

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O Box 119, Gjoa Haven, Nunavut
XOB 1JO
Phone (867) 360-6338 ext. 27 Fax (867) 360-6369
Email licensing@nunavutwaterboard.org

Date: March 28th 2013

RE: Water License NWB3REP 0409 Hamlet of Repulse Bay Annual Report 2013

Good afternoon Phyllis,

Please find attached the annual report for the above mentioned license, you will also find attachments with respect to the sample results as well as any other related information pertaining to the license requirements.

Please contact me should you have any questions, comments, or concerns.

Thanks

Jason Tologanak

Regional Director, Kivalliq Region Community & Government Services

Rankin Inlet, Nunavut

XOC OGO

Phone (867) 645-8101

Fax (867) 645-8197

Cell (867) 645-7255

ANNUAL REPORT FOR THE HAMLET OF REPULSE BAY, 2012

YEAR BEING REPORTED: 2012

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License # NWB3REP 0409 issued to the Hamlet of Repulse Bay.

 i) - iii) tabular summaries of all data generated under the "Monitoring Program"; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our On Tap Water Delivery System and the estimated discharge of sewage waste based on quantities used.

Month Reported	Quantity of Water Obtained from all sources (litres)	Quantity of Sewage Waste Discharged (Estimated)
January 2012	2,898,207.90	Same
February 2012	2,625,396.20	Same
March 2012	2,984,348.70	Same
April 2012	2,957,018.10	Same
May 2012	2,984,005.30	Same
June 2012	2,840,683.20	Same
July 2012	3,018,090.20	Same
August 2012	3,202,338.40	Same
September 2012	3,110,259.40	Same
October 2012	3,113,380.90	Same
November 2012	3,084,085.00	Same
December 2012	2,960,944.10	Same
ANNUAL TOTAL	35,778,757.40	35,778,757.40

Note: There is no meter existing at the discharge pipe. Therefore the monthly discharge is considered as equal to the monthly water consumption volume.

ANNUAL REPORT FOR THE HAMLET OF REPULSE BAY, 2012

iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities: The existing Water Truck Fill Station (WTFS) is being upgraded. EXP has been hired to provide design of the new pump house. EXP will submit design by the summer of 2013 with construction drawings to Tender the project. a list of unauthorized discharges and summary of follow-up action taken; Not recorded from the sewage lagoon. Spills: Tank farm: P-50: 161L, dated 4/3/2012, # 2012114 House 23: Heating fuel; 20L, dated 6/6/2012, #2012233 vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year; No plan was in 2012 and no anticipation in 2013. vii. a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned; Arktis solution Inc. completed a feasibility study on waste management across Nunavut and recommended new guidelines. CGS is planning to implement these guidelines in the future waste management facilities including Repulse Bay. CGS has retained William Engineering ltd conducting bathymetric surveys on the existing water source and also proposed secondary water source. This study will be completed in 2014. viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and -Monitoring wells are recommended to be installed up-gradient and down-gradient of the land farm to monitor ground water quality. -Toxicity test of the leachate is recommended to be conducted.

ANNUAL REPORT FOR THE HAMLET OF REPULSE BAY, 2012

ix. updates or revisions to the approved Operation and Maintenance Plans.

The O&M manual of the Water Truck Fills Station (WTFS) will be upgraded once construction is completed in 2013.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- The Licensee will continue extended sampling and testing program in 2013.
- The licensee will follow the instructions for amendment Water License for Land farm and other facilities of this License.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

The Licensee is working closely with CGS to satisfy the requirements of the Water License and the deficiencies mentioned by the AANDC inspector, dated August 8, 2011.

