.10	mg/L	2020-08-01	
Nitrate (as N)	0.113	0.010	mg/L	2020-08-01	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-08-01	
Sulfate	91.3	1.0	mg/L	2020-08-01	
BCMOE Aggregate Hydrocarbons					
EPHw10-19	< 250	250	µg/L	2020-08-05	
EPHw19-32	< 250	250	µg/L	2020-08-05	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	81	60-126	%	2020-08-05	
Calculated Parameters					
Hardness, Total (as CaCO3)	286	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	0.00021	0.00010	mg/L	2020-08-09	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-08-09	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2020-08-09	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-08-09	
Barium, dissolved	0.0163	0.0050	mg/L	2020-08-09	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-08-09	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-08-09	
Boron, dissolved	0.0585	0.0500	mg/L	2020-08-09	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2020-08-09	
Calcium, dissolved	93.1	0.20	mg/L	2020-08-09	
Chromium, dissolved	0.00114	0.00050	mg/L	2020-08-09	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2020-08-09	
Copper, dissolved	0.00236	0.00040	mg/L	2020-08-09	
Iron, dissolved	< 0.010	0.010	mg/L	2020-08-09	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-08-09	
Magnesium, dissolved	12.9	0.010	mg/L	2020-08-09	
Manganese, dissolved	0.00152	0.00020	mg/L	2020-08-09	
Molybdenum, dissolved	0.00085	0.00010	mg/L	2020-08-09	
Nickel, dissolved	0.00098	0.00040	mg/L	2020-08-09	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-08-09	
Potassium, dissolved	0.77	0.10	mg/L	2020-08-09	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-08-09	
Silicon, dissolved	7.1	1.0	mg/L	2020-08-09	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-08-09	
Sodium, dissolved	8.20	0.10	mg/L	2020-08-09	
Strontium, dissolved	0.243	0.0010	mg/L	2020-08-09	
Sulfur, dissolved	36.0	3.0	mg/L	2020-08-09	

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
P17-932

WORK ORDER REPORTED 0073181
2020-08-12 15:54

Analyte	Result	RL	Units	Analyzed	Qualifier
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SW1 (0073181-01) | Matrix: Water | Sampled: 2020-07-30 09:50, Continued

Dissolved Metals, Continued

Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-08-09	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-08-09	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-08-09	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-08-09	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-08-09	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-08-09	
Uranium, dissolved	0.00183	0.000020	mg/L	2020-08-09	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2020-08-09	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-08-09	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-08-09	

General Parameters

Alkalinity, Total (as CaCO3)	223	1.0	mg/L	2020-08-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-08-05	
Alkalinity, Bicarbonate (as CaCO3)	223	1.0	mg/L	2020-08-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-08-05	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-08-05	
Conductivity (EC)	575	2.0	µS/cm	2020-08-05	
pH	7.86	0.10	pH units	2020-08-05	HT2
Solids, Total Dissolved	372	15	mg/L	2020-08-07	HT1
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-05	
Turbidity	0.50	0.10	NTU	2020-08-04	HT1

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-08-06	
Acenaphthylene	< 0.200	0.200	µg/L	2020-08-06	
Acridine	< 0.050	0.050	µg/L	2020-08-06	
Anthracene	< 0.010	0.010	µg/L	2020-08-06	
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-08-06	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-08-06	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-08-06	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-08-06	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-08-06	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-08-06	
Chrysene	< 0.050	0.050	µg/L	2020-08-06	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-08-06	
Fluoranthene	< 0.030	0.030	µg/L	2020-08-06	
Fluorene	< 0.050	0.050	µg/L	2020-08-06	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-08-06	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-08-06	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-08-06	
Naphthalene	< 0.200	0.200	µg/L	2020-08-06	
Phenanthrene	< 0.100	0.100	µg/L	2020-08-06	
Pyrene	< 0.020	0.020	µg/L	2020-08-06	

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
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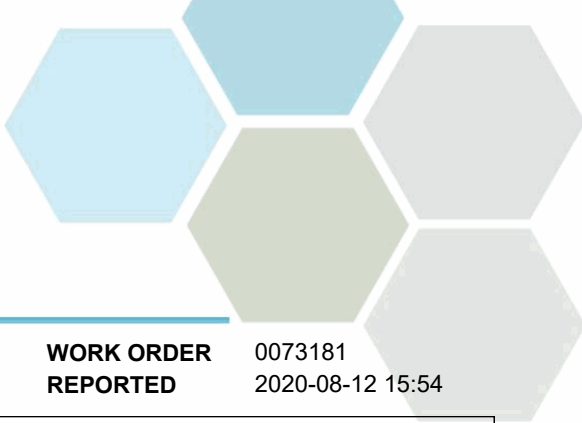
SW1 (0073181-01) | Matrix: Water | Sampled: 2020-07-30 09:50, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Quinoline	< 0.050	0.050	µg/L	2020-08-06	
Surrogate: Acridine-d9	85	50-140	%	2020-08-06	
Surrogate: Naphthalene-d8	95	50-140	%	2020-08-06	
Surrogate: Perylene-d12	62	50-140	%	2020-08-06	

Total Metals

Aluminum, total	0.0311	0.0050	mg/L	2020-08-08	
Antimony, total	0.00022	0.00020	mg/L	2020-08-08	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-08-08	
Barium, total	0.0188	0.0050	mg/L	2020-08-08	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-08-08	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-08-08	
Boron, total	< 0.0500	0.0500	mg/L	2020-08-08	
Cadmium, total	0.000011	0.000010	mg/L	2020-08-08	
Calcium, total	96.6	0.20	mg/L	2020-08-08	
Chromium, total	0.00118	0.00050	mg/L	2020-08-08	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-08-08	
Copper, total	0.00263	0.00040	mg/L	2020-08-08	
Iron, total	0.025	0.010	mg/L	2020-08-08	
Lead, total	< 0.00020	0.00020	mg/L	2020-08-08	
Lithium, total	0.00016	0.00010	mg/L	2020-08-08	
Magnesium, total	13.4	0.010	mg/L	2020-08-08	
Manganese, total	0.0173	0.00020	mg/L	2020-08-08	
Molybdenum, total	0.00095	0.00010	mg/L	2020-08-08	
Nickel, total	0.00105	0.00040	mg/L	2020-08-08	
Phosphorus, total	< 0.050	0.050	mg/L	2020-08-08	
Potassium, total	0.87	0.10	mg/L	2020-08-08	
Selenium, total	< 0.00050	0.00050	mg/L	2020-08-08	
Silicon, total	7.2	1.0	mg/L	2020-08-08	
Silver, total	< 0.000050	0.000050	mg/L	2020-08-08	
Sodium, total	9.09	0.10	mg/L	2020-08-08	
Strontium, total	0.266	0.0010	mg/L	2020-08-08	
Sulfur, total	33.3	3.0	mg/L	2020-08-08	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-08-08	
Thallium, total	< 0.000020	0.000020	mg/L	2020-08-08	
Thorium, total	< 0.00010	0.00010	mg/L	2020-08-08	
Tin, total	< 0.00020	0.00020	mg/L	2020-08-08	
Titanium, total	< 0.0050	0.0050	mg/L	2020-08-08	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-08-08	
Uranium, total	0.00202	0.000020	mg/L	2020-08-08	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-08-08	
Zinc, total	< 0.0040	0.0040	mg/L	2020-08-08	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-08-08	



TEST RESULTS

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Sample Qualifiers:	
HT1	The sample was prepared and/or analyzed past the recommended holding time.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H ₂ SO ₄	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
EPH in Water	EPA 3511* / BCMOE EPHw	Hexane MicroExtraction (Base/Neutral) / Gas Chromatography (GC-FID)	✓	Richmond
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
HEPHw in Water	BCMOE LEPH/HEPH	Calculation		N/A
LEPHw in Water	BCMOE LEPH/HEPH	Calculation		N/A
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)	✓	Richmond
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2017)	Nephelometry	✓	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
pH units	pH < 7 = acidic, pH > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
BCMOE	British Columbia Environmental Laboratory Manual, British Columbia Ministry of Environment
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

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General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: nyipp@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.

APPENDIX 2: QUALITY CONTROL RESULTS

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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS):** A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS):** A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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Anions, Batch B0G2871

Blank (B0G2871-BLK1)			Prepared: 2020-08-01, Analyzed: 2020-08-01						
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
LCS (B0G2871-BS1)			Prepared: 2020-08-01, Analyzed: 2020-08-01						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.05	0.10 mg/L	4.00		101	88-108			
Nitrate (as N)	4.01	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.04	0.010 mg/L	2.00		102	85-115			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			

BCMOE Aggregate Hydrocarbons, Batch B0H0286

Blank (B0H0286-BLK1)			Prepared: 2020-08-05, Analyzed: 2020-08-05						
EPHw10-19	< 250	250 µg/L							
EPHw19-32	< 250	250 µg/L							
Surrogate: 2-Methylnonane (EPH/F2-4)	409	µg/L	444		92	60-126			
LCS (B0H0286-BS2)			Prepared: 2020-08-05, Analyzed: 2020-08-05						
EPHw10-19	15000	250 µg/L	15500		97	70-117			
EPHw19-32	22400	250 µg/L	22200		101	70-113			
Surrogate: 2-Methylnonane (EPH/F2-4)	318	µg/L	444		72	60-126			
LCS Dup (B0H0286-BS2)			Prepared: 2020-08-05, Analyzed: 2020-08-05						
EPHw10-19	14400	250 µg/L	15500		93	70-117	4	20	
EPHw19-32	20200	250 µg/L	22200		91	70-113	10	20	
Surrogate: 2-Methylnonane (EPH/F2-4)	345	µg/L	444		78	60-126			

Dissolved Metals, Batch B0H0624

Blank (B0H0624-BLK1)			Prepared: 2020-08-09, Analyzed: 2020-08-09						
Lithium, dissolved	< 0.00010	0.00010 mg/L							
Aluminum, dissolved	< 0.0050	0.0050 mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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Dissolved Metals, Batch B0H0624, Continued

Blank (B0H0624-BLK1), Continued

Prepared: 2020-08-09, Analyzed: 2020-08-09

Antimony, dissolved	< 0.00020	0.00020 mg/L							
Arsenic, dissolved	< 0.00050	0.00050 mg/L							
Barium, dissolved	< 0.0050	0.0050 mg/L							
Beryllium, dissolved	< 0.00010	0.00010 mg/L							
Bismuth, dissolved	< 0.00010	0.00010 mg/L							
Boron, dissolved	< 0.0500	0.0500 mg/L							
Cadmium, dissolved	< 0.000010	0.000010 mg/L							
Calcium, dissolved	< 0.20	0.20 mg/L							
Chromium, dissolved	< 0.00050	0.00050 mg/L							
Cobalt, dissolved	< 0.00010	0.00010 mg/L							
Copper, dissolved	< 0.00040	0.00040 mg/L							
Iron, dissolved	< 0.010	0.010 mg/L							
Lead, dissolved	< 0.00020	0.00020 mg/L							
Magnesium, dissolved	< 0.010	0.010 mg/L							
Manganese, dissolved	< 0.00020	0.00020 mg/L							
Molybdenum, dissolved	< 0.00010	0.00010 mg/L							
Nickel, dissolved	< 0.00040	0.00040 mg/L							
Phosphorus, dissolved	< 0.050	0.050 mg/L							
Potassium, dissolved	< 0.10	0.10 mg/L							
Selenium, dissolved	< 0.00050	0.00050 mg/L							
Silicon, dissolved	< 1.0	1.0 mg/L							
Silver, dissolved	< 0.000050	0.000050 mg/L							
Sodium, dissolved	< 0.10	0.10 mg/L							
Strontium, dissolved	< 0.0010	0.0010 mg/L							
Sulfur, dissolved	< 3.0	3.0 mg/L							
Tellurium, dissolved	< 0.00050	0.00050 mg/L							
Thallium, dissolved	< 0.000020	0.000020 mg/L							
Thorium, dissolved	< 0.00010	0.00010 mg/L							
Tin, dissolved	< 0.00020	0.00020 mg/L							
Titanium, dissolved	< 0.0050	0.0050 mg/L							
Tungsten, dissolved	< 0.0010	0.0010 mg/L							
Uranium, dissolved	< 0.000020	0.000020 mg/L							
Vanadium, dissolved	< 0.0010	0.0010 mg/L							
Zinc, dissolved	< 0.0040	0.0040 mg/L							
Zirconium, dissolved	< 0.00010	0.00010 mg/L							