The Lab Test Results for 2012

L1171564_COA.PDF

L1187839_COA.PDF



Hamlet of Repulse Bay ATTN: KEVIN TEGUMIAR

PO Box 10

Repulse Bay NU X0C 0H0

Date Received: 03-JUL-12

Report Date:

26-JUL-12 14:11 (MT)

Version:

FINAL

Client Phone: 867-462-9952

Certificate of Analysis

Lab Work Order #:

L1171564

Project P.O. #:

NOT SUBMITTED

Job Reference:

REPULSE BAY MONITORING PROGRAM

C of C Numbers: Legal Site Desc:

Paul Necolas

Paul Nicolas Account Manager

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ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721

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L1171564 CONTD.... PAGE 2 of 10 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-1 REP-2							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @	11:40						
Matrix: WASTE WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.014		0.010	mg/L		11-JUL-12	R239676
Biochemical Oxygen Demand	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R239479
BOD Carbonaceous	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R239478
Fecal Coliforms	<3		3	MPN/100mL		06-JUL-12	R239423
Oil and Grease, Total	<2.0		2.0	mg/L	06-JUL-12	06-JUL-12	R239461
Phenols (4AAP)	<0.0010		0.0010	mg/L	10-JUL-12	10-JUL-12	R239564
Phosphorus (P)-Total	<0.010		0.010	mg/L	10 002 12	09-JUL-12	R239486
Total Organic Carbon	5.5		1.0	mg/L		26-JUL-12	R240514
Total Suspended Solids	8.0		5.0	mg/L		14-JUL-12	R239907
Routine Soluble + Metal scan	0.0		5.0	mg/L		14-30L-12	R239907
Alkalinity				1			
Alkalinity, Total (as CaCO3)	85		20	mg/L		03-JUL-12	R239197
Bicarbonate (HCO3)	103		24	mg/L		03-JUL-12	R239197
Carbonate (CO3)	<12		12	mg/L		03-JUL-12	R239197
Hydroxide (OH)	<6.8		6.8	mg/L		03-JUL-12	R239197
Chloride by Ion Chromatography	100000						- I see a
Chloride	12.2		0.50	mg/L		04-JUL-12	R239316
Conductivity	1						No. 20 re-co. to consecution
Conductivity	224		20	umhos/cm		03-JUL-12	R239197
Hardness Calculated							
Hardness (as CaCO3)	93.6		0.30	mg/L		06-JUL-12	
Nitrate as N by Ion Chromatography Nitrate-N	10.050		0.050			04 1111 40	D000040
Nitrate+Nitrite	<0.050		0.050	mg/L		04-JUL-12	R239316
Nitrate+Nitrite Nitrate and Nitrite as N	<0.071		0.071	mg/L		03-JUL-12	
Nitrite as N by Ion Chromatography	VO.071		0.071	mg/L		03-30L-12	
Nitrite-N	< 0.050		0.050	mg/L		04-JUL-12	R239316
Sulfate by Ion Chromatography	0.000		0.000	5/-		0,000.0	11200010
Sulfate	16.5		0.50	mg/L		04-JUL-12	R239316
TDS calculated							
TDS (Calculated)	125		5.0	mg/L		06-JUL-12	
Total Metals by ICP-MS							
Aluminum (AI)-Total	<0.020		0.020	mg/L	05-JUL-12	05-JUL-12	R239348
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Arsenic (As)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Barium (Ba)-Total	0.00909		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Boron (B)-Total Cadmium (Cd)-Total	<0.030		0.030	mg/L	05-JUL-12	05-JUL-12	R239348
Calcium (Ca)-Total	<0.00020		0.00020	mg/L	05-JUL-12 05-JUL-12	05-JUL-12	R239348
Cesium (Cs)-Total	29.1 <0.00050	1 1.	0.20 0.00050	mg/L mg/L	05-JUL-12 05-JUL-12	05-JUL-12 05-JUL-12	R2393489
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	05-JUL-12 05-JUL-12	05-JUL-12 05-JUL-12	R2393489
Cobalt (Co)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Copper (Cu)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Iron (Fe)-Total	<0.10		0.10	mg/L	05-JUL-12	05-JUL-12	R2393489
Lead (Pb)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Lithium (Li)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Magnesium (Mg)-Total	5.12		0.050	mg/L	05-JUL-12	05-JUL-12	R2393489
Manganese (Mn)-Total	0.0034		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Molybdenum (Mo)-Total	< 0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1171564 CONTD.... PAGE 3 of 10 Version: FINAL

	s/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-1	REP-2							
Sampled By:	KEVIN TEGUMIAR on 29-JUN-12 @	11:40						
Matrix:	WASTE WATER							
Total Metals	s by ICP-MS							
Nickel (Ni)-T	otal	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Phosphorus	(P)-Total	<0.50		0.50	mg/L	05-JUL-12	05-JUL-12	R239348
Potassium (F		1.53		0.10	mg/L	05-JUL-12	05-JUL-12	R239348
Rubidium (R		0.00148		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Selenium (Se		<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R239348
Silicon (Si)-T		<0.30		0.30	mg/L	05-JUL-12	05-JUL-12	R239348
Silver (Ag)-T		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Sodium (Na)		9.82		0.050	mg/L	05-JUL-12	05-JUL-12	R239348
Strontium (S		0.0298		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Tellurium (Te		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Thallium (TI) Thorium (Th)		<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R239348
Tin (Sn)-Tota		<0.0010 <0.00060		0.0010	mg/L	05-JUL-12 05-JUL-12	05-JUL-12 05-JUL-12	R239348
Titanium (Ti)					mg/L			R239348
Tungsten (W		<0.0010 <0.0020		0.0010	mg/L mg/L	05-JUL-12 05-JUL-12	05-JUL-12 05-JUL-12	R239348
Uranium (U)-		0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12 05-JUL-12	R239348
Vanadium (V		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Zinc (Zn)-Tot		<0.020		0.020	mg/L	05-JUL-12	05-JUL-12	R239348
Zirconium (Z		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
рH	**************************************							1,2000,10
рН		7.90		0.10	pH units		03-JUL-12	R2391974
Matrix: Miscellaneo Ammonia, To	WASTE WATER rus Parameters otal (as N)	12.5	DLA	1.0	mg/L		12-JUL-12	R2397587
	Oxygen Demand	<6.0	1000000	6.0	mg/L	04-JUL-12	09-JUL-12	R2394790
BOD Carbon	2712-0-51. 35 154.150470149.2949144111	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	
				0.0		0.002.2		R2394789
Fecal Coliforn	ms	430	1	3	MPN/100ml			R2394789
Fecal Coliforation		430 <2.0	1	3	MPN/100mL	06-JUL-12	06-JUL-12	R239423
Oil and Great	se, Total	<2.0		2.0	mg/L	06-JUL-12	06-JUL-12 06-JUL-12	R2394237 R2394615
Oil and Great Phenols (4AA	se, Total AP)	<2.0 0.0010		2.0 0.0010	mg/L mg/L	06-JUL-12 10-JUL-12	06-JUL-12 06-JUL-12 10-JUL-12	R2394233 R2394615 R2395644
Oil and Great Phenols (4AA Phosphorus (se, Total AP) (P)-Total	<2.0 0.0010 1.08		2.0 0.0010 0.010	mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12	R2394237 R2394615 R2395644 R2394869
Oil and Great Phenols (4AA Phosphorus (Total Organic	se, Total AP) (P)-Total c Carbon	<2.0 0.0010 1.08 13.1		2.0 0.0010 0.010 1.0	mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12	R2394237 R2394615 R2395644 R2394869 R2405143
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen	se, Total AP) (P)-Total c Carbon ided Solids	<2.0 0.0010 1.08		2.0 0.0010 0.010	mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12	R2394237 R2394615 R2395644 R2394869
Oil and Great Phenols (4AA Phosphorus (Total Organio Total Suspen Routine Solub	se, Total AP) (P)-Total c Carbon	<2.0 0.0010 1.08 13.1		2.0 0.0010 0.010 1.0	mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12	R2394237 R2394615 R2395644 R2394869 R2405143
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity	se, Total AP) (P)-Total c Carbon ided Solids	<2.0 0.0010 1.08 13.1		2.0 0.0010 0.010 1.0	mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12	R2394237 R2394615 R2395644 R2394869 R2405143