LCS (B0H0624-BS1)

Prepared: 2020-08-09, Analyzed: 2020-08-09

Lithium, dissolved	0.0220	0.00010 mg/L	0.0200	110	80-120
Aluminum, dissolved	0.0223	0.0050 mg/L	0.0199	112	80-120
Antimony, dissolved	0.0197	0.00020 mg/L	0.0200	98	80-120
Arsenic, dissolved	0.0219	0.00050 mg/L	0.0200	110	80-120
Barium, dissolved	0.0199	0.0050 mg/L	0.0198	100	80-120
Beryllium, dissolved	0.0223	0.00010 mg/L	0.0198	112	80-120
Bismuth, dissolved	0.0197	0.00010 mg/L	0.0200	98	80-120
Boron, dissolved	< 0.0500	0.0500 mg/L	0.0200	118	80-120
Cadmium, dissolved	0.0203	0.000010 mg/L	0.0199	102	80-120
Calcium, dissolved	2.05	0.20 mg/L	2.02	102	80-120
Chromium, dissolved	0.0214	0.00050 mg/L	0.0198	108	80-120
Cobalt, dissolved	0.0208	0.00010 mg/L	0.0199	104	80-120
Copper, dissolved	0.0210	0.00040 mg/L	0.0200	105	80-120
Iron, dissolved	2.08	0.010 mg/L	2.02	103	80-120
Lead, dissolved	0.0193	0.00020 mg/L	0.0199	97	80-120
Magnesium, dissolved	2.06	0.010 mg/L	2.02	102	80-120
Manganese, dissolved	0.0200	0.00020 mg/L	0.0199	101	80-120
Molybdenum, dissolved	0.0195	0.00010 mg/L	0.0200	98	80-120
Nickel, dissolved	0.0216	0.00040 mg/L	0.0200	108	80-120

APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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Dissolved Metals, Batch B0H0624, Continued

LCS (B0H0624-BS1), Continued

Prepared: 2020-08-09, Analyzed: 2020-08-09

Phosphorus, dissolved	1.98	0.050 mg/L	2.00		99	80-120			
Potassium, dissolved	2.02	0.10 mg/L	2.02		100	80-120			
Selenium, dissolved	0.0209	0.00050 mg/L	0.0200		104	80-120			
Silicon, dissolved	2.4	1.0 mg/L	2.00		120	80-120			
Silver, dissolved	0.0199	0.000050 mg/L	0.0200		100	80-120			
Sodium, dissolved	2.01	0.10 mg/L	2.02		100	80-120			
Strontium, dissolved	0.0205	0.0010 mg/L	0.0200		103	80-120			
Sulfur, dissolved	6.0	3.0 mg/L	5.00		119	80-120			
Tellurium, dissolved	0.0210	0.00050 mg/L	0.0200		105	80-120			
Thallium, dissolved	0.0196	0.000020 mg/L	0.0199		99	80-120			
Thorium, dissolved	0.0180	0.00010 mg/L	0.0200		90	80-120			
Tin, dissolved	0.0197	0.00020 mg/L	0.0200		98	80-120			
Titanium, dissolved	0.0218	0.0050 mg/L	0.0200		109	80-120			
Tungsten, dissolved	0.0177	0.0010 mg/L	0.0200		89	80-120			
Uranium, dissolved	0.0197	0.000020 mg/L	0.0200		99	80-120			
Vanadium, dissolved	0.0210	0.0010 mg/L	0.0200		105	80-120			
Zinc, dissolved	0.0233	0.0040 mg/L	0.0200		117	80-120			
Zirconium, dissolved	0.0200	0.00010 mg/L	0.0200		100	80-120			

Reference (B0H0624-SRM1)

Prepared: 2020-08-09, Analyzed: 2020-08-09

Lithium, dissolved	0.115	0.00010 mg/L	0.100		115	70-130			
Aluminum, dissolved	0.264	0.0050 mg/L	0.235		112	70-130			
Antimony, dissolved	0.0451	0.00020 mg/L	0.0431		105	70-130			
Arsenic, dissolved	0.492	0.00050 mg/L	0.423		116	70-130			
Barium, dissolved	3.01	0.0050 mg/L	3.30		91	70-130			
Beryllium, dissolved	0.241	0.00010 mg/L	0.209		115	70-130			
Boron, dissolved	1.51	0.0500 mg/L	1.65		91	70-130			
Cadmium, dissolved	0.227	0.000010 mg/L	0.221		103	70-130			
Calcium, dissolved	8.13	0.20 mg/L	7.72		105	70-130			
Chromium, dissolved	0.468	0.00050 mg/L	0.434		108	70-130			
Cobalt, dissolved	0.134	0.00010 mg/L	0.124		108	70-130			
Copper, dissolved	0.884	0.00040 mg/L	0.815		108	70-130			
Iron, dissolved	1.35	0.010 mg/L	1.27		106	70-130			
Lead, dissolved	0.108	0.00020 mg/L	0.110		99	70-130			
Magnesium, dissolved	7.09	0.010 mg/L	6.59		108	70-130			
Manganese, dissolved	0.361	0.00020 mg/L	0.342		105	70-130			
Molybdenum, dissolved	0.417	0.00010 mg/L	0.404		103	70-130			
Nickel, dissolved	0.900	0.00040 mg/L	0.835		108	70-130			
Phosphorus, dissolved	0.612	0.050 mg/L	0.499		123	70-130			
Potassium, dissolved	3.18	0.10 mg/L	2.88		110	70-130			
Selenium, dissolved	0.0364	0.00050 mg/L	0.0324		112	70-130			
Sodium, dissolved	19.5	0.10 mg/L	18.0		108	70-130			
Strontium, dissolved	0.954	0.0010 mg/L	0.935		102	70-130			
Thallium, dissolved	0.0388	0.000020 mg/L	0.0385		101	70-130			
Uranium, dissolved	0.240	0.000020 mg/L	0.258		93	70-130			
Vanadium, dissolved	0.920	0.0010 mg/L	0.873		105	70-130			
Zinc, dissolved	1.00	0.0040 mg/L	0.848		118	70-130			

General Parameters, Batch B0H0106

Blank (B0H0106-BLK1)

Prepared: 2020-08-04, Analyzed: 2020-08-04

Turbidity	< 0.10	0.10 NTU							
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LCS (B0H0106-BS1)

Prepared: 2020-08-04, Analyzed: 2020-08-04

Turbidity	37.2	0.10 NTU	40.0		93	90-110			
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APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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General Parameters, Batch B0H0106, Continued

Duplicate (B0H0106-DUP1)		Source: 0073181-01		Prepared: 2020-08-04, Analyzed: 2020-08-04					
Turbidity	0.52	0.10 NTU		0.50			3	15	

General Parameters, Batch B0H0200

Blank (B0H0200-BLK1)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Solids, Total Suspended	< 2.0	2.0 mg/L							
Blank (B0H0200-BLK2)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B0H0200-BS1)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Solids, Total Suspended	91.0	10.0 mg/L	100		91	85-115			
LCS (B0H0200-BS2)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Solids, Total Suspended	99.0	10.0 mg/L	100		99	85-115			

General Parameters, Batch B0H0277

Blank (B0H0277-BLK1)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B0H0277-BLK2)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B0H0277-BS1)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Alkalinity, Total (as CaCO3)	102	1.0 mg/L	100		102	80-120			
LCS (B0H0277-BS2)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Alkalinity, Total (as CaCO3)	102	1.0 mg/L	100		102	80-120			
LCS (B0H0277-BS3)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Conductivity (EC)	1420	2.0 µS/cm	1410		101	95-104			
LCS (B0H0277-BS4)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
Conductivity (EC)	1430	2.0 µS/cm	1410		102	95-104			
Reference (B0H0277-SRM1)		Prepared: 2020-08-06, Analyzed: 2020-08-06							
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B0H0277-SRM2)		Prepared: 2020-08-05, Analyzed: 2020-08-05							
pH	7.00	0.10 pH units	7.01		100	98-102			

General Parameters, Batch B0H0531

Blank (B0H0531-BLK1)		Prepared: 2020-08-07, Analyzed: 2020-08-07							
Solids, Total Dissolved	< 15	15 mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Allterra Construction
P17-932

WORK ORDER REPORTED 0073181
2020-08-12 15:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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General Parameters, Batch B0H0531, Continued

LCS (B0H0531-BS1)

Prepared: 2020-08-07, Analyzed: 2020-08-07

Solids, Total Dissolved	228	15 mg/L	240		95	85-115			
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Polycyclic Aromatic Hydrocarbons (PAH), Batch B0H0286

Blank (B0H0286-BLK1)

Prepared: 2020-08-05, Analyzed: 2020-08-05

Acenaphthene	< 0.050	0.050 µg/L							
Acenaphthylene	< 0.200	0.200 µg/L							
Acridine	< 0.050	0.050 µg/L							
Anthracene	< 0.010	0.010 µg/L							
Benz(a)anthracene	< 0.010	0.010 µg/L							
Benzo(a)pyrene	< 0.010	0.010 µg/L							
Benzo(b+j)fluoranthene	< 0.050	0.050 µg/L							
Benzo(g,h,i)perylene	< 0.050	0.050 µg/L							
Benzo(k)fluoranthene	< 0.050	0.050 µg/L							
2-Chloronaphthalene	< 0.100	0.100 µg/L							
Chrysene	< 0.050	0.050 µg/L							
Dibenz(a,h)anthracene	< 0.010	0.010 µg/L							
Fluoranthene	< 0.030	0.030 µg/L							
Fluorene	< 0.050	0.050 µg/L							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050 µg/L							
1-Methylnaphthalene	< 0.100	0.100 µg/L							
2-Methylnaphthalene	< 0.100	0.100 µg/L							
Naphthalene	< 0.200	0.200 µg/L							
Phenanthrene	< 0.100	0.100 µg/L							
Pyrene	< 0.020	0.020 µg/L							
Quinoline	< 0.050	0.050 µg/L							
Surrogate: Acridine-d9	2.29	µg/L	4.47		51	50-140			
Surrogate: Naphthalene-d8	3.76	µg/L	4.47		84	50-140			
Surrogate: Perylene-d12	3.49	µg/L	4.47		78	50-140			

LCS (B0H0286-BS1)

Prepared: 2020-08-05, Analyzed: 2020-08-05

Acenaphthene	3.51	0.050 µg/L	4.44		79	55-137			
Acenaphthylene	3.66	0.200 µg/L	4.44		82	53-140			
Acridine	2.39	0.050 µg/L	4.44		54	50-120			
Anthracene	3.45	0.010 µg/L	4.44		78	64-130			
Benz(a)anthracene	3.28	0.010 µg/L	4.44		74	57-140			
Benzo(a)pyrene	3.59	0.010 µg/L	4.44		81	63-133			
Benzo(b+j)fluoranthene	7.45	0.050 µg/L	8.89		84	60-129			
Benzo(g,h,i)perylene	3.88	0.050 µg/L	4.44		87	52-139			
Benzo(k)fluoranthene	3.22	0.050 µg/L	4.44		72	50-138			
2-Chloronaphthalene	3.30	0.100 µg/L	4.38		75	50-139			
Chrysene	3.20	0.050 µg/L	4.44		72	59-140			
Dibenz(a,h)anthracene	3.63	0.010 µg/L	4.44		82	53-136			
Fluoranthene	3.65	0.030 µg/L	4.44		82	67-135			
Fluorene	3.35	0.050 µg/L	4.44		75	57-134			
Indeno(1,2,3-cd)pyrene	3.87	0.050 µg/L	4.44		87	52-129			
1-Methylnaphthalene	3.26	0.100 µg/L	4.44		73	50-140			
2-Methylnaphthalene	3.42	0.100 µg/L	4.44		77	50-140			
Naphthalene	3.60	0.200 µg/L	4.44		81	50-140			
Phenanthrene	3.74	0.100 µg/L	4.44		84	61-134			
Pyrene	3.64	0.020 µg/L	4.44		82	66-131			
Quinoline	9.04	0.050 µg/L	4.44		204	50-140			SPK1
Surrogate: Acridine-d9	2.39	µg/L	4.47		54	50-140			
Surrogate: Naphthalene-d8	3.52	µg/L	4.47		79	50-140			
Surrogate: Perylene-d12	3.21	µg/L	4.47		72	50-140			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Allterra Construction
P17-932

WORK ORDER REPORTED 0073181
2020-08-12 15:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Polycyclic Aromatic Hydrocarbons (PAH), Batch B0H0286, Continued									
LCS Dup (B0H0286-BSD1)					Prepared: 2020-08-05, Analyzed: 2020-08-05				
Acenaphthene	3.48	0.050 µg/L	4.44		78	55-137	< 1	18	
Acenaphthylene	3.62	0.200 µg/L	4.44		81	53-140	1	20	
Acridine	2.41	0.050 µg/L	4.44		54	50-120	< 1	30	
Anthracene	3.45	0.010 µg/L	4.44		78	64-130	< 1	15	
Benzo(a)anthracene	3.27	0.010 µg/L	4.44		74	57-140	< 1	25	
Benzo(a)pyrene	3.61	0.010 µg/L	4.44		81	63-133	< 1	18	
Benzo(b+j)fluoranthene	7.44	0.050 µg/L	8.89		84	60-129	< 1	17	
Benzo(g,h,i)perylene	3.89	0.050 µg/L	4.44		87	52-139	< 1	22	
Benzo(k)fluoranthene	3.22	0.050 µg/L	4.44		72	50-138	< 1	26	
2-Chloronaphthalene	3.22	0.100 µg/L	4.38		74	50-139	2	23	
Chrysene	3.20	0.050 µg/L	4.44		72	59-140	< 1	23	
Dibenz(a,h)anthracene	3.65	0.010 µg/L	4.44		82	53-136	< 1	21	
Fluoranthene	3.68	0.030 µg/L	4.44		83	67-135	< 1	18	
Fluorene	3.34	0.050 µg/L	4.44		75	57-134	< 1	18	
Indeno(1,2,3-cd)pyrene	3.84	0.050 µg/L	4.44		87	52-129	< 1	21	
1-Methylnaphthalene	3.21	0.100 µg/L	4.44		72	50-140	1	20	
2-Methylnaphthalene	3.41	0.100 µg/L	4.44		77	50-140	< 1	21	
Naphthalene	3.55	0.200 µg/L	4.44		80	50-140	2	22	
Phenanthrene	3.75	0.100 µg/L	4.44		84	61-134	< 1	17	
Pyrene	3.70	0.020 µg/L	4.44		83	66-131	2	19	
Quinoline	9.81	0.050 µg/L	4.44		221	50-140	8	14	SPK1
Surrogate: Acridine-d9	2.42	µg/L	4.47		54	50-140			
Surrogate: Naphthalene-d8	3.44	µg/L	4.47		77	50-140			
Surrogate: Perylene-d12	3.21	µg/L	4.47		72	50-140			

Total Metals, Batch B0H0495

Blank (B0H0495-BLK1)			Prepared: 2020-08-07, Analyzed: 2020-08-08						
Aluminum, total	< 0.0050	0.0050 mg/L							
Antimony, total	< 0.00020	0.00020 mg/L							
Arsenic, total	< 0.00050	0.00050 mg/L							
Barium, total	< 0.0050	0.0050 mg/L							
Beryllium, total	< 0.00010	0.00010 mg/L							
Bismuth, total	< 0.00010	0.00010 mg/L							
Boron, total	< 0.0500	0.0500 mg/L							
Cadmium, total	< 0.000010	0.000010 mg/L							
Calcium, total	< 0.20	0.20 mg/L							
Chromium, total	< 0.00050	0.00050 mg/L							
Cobalt, total	< 0.00010	0.00010 mg/L							
Copper, total	< 0.00040	0.00040 mg/L							
Iron, total	< 0.010	0.010 mg/L							
Lead, total	< 0.00020	0.00020 mg/L							
Lithium, total	< 0.00010	0.00010 mg/L							
Magnesium, total	< 0.010	0.010 mg/L							
Manganese, total	< 0.00020	0.00020 mg/L							
Molybdenum, total	< 0.00010	0.00010 mg/L							
Nickel, total	< 0.00040	0.00040 mg/L							
Phosphorus, total	< 0.050	0.050 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Silicon, total	< 1.0	1.0 mg/L							
Silver, total	< 0.000050	0.000050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Sulfur, total	< 3.0	3.0 mg/L							
Tellurium, total	< 0.00050	0.00050 mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Allterra Construction
P17-932

WORK ORDER REPORTED 0073181
2020-08-12 15:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B0H0495, Continued									
Blank (B0H0495-BLK1), Continued				Prepared: 2020-08-07, Analyzed: 2020-08-08					
Thallium, total	< 0.000020	0.000020 mg/L							
Thorium, total	< 0.00010	0.00010 mg/L							
Tin, total	< 0.00020	0.00020 mg/L							
Titanium, total	< 0.0050	0.0050 mg/L							
Tungsten, total	< 0.0010	0.0010 mg/L							
Uranium, total	< 0.000020	0.000020 mg/L							
Vanadium, total	< 0.0010	0.0010 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							
Zirconium, total	< 0.00010	0.00010 mg/L							
LCS (B0H0495-BS1)				Prepared: 2020-08-07, Analyzed: 2020-08-08					
Aluminum, total	0.0215	0.0050 mg/L	0.0199		108	80-120			
Antimony, total	0.0219	0.00020 mg/L	0.0200		110	80-120			
Arsenic, total	0.0212	0.00050 mg/L	0.0200		106	80-120			
Barium, total	0.0209	0.0050 mg/L	0.0198		106	80-120			
Beryllium, total	0.0217	0.00010 mg/L	0.0198		110	80-120			
Bismuth, total	0.0210	0.00010 mg/L	0.0200		105	80-120			
Boron, total	< 0.0500	0.0500 mg/L	0.0200		120	80-120			
Cadmium, total	0.0207	0.000010 mg/L	0.0199		104	80-120			
Calcium, total	2.07	0.20 mg/L	2.02		102	80-120			
Chromium, total	0.0209	0.00050 mg/L	0.0198		106	80-120			
Cobalt, total	0.0209	0.00010 mg/L	0.0199		105	80-120			
Copper, total	0.0218	0.00040 mg/L	0.0200		109	80-120			
Iron, total	2.06	0.010 mg/L	2.02		102	80-120			
Lead, total	0.0206	0.00020 mg/L	0.0199		103	80-120			
Lithium, total	0.0213	0.00010 mg/L	0.0200		107	80-120			
Magnesium, total	2.22	0.010 mg/L	2.02		110	80-120			
Manganese, total	0.0219	0.00020 mg/L	0.0199		110	80-120			
Molybdenum, total	0.0209	0.00010 mg/L	0.0200		104	80-120			
Nickel, total	0.0215	0.00040 mg/L	0.0200		107	80-120			
Phosphorus, total	2.02	0.050 mg/L	2.00		101	80-120			
Potassium, total	2.20	0.10 mg/L	2.02		109	80-120			
Selenium, total	0.0214	0.00050 mg/L	0.0200		107	80-120			
Silicon, total	2.4	1.0 mg/L	2.00		118	80-120			
Silver, total	0.0209	0.000050 mg/L	0.0200		104	80-120			
Sodium, total	2.24	0.10 mg/L	2.02		111	80-120			
Strontium, total	0.0218	0.0010 mg/L	0.0200		109	80-120			
Sulfur, total	4.6	3.0 mg/L	5.00		92	80-120			
Tellurium, total	0.0206	0.00050 mg/L	0.0200		103	80-120			
Thallium, total	0.0209	0.000020 mg/L	0.0199		105	80-120			
Thorium, total	0.0197	0.00010 mg/L	0.0200		99	80-120			
Tin, total	0.0216	0.00020 mg/L	0.0200		108	80-120			
Titanium, total	0.0207	0.0050 mg/L	0.0200		103	80-120			
Tungsten, total	0.0205	0.0010 mg/L	0.0200		102	80-120			
Uranium, total	0.0206	0.000020 mg/L	0.0200		103	80-120			
Vanadium, total	0.0199	0.0010 mg/L	0.0200		100	80-120			
Zinc, total	0.0211	0.0040 mg/L	0.0200		106	80-120			
Zirconium, total	0.0207	0.00010 mg/L	0.0200		103	80-120			
Reference (B0H0495-SRM1)				Prepared: 2020-08-07, Analyzed: 2020-08-08					
Aluminum, total	0.294	0.0050 mg/L	0.299		98	70-130			
Antimony, total	0.0534	0.00020 mg/L	0.0517		103	70-130			
Arsenic, total	0.131	0.00050 mg/L	0.119		110	70-130			
Barium, total	0.812	0.0050 mg/L	0.801		101	70-130			
Beryllium, total	0.0549	0.00010 mg/L	0.0501		110	70-130			
Boron, total	3.62	0.0500 mg/L	4.11		88	70-130			
Cadmium, total	0.0523	0.000010 mg/L	0.0503		104	70-130			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Allterra Construction
P17-932

WORK ORDER REPORTED 0073181
2020-08-12 15:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B0H0495, Continued									
Reference (B0H0495-SRM1), Continued				Prepared: 2020-08-07, Analyzed: 2020-08-08					
Calcium, total	10.5	0.20 mg/L	10.7		99	70-130			
Chromium, total	0.260	0.00050 mg/L	0.250		104	70-130			
Cobalt, total	0.0409	0.00010 mg/L	0.0384		106	70-130			
Copper, total	0.517	0.00040 mg/L	0.487		106	70-130			
Iron, total	0.514	0.010 mg/L	0.504		102	70-130			
Lead, total	0.288	0.00020 mg/L	0.278		104	70-130			
Lithium, total	0.438	0.00010 mg/L	0.398		110	70-130			
Magnesium, total	3.89	0.010 mg/L	3.59		108	70-130			
Manganese, total	0.113	0.00020 mg/L	0.111		102	70-130			
Molybdenum, total	0.208	0.00010 mg/L	0.196		106	70-130			
Nickel, total	0.264	0.00040 mg/L	0.248		106	70-130			
Phosphorus, total	0.251	0.050 mg/L	0.213		118	70-130			
Potassium, total	6.41	0.10 mg/L	5.89		109	70-130			
Selenium, total	0.132	0.00050 mg/L	0.120		110	70-130			
Sodium, total	9.52	0.10 mg/L	8.71		109	70-130			
Strontium, total	0.413	0.0010 mg/L	0.393		105	70-130			
Thallium, total	0.0819	0.000020 mg/L	0.0787		104	70-130			
Uranium, total	0.0339	0.000020 mg/L	0.0344		99	70-130			
Vanadium, total	0.403	0.0010 mg/L	0.391		103	70-130			
Zinc, total	2.73	0.0040 mg/L	2.50		109	70-130			

QC Qualifiers:

SPK1 The recovery of this analyte was outside of established control limits. The data was accepted based on performance of other batch QC.