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity	se, Total AP) (P)-Total c Carbon aded Solids ble + Metal scan tal (as CaCO3)	<2.0 0.0010 1.08 13.1 11.0		2.0 0.0010 0.010 1.0 5.0	mg/L mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12 14-JUL-12	R2394237 R2394615 R2395644 R2394865 R2405145 R2399078
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity Alkalinity, Tot	se, Total AP) (P)-Total c Carbon ided Solids ile + Metal scan tal (as CaCO3) (HCO3)	<2.0 0.0010 1.08 13.1 11.0		2.0 0.0010 0.010 1.0 5.0	mg/L mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12 14-JUL-12	R239423 R2394615 R2395644 R2394865 R2405145 R2399078
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity Alkalinity, Tot Bicarbonate (se, Total AP) (P)-Total c Carbon ided Solids ole + Metal scan tal (as CaCO3) (HCO3)	<2.0 0.0010 1.08 13.1 11.0		2.0 0.0010 0.010 1.0 5.0	mg/L mg/L mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12 14-JUL-12	R2394231 R2394615 R2395644 R2394865 R2405143 R2399078 R2391974 R2391974
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity Alkalinity, Tot Bicarbonate (Carbonate (C Hydroxide (O Chloride by Chloride	se, Total AP) (P)-Total c Carbon aded Solids ble + Metal scan tal (as CaCO3) (HCO3) cO3) H) Ion Chromatography	<2.0 0.0010 1.08 13.1 11.0 94 115 <12		2.0 0.0010 0.010 1.0 5.0 20 24 12	mg/L mg/L mg/L mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12 14-JUL-12 03-JUL-12 03-JUL-12	R239423; R2394615 R2395644 R2394865 R2405143 R2399078 R2391974 R2391974 R2391974
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity Alkalinity, Tot Bicarbonate (C Carbonate (C Hydroxide (O Chloride by Chloride Conductivity Conductivity	se, Total AP) (P)-Total c Carbon ided Solids ole + Metal scan tal (as CaCO3) (HCO3) CO3) H) Ion Chromatography	<2.0 0.0010 1.08 13.1 11.0 94 115 <12 <6.8		2.0 0.0010 0.010 1.0 5.0 20 24 12 6.8	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12 14-JUL-12 03-JUL-12 03-JUL-12 03-JUL-12 03-JUL-12	R239423; R2394615 R2395644 R2394865 R2405145 R2399078 R2391974 R2391974 R2391974
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity Alkalinity, Tot Bicarbonate (C Hydroxide (O Chloride by Chloride Conductivity Conductivity Hardness Ca Hardness (as	se, Total AP) (P)-Total c Carbon ided Solids ole + Metal scan tal (as CaCO3) (HCO3) CO3) H) Ion Chromatography (alculated c CaCO3)	<2.0 0.0010 1.08 13.1 11.0 94 115 <12 <6.8		2.0 0.0010 0.010 1.0 5.0 20 24 12 6.8	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12 14-JUL-12 03-JUL-12 03-JUL-12 03-JUL-12 03-JUL-12	R239423; R2394615; R2395644; R2394865; R2405143; R2399078; R2391974; R2391974; R2393165;
Oil and Great Phenols (4AA Phosphorus (Total Organic Total Suspen Routine Solub Alkalinity Alkalinity, Tot Bicarbonate (C Hydroxide (O Chloride by Chloride Conductivity Conductivity Hardness Ca Hardness (as	se, Total AP) (P)-Total c Carbon ided Solids ole + Metal scan tal (as CaCO3) (HCO3) (CO3) H) Ion Chromatography (alculated c CaCO3) by Ion Chromatography	<2.0 0.0010 1.08 13.1 11.0 94 115 <12 <6.8 13.7		2.0 0.0010 0.010 1.0 5.0 20 24 12 6.8 0.50	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L		06-JUL-12 06-JUL-12 10-JUL-12 09-JUL-12 26-JUL-12 14-JUL-12 03-JUL-12 03-JUL-12 03-JUL-12 04-JUL-12	R239423; R2394615; R2395644; R2394865; R2405143; R2399078; R2391974; R2391974; R2393165;