2K9

5C3

IS 1H7

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CHAIN OF CUSTODY RECORD

COC#

PAGE 1 OF 1

RELINQUISHED BY: JOEL CLARKSON	DATE: 20200730 TIME: 14:30	RECEIVED BY: MAR. Express TC	DATE: 6/7/31 TIME: 1200
PROJECT:		PROJECT INFO:	

PROJECT: 17-932	PROJECT INFO:
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TURNAROUND TIME REQUESTED: Routine: (5-7 Days) ☒ Rush: 1 Day* ☐ 2 Day* ☐ 3 Day* ☐ Other* *Contact Lab To Confirm. Surcharge May Apply		REGULATORY APPLICATION: Canadian Drinking Water Quality Guidelines ☐ Regs on Report? ☐ BC Drinking Water Protection Act / Reg. ☐ BC CSR ☐ AB TIER 1 ☐ CCME ☐ OTHER* ☐ AL ☐ PL ☐ RL ☐ CL ☐ IL ☐ AW ☐ IW ☐ LW ☐	
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ANALYSES REQUESTED:[illegible]

REPORT TO:	INVOICE TO:
COMPANY: <u>ALTERRA CONSTRUCTION LTD.</u>	COMPANY: _____
ADDRESS: <u>2158 MILLSTREAM RD</u> <u>VICTORIA BC V9B 6H4</u>	ADDRESS: _____
CONTACT: _____	CONTACT: _____
TEL/FAX: _____	TEL/FAX: _____
DELIVERY METHOD: EMAIL ☒ MAIL ☐ OTHER* ☐	DELIVERY METHOD: EMAIL ☐ MAIL ☐ OTHER* ☐
DATA FORMAT: EXCEL ☒ WATERTRAX ☐ ESdat ☐ EQuIS ☐ BC EMS ☐ OTHER* ☐	EMAIL 1: _____
EMAIL 1: <u>RAYMOND@ALTERRACONSTRUCTION.CA</u>	EMAIL 2: _____
EMAIL 2: <u>REX@DTHAR@ISLANDERENGINEERING.COM</u>	EMAIL 3: _____
EMAIL 3: <u>SBABULIC@ISLANDERENGINEERING.COM</u>	PO #: <u>17-932</u>
** NEW ** If you would like to sign up for ClientConnect and/or EnviroChain, CARO's online service offerings, check here: ☐	

[illegible]

SHIPPING INSTRUCTIONS: Return Cooler(s) ☐		SAMPLE RETENTION INSTRUCTIONS (Discarded 30 days after Report unless otherwise specified): 60 Days ☐ 90 Days ☐ Longer Date (Surcharges will Apply): _____		PAYMENT: CHEQUE ☐ CREDIT ☐ DEBIT ☐ CASH ☐ INVOICE ☐		SAMPLE RECEIPT CONDITION: COOLER 1 (°C): <u>13.8</u> ICE: Y ☒ N ☐ COOLER 2 (°C): _____ ICE: Y ☐ N ☐ COOLER 3 (°C): _____ ICE: Y ☐ N ☐ CUSTODY SEALS INTACT: NA ☐ Y ☐ N ☐	
Supplies Needed: _____ _____ _____		* OTHER INSTRUCTIONS: _____ _____ _____					

Table 1: Analytical Results for Nutrients in Groundwater

Sample Location	CSR Standards ⁽¹⁾		MW19-01	MW19-02	MW-3S
As-built Well Depths to Bottom (mbgs)			7.05	8.9	24.72
Sample ID			0083068-01	0083068-02	0083068-03
			MW19-01	MW19-02	MW-3S
Date Sampled	Aquatic Life	Drinking Water	2020-08-28	2020-08-27	2020-08-27
Physical Tests					
Conductivity (uS/cm)	-	-	792	935	339
Hardness (as CaCO3) mg/L	-	-	377	516	153
pH (pH Units)	-	-	7.89	7.76	7.85
Total Dissolved Solids mg/L	-	-	491	640	224
Turbidity (NTU)	-	-	42.7	5.45	1.24
Anions and Nutrients mg/L					
Alkalinity, Bicarbonate (as CaCO3)			267	305	135
Alkalinity, Carbonate (as CaCO3)			<1.0	<1.0	<1.0
Chloride (Cl)	1500	250	45.8	20.90	10.1
Fluoride (F)	2 (H < 50)	1.5			
	3 (H ≥ 50)		<0.10	0.110	0.11
Nitrate (as N)	400	10	0.089	0.850	0.066
Nitrite (as N) ⁽¹⁾ Cl <2 mg/L	0.2	3.2			
Cl 2 - <4 mg/L	0.4				
Cl 4 - <6 mg/L	0.6				
Cl 6 - <8 mg/L	0.8				
Cl 8 - <10 mg/L	1				
Cl ≥ 10 mg/L	2		0.076	<0.010	<0.010
Sulfate (SO4)	1000	500	95.6	189.0	36.7

Notes: Refer to Table Endnotes (attached)

Table 2: Analytical Results for Dissolved Metals in Groundwater

Sample Location	CSR Standards ⁽¹⁾		MW19-01	MW19-02	MW-3S
As-built Well Depths (mbgs)			7.05	8.90	24.72
Sample ID			0083068-01	0083068-02	0083068-03
			MW19-01	MW19-02	MW-3S
Date Sampled	Aquatic Life	Drinking Water	2020-08-28	2020-08-27	2020-08-27
Physical Tests mg/L					
Hardness (as CaCO3)	-	-	377	516	153
Dissolved Metals mg/L					
Aluminum (Al)-Dissolved	-	9.5	<0.0050	0.0164	<0.0050
Antimony (Sb)-Dissolved	0.2	0.006	<0.00020	<0.00020	<0.00020
Arsenic (As)-Dissolved	0.05	0.01	<0.00050	<0.00050	0.00121
Barium (Ba)-Dissolved	10	1	0.0275	0.0298	0.0218
Beryllium (Be)-Dissolved	0.053	-	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved	-	-	<0.00010	<0.00010	<0.00010
Boron (B)-Dissolved	50	5	<0.0500	<0.0500	<0.0500
Cadmium (Cd)-Dissolved	0.0001 (H<30)	0.005			
	0.0003 (H=30-<90)				
	0.0005 (H=90-<150)				
	0.0006 (H=150-<210)		0.000025	0.00003	0.000094
Calcium (Ca)-Dissolved	-	-	117	169	48.5
Chromium (Cr)-Dissolved	0.01	0.05	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	0.04	-	0.00078	0.00031	<0.00010
Copper (Cu)-Dissolved	0.02 (H<50)	1			
	0.03 (H=50-<75)				
	0.04 (H=75-<100)				
	0.05 (H=100-<125)				
	0.06 (H=125-<150)				
	0.07 (H=150-<175)				<0.00040
	0.08 (H=175-<200)				
	0.09 (H>200)		0.00073	0.00141	
Iron (Fe)-Dissolved	-	6.5	0.035	0.025	0.013
Lead (Pb)-Dissolved	0.04 (H<50)	0.01			
	0.05 (H=50-<100)				
	0.06 (H=100-<200)				<0.00020
	0.11 (H=200-<300)				
	0.16 (H>300)		<0.00020	<0.00020	
Lithium (Li)-Dissolved	-	-	0.00288	0.00019	0.00019
Magnesium (Mg)-Dissolved	-	100	20.8	22.9	7.74
Manganese (Mn)-Dissolved	-	0.55	0.332	0.0377	0.196
Mercury (Hg)-Dissolved	0.001	0.001	-	-	-
Molybdenum (Mo)-Dissolved	10	0.25	0.00194	0.00095	0.00354
Nickel (Ni)-Dissolved	0.25 (H<60)	-			
	0.65 (H=60-<120)				
	1.1 (H=120-<180)				0.00336
	1.5 (H>180)		0.00277	0.00063	
Phosphorus(P)-Dissolved	-	-	<0.050	<0.050	0.077
Potassium (K)-Dissolved	-	-	1.6	1.33	1.26
Selenium (Se)-Dissolved	0.01	0.01	<0.00050	<0.00050	<0.00050
Silicon (Si)-Dissolved	-	-	7.7	7.2	6.9
Silver (Ag)-Dissolved	0.0005 (H<=100)	-			
	0.015 (H>100)		<0.000050	<0.000050	<0.000050
Sodium (Na)-Dissolved	-	200	27.1	16.4	15.3
Strontium (Sr)-Dissolved	-	-	0.332	0.419	0.24
Sulfur (S)-Dissolved	-	-	30.5	63.3	12.1
Tellurium (Te)-Dissolved	-	-	<0.00050	<0.00050	<0.00050
Thallium (Tl)-Dissolved	0.003	-	<0.000020	<0.000020	<0.000020
Thorium (Th)-Dissolved	-	-	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved	-	-	<0.00020	<0.00020	<0.00020
Titanium (Ti)-Dissolved	1	-	<0.0050	<0.0050	<0.0050
Tungsten (W)-Dissolved	-	-	0.0068	0.0038	<0.0010
Uranium (U)-Dissolved	3	0.02	0.0081	0.00328	0.000939
Vanadium (V)-Dissolved	-	-	<0.0010	0.0024	<0.0010
Zinc (Zn)-Dissolved	0.075 (H<90)	5			
	0.150 (H=90-<100)				
	0.900 (H=100-<200)				<0.0040
	1.650 (H=200-<300)				
	2.4 (H=300-<400)		0.0045	<0.0040	
Zirconium (Zr)-Dissolved	-	-	<0.00010	<0.00010	<0.00010

Notes: Refer to Table Endnotes (attached)

Table 3: Analytical Results for Hydrocarbons and PAHs in Groundwater

Sample Location	CSR Standards ⁽¹⁾		MW19-01	MW19-02	MW-3S	MW-01S	MW-01D	MW-02	MW-3D	MW-5S	MW-5D	MW-06
As-built Well Depths (mbgs)			7.05	8.90	24.72	51.88	83.49	43.49	47.45	29.65	38.55	48.02
Sample ID			0083068-01	0083068-02	0083068-03	0083068-04	0083068-05	0083068-06	0083068-07	0083068-08	0083068-09	0083068-10
			MW19-01	MW19-02	MW-3S	MW-01S	MW-01D	MW-02	MW-3D	MW-5S	MW-5D	MW-06
Date Sampled	Aquatic Life	Drinking Water	2020-08-28	2020-08-27	2020-08-27	2020-08-28	2020-08-28	2020-08-27	2020-08-27	2020-08-28	2020-08-28	2020-08-28
Turbidity (NTU)	-	-	42.7	5.45	1.24							
Hydrocarbons ug/L												
EPH10-19	5000	5000	<250	<250	<250	<250	<250	<250	<250	<250	<250	270
EPH10-19 (SG)	5000	5000										
EPH19-32	-	-	<250	<250	<250	<250	<250	758	521	<250	882	1620
EPH19-32 (SG)	-	-										
LEPH	500	-	<250	<250	<250	<250	<250	<250	<250	<250	<250	270
HEPH	-	-	<250	<250	<250	<250	<250	758	521	<250	882	1620
Polycyclic Aromatic Hydrocarbons ug/L												
Acenaphthene	60	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	-	-	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Acridine	0.5	-	<0.050	<0.050	<0.050	<0.050	<0.050	<14.4	<9.95	<0.050	0.366	<18.8
Anthracene	1	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.208	<0.370	<0.010	<0.010	<0.295
Benzo(a)anthracene	1	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene	0.1	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b+j)fluoranthene	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-Chloronaphthalene	-	-	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Chrysene	1	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Fluoranthene	2	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Fluorene	120	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-c,d)pyrene	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1-Methylnaphthalene	-	-	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
2-Methylnaphthalene	-	-	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Naphthalene	10	-	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Phenanthrene	3	-	<0.100	<0.100	<0.100	<0.100	<0.100	<0.909	<0.620	<0.100	<0.100	<1.16
Pyrene	0.2	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Quinoline	34	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Notes: Refer to Table Endnotes (attached)

Analytical Table Footnotes: Analytical Results for Groundwater and Seepage Blanket Water

All concentrations in mg/L, except pH or as indicated.

- "<" less than the laboratory detection limit indicated.
- "-" means not analyzed or no standard or guideline applies.
- * RPDs are not normally calculated where one or more concentrations are less than five times MDL.
- (1) A compendium of CSR Schedules 6 and 10 guidelines with respect to Drinking Water (DW) and Freshwater Aquatic Life (AW).
- (2) Standard is dissolved Chloride-dependent.