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1171564 CONTD.... PAGE 4 of 10 Version: FINAL

Sample Details/Para	ameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-2 REF	P-4							
Sampled By: KE\	/IN TEGUMIAR on 29-JUN-12 @ 11:40							
	STE WATER							
	on Chromatography							
Nitrite-N	347	< 0.050		0.050	mg/L		04-JUL-12	R239316
Sulfate by Ion Cl	hromatography							
Sulfate		7.96		0.50	mg/L		04-JUL-12	R239316
TDS calculated								
TDS (Calculated)		124		5.0	mg/L		24-JUL-12	
Total Metals by I	CP-MS				490			
Aluminum (AI)-To		0.031		0.020	mg/L	05-JUL-12	05-JUL-12	R239348
Antimony (Sb)-To	- 1	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Arsenic (As)-Tota		< 0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Barium (Ba)-Total	1	0.00403		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Beryllium (Be)-To		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Bismuth (Bi)-Tota		<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Boron (B)-Total		<0.030		0.030	mg/L	05-JUL-12	05-JUL-12	R239348
Cadmium (Cd)-To		<0.00020	1	0.00020	mg/L	05-JUL-12	05-JUL-12	R239348
Calcium (Ca)-Tota		23.2		0.20	mg/L	05-JUL-12	05-JUL-12	R239348
Cesium (Cs)-Tota	(C) 1/2	< 0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Chromium (Cr)-To	tal	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Cobalt (Co)-Total		<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Copper (Cu)-Total	ri e	0.0059		0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Iron (Fe)-Total		0.38		0.10	mg/L	05-JUL-12	05-JUL-12	R239348
Lead (Pb)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Lithium (Li)-Total	_ =====================================	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Magnesium (Mg)-		4.71		0.050	mg/L	05-JUL-12	05-JUL-12	R239348
Manganese (Mn)-		0.0229		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Molybdenum (Mo)	-Total	0.00057		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Phosphorus (P)-To	4	0.92		0.50	mg/L	05-JUL-12	05-JUL-12	R239348
Potassium (K)-Tot		4.56		0.10	mg/L	05-JUL-12	05-JUL-12	R239348
Rubidium (Rb)-To		0.00489		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Selenium (Se)-Tot	tal	<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R239348
Silicon (Si)-Total		0.85		0.30	mg/L	05-JUL-12	05-JUL-12	R239348
Silver (Ag)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Sodium (Na)-Total		13.1		0.050	mg/L	05-JUL-12	05-JUL-12	R239348
Strontium (Sr)-Tot Tellurium (Te)-Tot		0.0340		0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Thallium (TI)-Total		<0.0010		0.0010	mg/L	05-JUL-12 05-JUL-12	05-JUL-12 05-JUL-12	R239348
Thorium (Th)-Total		<0.0050		0.0050	mg/L	05-JUL-12 05-JUL-12		R239348
Tin (Sn)-Total		<0.0010 <0.00060		0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Titanium (Ti)-Total		<0.0000		0.00060	mg/L mg/L	05-JUL-12	05-JUL-12 05-JUL-12	R239348 R239348
Tungsten (W)-Total						05-JUL-12		
Uranium (U)-Total		<0.0020 0.00072		0.0020 0.00050	mg/L mg/L	05-JUL-12 05-JUL-12	05-JUL-12 05-JUL-12	R239348
Vanadium (V)-Total		<0.00072		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Zinc (Zn)-Total	s:	<0.020		0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Zirconium (Zr)-Total	al	<0.020		0.020	mg/L	05-JUL-12	05-JUL-12	R2393489
pH		SU.0010		0.0010	mg/L	00-00L-12	30-30L-12	112000400
pH		7.76		0.10	pH units		03-JUL-12	R2391974
1171564-3 REP	-6	7.70	+	0.10	priamo		30 000 12	
	IN TEGUMIAR on 29-JUN-12 @ 11:40							
	STE WATER							
BTEX plus F1-F4	COME							
BTX plus F1 by 0	OCIVIO		1					