BOLD, UNDERLINE

Laboratory Detection Limit exceeds one or more applicable Standard

BLUE SHADING

Concentration greater than CSR Aquatic Life (AW) Standard

BOLD, BEIGE TEXT

Concentration greater than CSR Drinking Water (DW) Standard

CERTIFICATE OF ANALYSIS

REPORTED TO Allterra Construction
2158 Millstream Road
Victoria, BC V9B 6H4

ATTENTION Ray Lam

PO NUMBER 17-932

PROJECT 17-932

PROJECT INFO

WORK ORDER 0083068

RECEIVED / TEMP 2020-08-31 11:00 / 18°C

REPORTED 2020-09-08 13:20

COC NUMBER B75135

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at nyipp@caro.ca

Authorized By:

Nicole Yipp
Team Lead, Client Service

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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
17-932

WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL	Units	Analyzed	Qualifier
MW19-01 (0083068-01) Matrix: Water Sampled: 2020-08-28 10:51					
Anions					
Chloride	45.8	0.10	mg/L	2020-09-02	
Fluoride	< 0.10	0.10	mg/L	2020-09-02	
Nitrate (as N)	0.089	0.010	mg/L	2020-09-02	HT1
Nitrite (as N)	0.076	0.010	mg/L	2020-09-02	HT1
Sulfate	95.6	1.0	mg/L	2020-09-02	
BCMOE Aggregate Hydrocarbons					
EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	< 250	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	71	60-126	%	2020-09-06	
Calculated Parameters					
Hardness, Total (as CaCO3)	377	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	0.00288	0.00010	mg/L	2020-09-05	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-05	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Barium, dissolved	0.0275	0.0050	mg/L	2020-09-05	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-05	
Cadmium, dissolved	0.000025	0.000010	mg/L	2020-09-05	
Calcium, dissolved	117	0.20	mg/L	2020-09-05	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Cobalt, dissolved	0.00078	0.00010	mg/L	2020-09-05	
Copper, dissolved	0.00073	0.00040	mg/L	2020-09-05	
Iron, dissolved	0.035	0.010	mg/L	2020-09-05	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Magnesium, dissolved	20.8	0.010	mg/L	2020-09-05	
Manganese, dissolved	0.332	0.00020	mg/L	2020-09-05	
Molybdenum, dissolved	0.00194	0.00010	mg/L	2020-09-05	
Nickel, dissolved	0.00277	0.00040	mg/L	2020-09-05	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-05	
Potassium, dissolved	1.60	0.10	mg/L	2020-09-05	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Silicon, dissolved	7.7	1.0	mg/L	2020-09-05	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-05	
Sodium, dissolved	27.1	0.10	mg/L	2020-09-05	
Strontium, dissolved	0.332	0.0010	mg/L	2020-09-05	
Sulfur, dissolved	30.5	3.0	mg/L	2020-09-05	

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
17-932

WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL	Units	Analyzed	Qualifier
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MW19-01 (0083068-01) | Matrix: Water | Sampled: 2020-08-28 10:51, Continued

Dissolved Metals, Continued

Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-05	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-05	
Tungsten, dissolved	0.0068	0.0010	mg/L	2020-09-05	
Uranium, dissolved	0.00810	0.000020	mg/L	2020-09-05	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2020-09-05	
Zinc, dissolved	0.0045	0.0040	mg/L	2020-09-05	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	

General Parameters

Alkalinity, Total (as CaCO ₃)	267	1.0	mg/L	2020-09-03	
Alkalinity, Phenolphthalein (as CaCO ₃)	< 1.0	1.0	mg/L	2020-09-03	
Alkalinity, Bicarbonate (as CaCO ₃)	267	1.0	mg/L	2020-09-03	
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0	mg/L	2020-09-03	
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0	mg/L	2020-09-03	
Conductivity (EC)	792	2.0	µS/cm	2020-09-03	
pH	7.89	0.10	pH units	2020-09-03	HT2
Solids, Total Dissolved	491	15	mg/L	2020-09-02	
Solids, Total Suspended	106	2.0	mg/L	2020-09-02	
Turbidity	42.7	0.10	NTU	2020-09-02	HT1

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-06	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-06	
Acridine	< 0.050	0.050	µg/L	2020-09-06	
Anthracene	< 0.010	0.010	µg/L	2020-09-06	
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-06	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-06	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-06	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-06	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-06	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-06	
Chrysene	< 0.050	0.050	µg/L	2020-09-06	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-06	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-06	
Fluorene	< 0.050	0.050	µg/L	2020-09-06	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-06	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-06	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-06	
Naphthalene	< 0.200	0.200	µg/L	2020-09-06	
Phenanthrene	< 0.100	0.100	µg/L	2020-09-06	
Pyrene	< 0.020	0.020	µg/L	2020-09-06	

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
17-932

WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL	Units	Analyzed	Qualifier
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MW19-01 (0083068-01) | Matrix: Water | Sampled: 2020-08-28 10:51, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Quinoline	< 0.050	0.050	µg/L	2020-09-06	
Surrogate: Acridine-d9	87	50-140	%	2020-09-06	
Surrogate: Naphthalene-d8	83	50-140	%	2020-09-06	
Surrogate: Perylene-d12	52	50-140	%	2020-09-06	

MW19-02 (0083068-02) | Matrix: Water | Sampled: 2020-08-27 12:02

Anions

Chloride	20.9	0.10	mg/L	2020-09-02	
Fluoride	0.11	0.10	mg/L	2020-09-02	
Nitrate (as N)	0.850	0.010	mg/L	2020-09-02	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-02	HT1
Sulfate	189	1.0	mg/L	2020-09-02	

BCMOE Aggregate Hydrocarbons

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	< 250	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	67	60-126	%	2020-09-06	

Calculated Parameters

Hardness, Total (as CaCO3)	516	0.500	mg/L	N/A	
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Dissolved Metals

Lithium, dissolved	0.00019	0.00010	mg/L	2020-09-05	
Aluminum, dissolved	0.0164	0.0050	mg/L	2020-09-05	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Barium, dissolved	0.0298	0.0050	mg/L	2020-09-05	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-05	
Cadmium, dissolved	0.000030	0.000010	mg/L	2020-09-05	
Calcium, dissolved	169	0.20	mg/L	2020-09-05	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Cobalt, dissolved	0.00031	0.00010	mg/L	2020-09-05	
Copper, dissolved	0.00141	0.00040	mg/L	2020-09-05	
Iron, dissolved	0.025	0.010	mg/L	2020-09-05	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Magnesium, dissolved	22.9	0.010	mg/L	2020-09-05	
Manganese, dissolved	0.0377	0.00020	mg/L	2020-09-05	
Molybdenum, dissolved	0.00095	0.00010	mg/L	2020-09-05	
Nickel, dissolved	0.00063	0.00040	mg/L	2020-09-05	

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
17-932

WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL	Units	Analyzed	Qualifier
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MW19-02 (0083068-02) | Matrix: Water | Sampled: 2020-08-27 12:02, Continued

Dissolved Metals, Continued

Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-05	
Potassium, dissolved	1.33	0.10	mg/L	2020-09-05	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Silicon, dissolved	7.2	1.0	mg/L	2020-09-05	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-05	
Sodium, dissolved	16.4	0.10	mg/L	2020-09-05	
Strontium, dissolved	0.419	0.0010	mg/L	2020-09-05	
Sulfur, dissolved	63.3	3.0	mg/L	2020-09-05	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-05	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-05	
Tungsten, dissolved	0.0038	0.0010	mg/L	2020-09-05	
Uranium, dissolved	0.00328	0.000020	mg/L	2020-09-05	
Vanadium, dissolved	0.0024	0.0010	mg/L	2020-09-05	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-09-05	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	

General Parameters

Alkalinity, Total (as CaCO3)	305	1.0	mg/L	2020-09-03	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-03	
Alkalinity, Bicarbonate (as CaCO3)	305	1.0	mg/L	2020-09-03	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-03	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-03	
Conductivity (EC)	935	2.0	µS/cm	2020-09-03	
pH	7.76	0.10	pH units	2020-09-03	HT2
Solids, Total Dissolved	640	15	mg/L	2020-09-02	
Solids, Total Suspended	12.4	2.0	mg/L	2020-09-02	
Turbidity	5.45	0.10	NTU	2020-09-02	HT1

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-06	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-06	
Acridine	< 0.050	0.050	µg/L	2020-09-06	
Anthracene	< 0.010	0.010	µg/L	2020-09-06	
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-06	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-06	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-06	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-06	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-06	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-06	
Chrysene	< 0.050	0.050	µg/L	2020-09-06	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-06	

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
17-932

WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL	Units	Analyzed	Qualifier
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MW19-02 (0083068-02) | Matrix: Water | Sampled: 2020-08-27 12:02, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Fluoranthene	< 0.030	0.030	µg/L	2020-09-06	
Fluorene	< 0.050	0.050	µg/L	2020-09-06	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-06	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-06	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-06	
Naphthalene	< 0.200	0.200	µg/L	2020-09-06	
Phenanthrene	< 0.100	0.100	µg/L	2020-09-06	
Pyrene	< 0.020	0.020	µg/L	2020-09-06	
Quinoline	< 0.050	0.050	µg/L	2020-09-06	
Surrogate: Acridine-d9	81	50-140	%	2020-09-06	
Surrogate: Naphthalene-d8	71	50-140	%	2020-09-06	
Surrogate: Perylene-d12	55	50-140	%	2020-09-06	

MW-3S (0083068-03) | Matrix: Water | Sampled: 2020-08-27 11:00

Anions

Chloride	10.1	0.10	mg/L	2020-09-02	
Fluoride	0.11	0.10	mg/L	2020-09-02	
Nitrate (as N)	0.066	0.010	mg/L	2020-09-02	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-02	HT1
Sulfate	36.7	1.0	mg/L	2020-09-02	

BCMOE Aggregate Hydrocarbons

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	< 250	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	70	60-126	%	2020-09-06	

Calculated Parameters

Hardness, Total (as CaCO3)	153	0.500	mg/L	N/A	
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Dissolved Metals

Lithium, dissolved	0.00019	0.00010	mg/L	2020-09-05	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-05	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Arsenic, dissolved	0.00121	0.00050	mg/L	2020-09-05	
Barium, dissolved	0.0218	0.0050	mg/L	2020-09-05	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-05	
Cadmium, dissolved	0.000094	0.000010	mg/L	2020-09-05	
Calcium, dissolved	48.5	0.20	mg/L	2020-09-05	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
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MW-3S (0083068-03) | Matrix: Water | Sampled: 2020-08-27 11:00, Continued

Dissolved Metals, Continued

Cobalt, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Copper, dissolved	< 0.00040	0.00040	mg/L	2020-09-05	
Iron, dissolved	0.013	0.010	mg/L	2020-09-05	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Magnesium, dissolved	7.74	0.010	mg/L	2020-09-05	
Manganese, dissolved	0.196	0.00020	mg/L	2020-09-05	
Molybdenum, dissolved	0.00354	0.00010	mg/L	2020-09-05	
Nickel, dissolved	0.00336	0.00040	mg/L	2020-09-05	
Phosphorus, dissolved	0.077	0.050	mg/L	2020-09-05	
Potassium, dissolved	1.26	0.10	mg/L	2020-09-05	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Silicon, dissolved	6.9	1.0	mg/L	2020-09-05	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-05	
Sodium, dissolved	15.3	0.10	mg/L	2020-09-05	
Strontium, dissolved	0.240	0.0010	mg/L	2020-09-05	
Sulfur, dissolved	12.1	3.0	mg/L	2020-09-05	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-05	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-05	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-05	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-05	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-05	
Uranium, dissolved	0.000939	0.000020	mg/L	2020-09-05	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2020-09-05	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-09-05	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-05	

General Parameters

Alkalinity, Total (as CaCO3)	135	1.0	mg/L	2020-09-03	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-03	
Alkalinity, Bicarbonate (as CaCO3)	135	1.0	mg/L	2020-09-03	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-03	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-03	
Conductivity (EC)	339	2.0	µS/cm	2020-09-03	
pH	7.85	0.10	pH units	2020-09-03	HT2
Solids, Total Dissolved	224	15	mg/L	2020-09-02	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-02	
Turbidity	1.24	0.10	NTU	2020-09-02	HT1

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-06	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-06	
Acridine	< 0.050	0.050	µg/L	2020-09-06	
Anthracene	< 0.010	0.010	µg/L	2020-09-06	

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
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MW-3S (0083068-03) | Matrix: Water | Sampled: 2020-08-27 11:00, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-06	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-06	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-06	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-06	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-06	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-06	
Chrysene	< 0.050	0.050	µg/L	2020-09-06	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-06	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-06	
Fluorene	< 0.050	0.050	µg/L	2020-09-06	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-06	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-06	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-06	
Naphthalene	< 0.200	0.200	µg/L	2020-09-06	
Phenanthrene	< 0.100	0.100	µg/L	2020-09-06	
Pyrene	< 0.020	0.020	µg/L	2020-09-06	
Quinoline	< 0.050	0.050	µg/L	2020-09-06	
Surrogate: Acridine-d9	102	50-140	%	2020-09-06	
Surrogate: Naphthalene-d8	83	50-140	%	2020-09-06	
Surrogate: Perylene-d12	63	50-140	%	2020-09-06	

MW-01S (0083068-04) | Matrix: Water | Sampled: 2020-08-28 08:00

BCMOE Aggregate Hydrocarbons

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	< 250	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	61	60-126	%	2020-09-06	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-07	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-07	
Acridine	< 0.050	0.050	µg/L	2020-09-07	
Anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Chrysene	< 0.050	0.050	µg/L	2020-09-07	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-07	

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
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WORK ORDER REPORTED 0083068
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Analyte	Result	RL	Units	Analyzed	Qualifier
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MW-01S (0083068-04) | Matrix: Water | Sampled: 2020-08-28 08:00, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Fluoranthene	< 0.030	0.030	µg/L	2020-09-07	
Fluorene	< 0.050	0.050	µg/L	2020-09-07	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-07	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Naphthalene	< 0.200	0.200	µg/L	2020-09-07	
Phenanthrene	< 0.100	0.100	µg/L	2020-09-07	
Pyrene	< 0.020	0.020	µg/L	2020-09-07	
Quinoline	< 0.050	0.050	µg/L	2020-09-07	
Surrogate: Acridine-d9	88	50-140	%	2020-09-07	
Surrogate: Naphthalene-d8	91	50-140	%	2020-09-07	
Surrogate: Perylene-d12	86	50-140	%	2020-09-07	

MW-01D (0083068-05) | Matrix: Water | Sampled: 2020-08-28 08:15

BCMOE Aggregate Hydrocarbons

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	< 250	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	68	60-126	%	2020-09-06	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-07	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-07	
Acridine	< 0.050	0.050	µg/L	2020-09-07	
Anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Chrysene	< 0.050	0.050	µg/L	2020-09-07	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-07	
Fluorene	< 0.050	0.050	µg/L	2020-09-07	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-07	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Naphthalene	< 0.200	0.200	µg/L	2020-09-07	
Phenanthrene	< 0.100	0.100	µg/L	2020-09-07	
Pyrene	< 0.020	0.020	µg/L	2020-09-07	

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
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WORK ORDER REPORTED 0083068
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Analyte	Result	RL	Units	Analyzed	Qualifier
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MW-01D (0083068-05) | Matrix: Water | Sampled: 2020-08-28 08:15, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Quinoline	< 0.050	0.050	µg/L	2020-09-07	
Surrogate: Acridine-d9	77	50-140	%	2020-09-07	
Surrogate: Naphthalene-d8	80	50-140	%	2020-09-07	
Surrogate: Perylene-d12	69	50-140	%	2020-09-07	

MW-02 (0083068-06) | Matrix: Water | Sampled: 2020-08-27 11:32

BCMOE Aggregate Hydrocarbons

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	758	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	758	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	88	60-126	%	2020-09-06	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-07	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-07	
Acridine	< 14.4	0.050	µg/L	2020-09-07	RA1
Anthracene	< 0.208	0.010	µg/L	2020-09-07	RA1
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Chrysene	< 0.050	0.050	µg/L	2020-09-07	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-07	
Fluorene	< 0.050	0.050	µg/L	2020-09-07	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-07	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Naphthalene	< 0.200	0.200	µg/L	2020-09-07	
Phenanthrene	< 0.909	0.100	µg/L	2020-09-07	RA1
Pyrene	< 0.020	0.020	µg/L	2020-09-07	
Quinoline	< 0.050	0.050	µg/L	2020-09-07	
Surrogate: Acridine-d9	124	50-140	%	2020-09-07	
Surrogate: Naphthalene-d8	93	50-140	%	2020-09-07	
Surrogate: Perylene-d12	67	50-140	%	2020-09-07	

MW-3D (0083068-07) | Matrix: Water | Sampled: 2020-08-27 10:30

BCMOE Aggregate Hydrocarbons

TEST RESULTS

REPORTED TO PROJECT Allterra Construction
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WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL	Units	Analyzed	Qualifier
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MW-3D (0083068-07) | Matrix: Water | Sampled: 2020-08-27 10:30, Continued

BCMOE Aggregate Hydrocarbons, Continued

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	521	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	521	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	65	60-126	%	2020-09-06	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-07	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-07	
Acridine	< 9.95	0.050	µg/L	2020-09-07	RA1
Anthracene	< 0.370	0.010	µg/L	2020-09-07	RA1
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Chrysene	< 0.050	0.050	µg/L	2020-09-07	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-07	
Fluorene	< 0.050	0.050	µg/L	2020-09-07	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-07	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Naphthalene	< 0.200	0.200	µg/L	2020-09-07	
Phenanthrene	< 0.620	0.100	µg/L	2020-09-07	RA1
Pyrene	< 0.020	0.020	µg/L	2020-09-07	
Quinoline	< 0.050	0.050	µg/L	2020-09-07	
Surrogate: Acridine-d9	82	50-140	%	2020-09-07	
Surrogate: Naphthalene-d8	83	50-140	%	2020-09-07	
Surrogate: Perylene-d12	58	50-140	%	2020-09-07	

MW-5S (0083068-08) | Matrix: Water | Sampled: 2020-08-28 09:00

BCMOE Aggregate Hydrocarbons

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	< 250	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	78	60-126	%	2020-09-06	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-07	
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TEST RESULTS

REPORTED TO PROJECT Allterra Construction
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WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL	Units	Analyzed	Qualifier
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MW-5S (0083068-08) | Matrix: Water | Sampled: 2020-08-28 09:00, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Acenaphthylene	< 0.200	0.200	µg/L	2020-09-07	
Acridine	< 0.050	0.050	µg/L	2020-09-07	
Anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Chrysene	< 0.050	0.050	µg/L	2020-09-07	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-07	
Fluorene	< 0.050	0.050	µg/L	2020-09-07	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-07	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Naphthalene	< 0.200	0.200	µg/L	2020-09-07	
Phenanthrene	< 0.100	0.100	µg/L	2020-09-07	
Pyrene	< 0.020	0.020	µg/L	2020-09-07	
Quinoline	< 0.050	0.050	µg/L	2020-09-07	
Surrogate: Acridine-d9	84	50-140	%	2020-09-07	
Surrogate: Naphthalene-d8	89	50-140	%	2020-09-07	
Surrogate: Perylene-d12	74	50-140	%	2020-09-07	

MW-5D (0083068-09) | Matrix: Water | Sampled: 2020-08-28 09:50

BCMOE Aggregate Hydrocarbons

EPHw10-19	< 250	250	µg/L	2020-09-06	
EPHw19-32	882	250	µg/L	2020-09-06	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	882	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	66	60-126	%	2020-09-06	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-07	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-07	
Acridine	0.366	0.050	µg/L	2020-09-07	
Anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-07	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-07	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-07	

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
MW-5D (0083068-09) Matrix: Water Sampled: 2020-08-28 09:50, Continued					
<i>Polycyclic Aromatic Hydrocarbons (PAH), Continued</i>					
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Chrysene	< 0.050	0.050	µg/L	2020-09-07	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-07	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-07	
Fluorene	< 0.050	0.050	µg/L	2020-09-07	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-07	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-07	
Naphthalene	< 0.200	0.200	µg/L	2020-09-07	
Phenanthrene	< 0.100	0.100	µg/L	2020-09-07	
Pyrene	< 0.020	0.020	µg/L	2020-09-07	
Quinoline	< 0.050	0.050	µg/L	2020-09-07	
Surrogate: Acridine-d9	79	50-140	%	2020-09-07	
Surrogate: Naphthalene-d8	81	50-140	%	2020-09-07	
Surrogate: Perylene-d12	57	50-140	%	2020-09-07	

MW-06 (0083068-10) | Matrix: Water | Sampled: 2020-08-28 07:37

BCMOE Aggregate Hydrocarbons

EPHw10-19	270	250	µg/L	2020-09-06	
EPHw19-32	1620	250	µg/L	2020-09-06	
LEPHw	270	250	µg/L	N/A	
HEPHw	1620	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	71	60-126	%	2020-09-06	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	0.050	µg/L	2020-09-08	
Acenaphthylene	< 0.200	0.200	µg/L	2020-09-08	
Acridine	< 18.8	0.050	µg/L	2020-09-08	RA1
Anthracene	< 0.295	0.010	µg/L	2020-09-08	RA1
Benz(a)anthracene	< 0.010	0.010	µg/L	2020-09-08	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2020-09-08	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2020-09-08	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2020-09-08	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2020-09-08	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2020-09-08	
Chrysene	< 0.050	0.050	µg/L	2020-09-08	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2020-09-08	
Fluoranthene	< 0.030	0.030	µg/L	2020-09-08	
Fluorene	< 0.050	0.050	µg/L	2020-09-08	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2020-09-08	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-08	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2020-09-08	

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
MW-06 (0083068-10) Matrix: Water Sampled: 2020-08-28 07:37, Continued					
<i>Polycyclic Aromatic Hydrocarbons (PAH), Continued</i>					
Naphthalene	< 0.200	0.200	µg/L	2020-09-08	
Phenanthrene	< 1.16	0.100	µg/L	2020-09-08	RA1
Pyrene	< 0.020	0.020	µg/L	2020-09-08	
Quinoline	< 0.050	0.050	µg/L	2020-09-08	
Surrogate: Acridine-d9	82	50-140	%	2020-09-08	
Surrogate: Naphthalene-d8	88	50-140	%	2020-09-08	
Surrogate: Perylene-d12	66	50-140	%	2020-09-08	

Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.
 HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
 RA1 The Reporting Limit has been raised due to matrix interference.

APPENDIX 1: SUPPORTING INFORMATION

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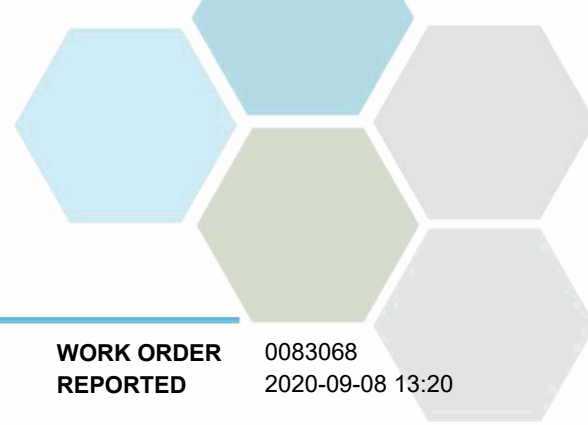
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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H ₂ SO ₄	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
EPH in Water	EPA 3511* / BCMOE EPHw	Hexane MicroExtraction (Base/Neutral) / Gas Chromatography (GC-FID)	✓	Richmond
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
HEPHw in Water	BCMOE LEPH/HEPH	Calculation		N/A
LEPHw in Water	BCMOE LEPH/HEPH	Calculation		N/A
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)	✓	Richmond
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Turbidity in Water	SM 2130 B (2017)	Nephelometry	✓	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
pH units	pH < 7 = acidic, pH > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
BCMOE	British Columbia Environmental Laboratory Manual, British Columbia Ministry of Environment
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association



APPENDIX 1: SUPPORTING INFORMATION

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General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: nyipp@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.

APPENDIX 2: QUALITY CONTROL RESULTS

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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS):** A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS):** A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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Anions, Batch B0I0042

Blank (B0I0042-BLK1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							

Blank (B0I0042-BLK2)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							

LCS (B0I0042-BS1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Chloride	16.2	0.10 mg/L	16.0		101	90-110			
Fluoride	4.06	0.10 mg/L	4.00		102	88-108			
Nitrate (as N)	4.01	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		100	85-115			
Sulfate	16.1	1.0 mg/L	16.0		101	90-110			

LCS (B0I0042-BS2)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Chloride	16.1	0.10 mg/L	16.0		101	90-110			
Fluoride	4.04	0.10 mg/L	4.00		101	88-108			
Nitrate (as N)	4.01	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.03	0.010 mg/L	2.00		101	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			

BCMOE Aggregate Hydrocarbons, Batch B0I0565

Blank (B0I0565-BLK1)			Prepared: 2020-09-06, Analyzed: 2020-09-06						
EPHw10-19	< 250	250 µg/L							
EPHw19-32	< 250	250 µg/L							
Surrogate: 2-Methylnonane (EPH/F2-4)	302	µg/L	444		68	60-126			
LCS (B0I0565-BS2)			Prepared: 2020-09-06, Analyzed: 2020-09-06						
EPHw10-19	15200	250 µg/L	15500		98	70-117			

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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BCMOE Aggregate Hydrocarbons, Batch B0I0565, Continued

LCS (B0I0565-BS2), Continued			Prepared: 2020-09-06, Analyzed: 2020-09-06						
EPHw19-32	22000	250 µg/L	22200		99	70-113			
Surrogate: 2-Methylnonane (EPH/F2-4)	306	µg/L	444		69	60-126			
LCS Dup (B0I0565-BSD2)			Prepared: 2020-09-06, Analyzed: 2020-09-06						
EPHw10-19	13600	250 µg/L	15500		88	70-117	11	20	
EPHw19-32	19300	250 µg/L	22200		87	70-113	13	20	
Surrogate: 2-Methylnonane (EPH/F2-4)	281	µg/L	444		63	60-126			

Dissolved Metals, Batch B0I0457

Blank (B0I0457-BLK1)			Prepared: 2020-09-05, Analyzed: 2020-09-05						
Lithium, dissolved	< 0.00010	0.00010 mg/L							
Aluminum, dissolved	< 0.0050	0.0050 mg/L							
Antimony, dissolved	< 0.00020	0.00020 mg/L							
Arsenic, dissolved	< 0.00050	0.00050 mg/L							
Barium, dissolved	< 0.0050	0.0050 mg/L							
Beryllium, dissolved	< 0.00010	0.00010 mg/L							
Bismuth, dissolved	< 0.00010	0.00010 mg/L							
Boron, dissolved	< 0.0500	0.0500 mg/L							
Cadmium, dissolved	< 0.000010	0.000010 mg/L							
Calcium, dissolved	< 0.20	0.20 mg/L							
Chromium, dissolved	< 0.00050	0.00050 mg/L							
Cobalt, dissolved	< 0.00010	0.00010 mg/L							
Copper, dissolved	< 0.00040	0.00040 mg/L							
Iron, dissolved	< 0.010	0.010 mg/L							
Lead, dissolved	< 0.00020	0.00020 mg/L							
Magnesium, dissolved	< 0.010	0.010 mg/L							
Manganese, dissolved	< 0.00020	0.00020 mg/L							
Molybdenum, dissolved	< 0.00010	0.00010 mg/L							
Nickel, dissolved	< 0.00040	0.00040 mg/L							
Phosphorus, dissolved	< 0.050	0.050 mg/L							
Potassium, dissolved	< 0.10	0.10 mg/L							
Selenium, dissolved	< 0.00050	0.00050 mg/L							
Silicon, dissolved	< 1.0	1.0 mg/L							
Silver, dissolved	< 0.000050	0.000050 mg/L							
Sodium, dissolved	< 0.10	0.10 mg/L							
Strontium, dissolved	< 0.0010	0.0010 mg/L							
Sulfur, dissolved	< 3.0	3.0 mg/L							
Tellurium, dissolved	< 0.00050	0.00050 mg/L							
Thallium, dissolved	< 0.000020	0.000020 mg/L							
Thorium, dissolved	< 0.00010	0.00010 mg/L							
Tin, dissolved	< 0.00020	0.00020 mg/L							
Titanium, dissolved	< 0.0050	0.0050 mg/L							
Tungsten, dissolved	< 0.0010	0.0010 mg/L							
Uranium, dissolved	< 0.000020	0.000020 mg/L							
Vanadium, dissolved	< 0.0010	0.0010 mg/L							
Zinc, dissolved	< 0.0040	0.0040 mg/L							
Zirconium, dissolved	< 0.00010	0.00010 mg/L							

LCS (B0I0457-BS1)			Prepared: 2020-09-05, Analyzed: 2020-09-05						
Lithium, dissolved	0.0239	0.00010 mg/L	0.0200		120	80-120			
Aluminum, dissolved	0.0220	0.0050 mg/L	0.0199		111	80-120			
Antimony, dissolved	0.0195	0.00020 mg/L	0.0200		98	80-120			
Arsenic, dissolved	0.0221	0.00050 mg/L	0.0200		111	80-120			
Barium, dissolved	0.0204	0.0050 mg/L	0.0198		103	80-120			
Beryllium, dissolved	0.0228	0.00010 mg/L	0.0198		115	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B0I0457, Continued									
LCS (B0I0457-BS1), Continued					Prepared: 2020-09-05, Analyzed: 2020-09-05				
Bismuth, dissolved	0.0231	0.00010 mg/L	0.0200		116	80-120			
Boron, dissolved	< 0.0500	0.0500 mg/L	0.0200		115	80-120			
Cadmium, dissolved	0.0204	0.000010 mg/L	0.0199		103	80-120			
Calcium, dissolved	2.32	0.20 mg/L	2.02		115	80-120			
Chromium, dissolved	0.0221	0.00050 mg/L	0.0198		112	80-120			
Cobalt, dissolved	0.0219	0.00010 mg/L	0.0199		110	80-120			
Copper, dissolved	0.0221	0.00040 mg/L	0.0200		111	80-120			
Iron, dissolved	2.10	0.010 mg/L	2.02		104	80-120			
Lead, dissolved	0.0224	0.00020 mg/L	0.0199		112	80-120			
Magnesium, dissolved	2.25	0.010 mg/L	2.02		111	80-120			
Manganese, dissolved	0.0208	0.00020 mg/L	0.0199		105	80-120			
Molybdenum, dissolved	0.0206	0.00010 mg/L	0.0200		103	80-120			
Nickel, dissolved	0.0230	0.00040 mg/L	0.0200		115	80-120			
Phosphorus, dissolved	2.08	0.050 mg/L	2.00		104	80-120			
Potassium, dissolved	2.13	0.10 mg/L	2.02		105	80-120			
Selenium, dissolved	0.0205	0.00050 mg/L	0.0200		102	80-120			
Silicon, dissolved	2.3	1.0 mg/L	2.00		117	80-120			
Silver, dissolved	0.0210	0.000050 mg/L	0.0200		105	80-120			
Sodium, dissolved	2.14	0.10 mg/L	2.02		106	80-120			
Strontium, dissolved	0.0204	0.0010 mg/L	0.0200		102	80-120			
Sulfur, dissolved	5.7	3.0 mg/L	5.00		114	80-120			
Tellurium, dissolved	0.0196	0.00050 mg/L	0.0200		98	80-120			
Thallium, dissolved	0.0221	0.000020 mg/L	0.0199		111	80-120			
Thorium, dissolved	0.0213	0.00010 mg/L	0.0200		107	80-120			
Tin, dissolved	0.0206	0.00020 mg/L	0.0200		103	80-120			
Titanium, dissolved	0.0235	0.0050 mg/L	0.0200		118	80-120			
Tungsten, dissolved	0.0212	0.0010 mg/L	0.0200		106	80-120			
Uranium, dissolved	0.0212	0.000020 mg/L	0.0200		106	80-120			
Vanadium, dissolved	0.0218	0.0010 mg/L	0.0200		109	80-120			
Zinc, dissolved	0.0218	0.0040 mg/L	0.0200		109	80-120			
Zirconium, dissolved	0.0204	0.00010 mg/L	0.0200		102	80-120			
Reference (B0I0457-SRM1)					Prepared: 2020-09-05, Analyzed: 2020-09-05				
Lithium, dissolved	0.115	0.00010 mg/L	0.100		115	70-130			
Aluminum, dissolved	0.245	0.0050 mg/L	0.235		104	70-130			
Antimony, dissolved	0.0477	0.00020 mg/L	0.0431		111	70-130			
Arsenic, dissolved	0.477	0.00050 mg/L	0.423		113	70-130			
Barium, dissolved	3.20	0.0050 mg/L	3.30		97	70-130			
Beryllium, dissolved	0.234	0.00010 mg/L	0.209		112	70-130			
Boron, dissolved	1.87	0.0500 mg/L	1.65		113	70-130			
Cadmium, dissolved	0.225	0.000010 mg/L	0.221		102	70-130			
Calcium, dissolved	7.83	0.20 mg/L	7.72		101	70-130			
Chromium, dissolved	0.472	0.00050 mg/L	0.434		109	70-130			
Cobalt, dissolved	0.135	0.00010 mg/L	0.124		109	70-130			
Copper, dissolved	0.915	0.00040 mg/L	0.815		112	70-130			
Iron, dissolved	1.34	0.010 mg/L	1.27		105	70-130			
Lead, dissolved	0.119	0.00020 mg/L	0.110		108	70-130			
Magnesium, dissolved	7.29	0.010 mg/L	6.59		111	70-130			
Manganese, dissolved	0.344	0.00020 mg/L	0.342		101	70-130			
Molybdenum, dissolved	0.434	0.00010 mg/L	0.404		108	70-130			
Nickel, dissolved	0.934	0.00040 mg/L	0.835		112	70-130			
Phosphorus, dissolved	0.543	0.050 mg/L	0.499		109	70-130			
Potassium, dissolved	3.12	0.10 mg/L	2.88		108	70-130			
Selenium, dissolved	0.0332	0.00050 mg/L	0.0324		103	70-130			
Sodium, dissolved	19.8	0.10 mg/L	18.0		110	70-130			
Strontium, dissolved	0.933	0.0010 mg/L	0.935		100	70-130			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Allterra Construction
17-932

WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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Dissolved Metals, Batch B0I0457, Continued

Reference (B0I0457-SRM1), Continued			Prepared: 2020-09-05, Analyzed: 2020-09-05						
Thallium, dissolved	0.0418	0.000020 mg/L	0.0385		109	70-130			
Uranium, dissolved	0.255	0.000020 mg/L	0.258		99	70-130			
Vanadium, dissolved	0.930	0.0010 mg/L	0.873		107	70-130			
Zinc, dissolved	0.922	0.0040 mg/L	0.848		109	70-130			

General Parameters, Batch B0I0112

Blank (B0I0112-BLK1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Turbidity	< 0.10	0.10 NTU							
LCS (B0I0112-BS1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Turbidity	39.1	0.10 NTU	40.0		98	90-110			

General Parameters, Batch B0I0152

Blank (B0I0152-BLK1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Solids, Total Dissolved	< 15	15 mg/L							
LCS (B0I0152-BS1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Solids, Total Dissolved	237	15 mg/L	240		99	85-115			

General Parameters, Batch B0I0153

Blank (B0I0153-BLK1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B0I0153-BS1)			Prepared: 2020-09-02, Analyzed: 2020-09-02						
Solids, Total Suspended	85.0	10.0 mg/L	100		85	85-115			

General Parameters, Batch B0I0349

Blank (B0I0349-BLK1)			Prepared: 2020-09-03, Analyzed: 2020-09-03						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B0I0349-BLK2)			Prepared: 2020-09-03, Analyzed: 2020-09-03						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B0I0349-BLK3)			Prepared: 2020-09-03, Analyzed: 2020-09-03						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Allterra Construction
17-932

WORK ORDER REPORTED 0083068
2020-09-08 13:20

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B010349, Continued									
LCS (B010349-BS1)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
Alkalinity, Total (as CaCO ₃)	105	1.0 mg/L	100		105	80-120			
LCS (B010349-BS2)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
Alkalinity, Total (as CaCO ₃)	107	1.0 mg/L	100		107	80-120			
LCS (B010349-BS3)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
Alkalinity, Total (as CaCO ₃)	106	1.0 mg/L	100		106	80-120			
LCS (B010349-BS4)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
Conductivity (EC)	1440	2.0 µS/cm	1410		102	95-104			
LCS (B010349-BS5)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
Conductivity (EC)	1450	2.0 µS/cm	1410		103	95-104			
LCS (B010349-BS6)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
Conductivity (EC)	1460	2.0 µS/cm	1410		103	95-104			
Reference (B010349-SRM1)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B010349-SRM2)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B010349-SRM3)				Prepared: 2020-09-03, Analyzed: 2020-09-03					
pH	7.00	0.10 pH units	7.01		100	98-102			

Polycyclic Aromatic Hydrocarbons (PAH), Batch B010565

Blank (B010565-BLK1)				Prepared: 2020-09-06, Analyzed: 2020-09-06					
Acenaphthene	< 0.050	0.050 µg/L							
Acenaphthylene	< 0.200	0.200 µg/L							
Acridine	< 0.050	0.050 µg/L							
Anthracene	< 0.010	0.010 µg/L							
Benzo(a)anthracene	< 0.010	0.010 µg/L							
Benzo(a)pyrene	< 0.010	0.010 µg/L							
Benzo(b+j)fluoranthene	< 0.050	0.050 µg/L							
Benzo(g,h,i)perylene	< 0.050	0.050 µg/L							
Benzo(k)fluoranthene	< 0.050	0.050 µg/L							
2-Chloronaphthalene	< 0.100	0.100 µg/L							
Chrysene	< 0.050	0.050 µg/L							
Dibenz(a,h)anthracene	< 0.010	0.010 µg/L							
Fluoranthene	< 0.030	0.030 µg/L							
Fluorene	< 0.050	0.050 µg/L							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050 µg/L							
1-Methylnaphthalene	< 0.100	0.100 µg/L							
2-Methylnaphthalene	< 0.100	0.100 µg/L							
Naphthalene	< 0.200	0.200 µg/L							
Phenanthrene	< 0.100	0.100 µg/L							
Pyrene	< 0.020	0.020 µg/L							
Quinoline	< 0.050	0.050 µg/L							
Surrogate: Acridine-d9	3.93	µg/L	4.47		88	50-140			
Surrogate: Naphthalene-d8	3.46	µg/L	4.47		77	50-140			
Surrogate: Perylene-d12	3.49	µg/L	4.47		78	50-140			
LCS (B010565-BS1)				Prepared: 2020-09-06, Analyzed: 2020-09-06					
Acenaphthene	4.00	0.050 µg/L	4.44		90	55-137			
Acenaphthylene	4.07	0.200 µg/L	4.44		91	53-140			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Allterra Construction
PROJECT 17-932

WORK ORDER 0083068
REPORTED 2020-09-08 13:20

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Polycyclic Aromatic Hydrocarbons (PAH), Batch B0I0565, Continued									
LCS (B0I0565-BS1), Continued					Prepared: 2020-09-06, Analyzed: 2020-09-06				
Acridine	3.95	0.050 µg/L	4.44		89	50-120			
Anthracene	3.91	0.010 µg/L	4.44		88	64-130			
Benz(a)anthracene	3.64	0.010 µg/L	4.44		82	57-140			
Benzo(a)pyrene	3.91	0.010 µg/L	4.44		88	63-133			
Benzo(b+j)fluoranthene	8.31	0.050 µg/L	8.89		93	60-129			
Benzo(g,h,i)perylene	4.11	0.050 µg/L	4.44		92	52-139			
Benzo(k)fluoranthene	3.85	0.050 µg/L	4.44		87	50-138			
2-Chloronaphthalene	3.72	0.100 µg/L	4.38		85	50-139			
Chrysene	3.60	0.050 µg/L	4.44		81	59-140			
Dibenz(a,h)anthracene	3.63	0.010 µg/L	4.44		82	53-136			
Fluoranthene	4.32	0.030 µg/L	4.44		97	67-135			
Fluorene	4.14	0.050 µg/L	4.44		93	57-134			
Indeno(1,2,3-cd)pyrene	3.75	0.050 µg/L	4.44		84	52-129			
1-Methylnaphthalene	3.20	0.100 µg/L	4.44		72	50-140			
2-Methylnaphthalene	3.21	0.100 µg/L	4.44		72	50-140			
Naphthalene	3.52	0.200 µg/L	4.44		79	50-140			
Phenanthrene	4.36	0.100 µg/L	4.44		98	61-134			
Pyrene	3.53	0.020 µg/L	4.44		79	66-131			
Quinoline	5.83	0.050 µg/L	4.44		131	50-140			
Surrogate: Acridine-d9	3.74	µg/L	4.47		84	50-140			
Surrogate: Naphthalene-d8	3.16	µg/L	4.47		71	50-140			
Surrogate: Perylene-d12	3.37	µg/L	4.47		75	50-140			
LCS Dup (B0I0565-BSD1)					Prepared: 2020-09-06, Analyzed: 2020-09-06				
Acenaphthene	4.03	0.050 µg/L	4.44		91	55-137	< 1	18	
Acenaphthylene	4.09	0.200 µg/L	4.44		92	53-140	< 1	20	
Acridine	4.15	0.050 µg/L	4.44		93	50-120	5	30	
Anthracene	4.17	0.010 µg/L	4.44		94	64-130	7	15	
Benz(a)anthracene	4.11	0.010 µg/L	4.44		92	57-140	12	25	
Benzo(a)pyrene	3.89	0.010 µg/L	4.44		88	63-133	< 1	18	
Benzo(b+j)fluoranthene	8.25	0.050 µg/L	8.89		93	60-129	< 1	17	
Benzo(g,h,i)perylene	4.09	0.050 µg/L	4.44		92	52-139	< 1	22	
Benzo(k)fluoranthene	3.83	0.050 µg/L	4.44		86	50-138	< 1	26	
2-Chloronaphthalene	3.83	0.100 µg/L	4.38		87	50-139	3	23	
Chrysene	4.06	0.050 µg/L	4.44		91	59-140	12	23	
Dibenz(a,h)anthracene	3.61	0.010 µg/L	4.44		81	53-136	< 1	21	
Fluoranthene	4.00	0.030 µg/L	4.44		90	67-135	8	18	
Fluorene	4.37	0.050 µg/L	4.44		98	57-134	5	18	
Indeno(1,2,3-cd)pyrene	3.87	0.050 µg/L	4.44		87	52-129	3	21	
1-Methylnaphthalene	3.31	0.100 µg/L	4.44		74	50-140	3	20	
2-Methylnaphthalene	3.52	0.100 µg/L	4.44		79	50-140	9	21	
Naphthalene	3.50	0.200 µg/L	4.44		79	50-140	< 1	22	
Phenanthrene	4.45	0.100 µg/L	4.44		100	61-134	2	17	
Pyrene	4.20	0.020 µg/L	4.44		94	66-131	17	19	
Quinoline	5.13	0.050 µg/L	4.44		115	50-140	13	14	
Surrogate: Acridine-d9	4.00	µg/L	4.47		90	50-140			
Surrogate: Naphthalene-d8	3.17	µg/L	4.47		71	50-140			
Surrogate: Perylene-d12	3.16	µg/L	4.47		71	50-140			

SITE INSPECTION REPORT

Cobble Hill Landfill Closure

PROJECT # : 2307

IEL REPRESENTATIVE:

Joel Clarkston, Grad. Tech.

Date: September 9, 2020

Time: 8:00AM – 12:00PM

Owner:

Cobble Hill Holdings Ltd.

Weather

Morning: Mainly Sunny

Contractor:

Allterra Construction Ltd

Afternoon: Mainly Sunny

Construction Activities:

Islander Engineering Ltd (IEL) performed a site inspection on September 9, 2020 at the Cobble Hill Landfill (Landfill) to assess the site construction progress of the recently identified final walkthrough deficiencies by Sperling Hansen. This report summarizes the Landfill site inspection findings and concludes by identifying action items, if applicable.



Picture # 1: Ditching along north toe of PEA being reshaped (looking west). The contractor was on site to address the remaining deficiencies previously identified by Sperling Hansen.



Picture # 2: Fabric placed along north toe PEA ditch prior to backfilling (looking west).



Picture # 3: Backfilling ditches along the north toe of the PEA after fabric was placed (looking west).



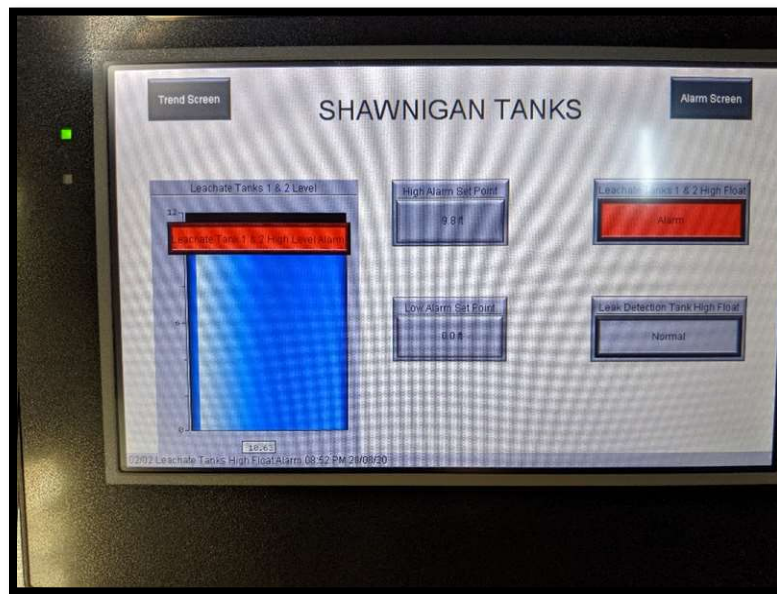
Picture # 4: Completed ditching across the north slope of the PEA (looking west).



Picture # 5: Completed ditching along the north slope of the PEA (looking east).



Picture # 6: Extent of the completed PEA slope ditching wrapping around the north slope onto the east slope (looking north).



Picture # 7: Leachate display – 10.63 ft per tank. Leachate tanks are expected to be emptied sometime next week.

Report prepared by:



Joel Clarkston, Grad Tech.
Islander Engineering Ltd.

SITE INSPECTION REPORT

Cobble Hill Landfill Closure

PROJECT # : 2307

IEL REPRESENTATIVE:

Joel Clarkston, Grad. Tech.

Date: September 10, 2020

Time: 8:00AM – 12:30PM

Owner:

Cobble Hill Holdings Ltd.

Weather

Morning: Mainly Sunny

Contractor:

Allterra Construction Ltd

Afternoon: Mainly Sunny

Construction Activities:

Islander Engineering Ltd (IEL) performed a site inspection on September 10, 2020 at the Cobble Hill Landfill (Landfill) to assess the site construction progress of the recently identified final walkthrough deficiencies by Sperling Hansen. This report summarizes the Landfill site inspection findings and concludes by identifying action items, if applicable.



Picture # 1: Ditching along western perimeter of the PEA being reshaped and installing trench dams approximately every 15m (looking south). A mini-excavator was brought on site to complete the remaining deficiencies previously identified by Sperling Hansen.



Picture # 2: Completed ditch and trench dam at the northwest corner of the PEA perimeter (looking north).



Picture # 3: Mini-excavator being used to reshape the western perimeter ditching and install trench dams (looking west).



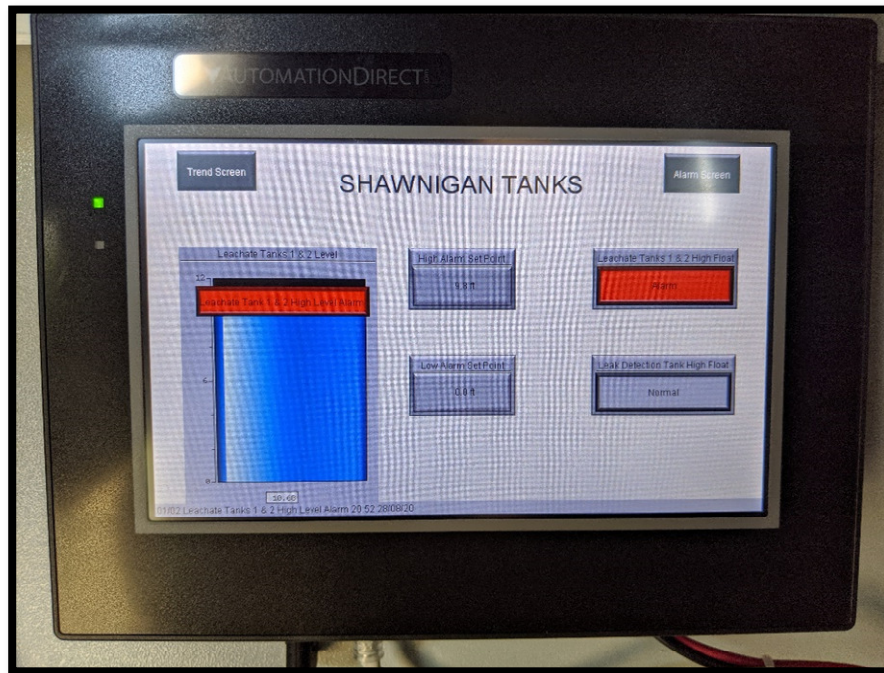
Picture # 4: Completed ditching and trench dam at approximately half way along the western perimeter before tying into the existing perimeter ditching (looking south).



Picture # 5: Existing perimeter ditching after being reshaped (looking southeast).



Picture # 6: Extent of the existing perimeter ditching after being reshaped (looking west from the south corner of the PEA).



Picture # 7: Leachate display – 10.68 ft per tank. Leachate tanks are still expected to be emptied sometime next week.

Report prepared by:



Joel Clarkston, Grad Tech.
Islander Engineering Ltd.