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1171564 CONTD.... PAGE 5 of 10 Version: FINAL

Sample Details/Parameters	Result	Qualifier	* D.L.	Units	Extracted	Analyzed	Batch
_1171564-3 REP-6							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @	0 11:40	9					
Matrix: WASTE WATER							
BTX plus F1 by GCMS							
Benzene	< 0.00050		0.00050	mg/L		11-JUL-12	R239621
Toluene	< 0.0010		0.0010	mg/L		11-JUL-12	R239621
Ethyl benzene	< 0.00050		0.00050	mg/L		11-JUL-12	R239621
o-Xylene	< 0.00050		0.00050	mg/L		11-JUL-12	R239621
m+p-Xylenes	< 0.00050		0.00050	mg/L		11-JUL-12	R239621
Xylenes	< 0.0015		0.0015	mg/L		11-JUL-12	R239621
F1 (C6-C10)	<0.10		0.10	mg/L		11-JUL-12	R239621
Surrogate: 4-Bromofluorobenzene (SS)	80.5		70-130	%		11-JUL-12	R239621
CCME Total Hydrocarbons	*						
F1-BTEX	<0.10		0.10	mg/L		13-JUL-12	
F2-Naphth	< 0.25		0.25	mg/L		13-JUL-12	
F3-PAH	<0.25		0.25	mg/L		13-JUL-12	
Total Hydrocarbons (C6-C50)	<0.44		0.44	mg/L		13-JUL-12	
F2-F4 PHC method							
F2 (C10-C16)	<0.25		0.25	mg/L	05-JUL-12	05-JUL-12	R239365
F3 (C16-C34)	<0.25		0.25	mg/L	05-JUL-12	05-JUL-12	R23936
F4 (C34-C50)	<0.25		0.25	mg/L	05-JUL-12	05-JUL-12	R23936
Surrogate: 2-Bromobenzotrifluoride	87.6		65-135	%	05-JUL-12	05-JUL-12	R239365
Miscellaneous Parameters							
Ammonia, Total (as N)	0.024		0.010	mg/L		11-JUL-12	R239676
Biochemical Oxygen Demand	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R239479
BOD Carbonaceous	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R239478
Fecal Coliforms	<3		3	MPN/100mL		06-JUL-12	R239423
Oil and Grease, Total	<2.0		2.0	mg/L	06-JUL-12	06-JUL-12	R239461
Phenols (4AAP)	<0.0010		0.0010	mg/L	10-JUL-12	10-JUL-12	R239564
Phosphorus (P)-Total	0.033		0.010	mg/L		09-JUL-12	R239486
Total Organic Carbon	19.8		1.0	mg/L		26-JUL-12	R240514
Total Suspended Solids	<5.0					14-JUL-12	
Polyaromatic Hydrocarbons (PAHs)	\5.0		5.0	mg/L		14-JUL-12	R239907
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Acenaphthene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Acenaphthylene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Anthracene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R239803
Acridine	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Benzo(a)anthracene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R239803
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	06-JUL-12	11-JUL-12	R239803
Benzo(b&j)fluoranthene	< 0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R239803
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Benzo(k)fluoranthene	< 0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R239803
Chrysene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	06-JUL-12	11-JUL-12	R239803
Fluoranthene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Fluorene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R239803
Indeno(1,2,3-cd)pyrene	< 0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R239803
Naphthalene	<0.000050		0.000050	mg/L	06-JUL-12	11-JUL-12	R239803
Phenanthrene	< 0.000050		0.000050	mg/L	06-JUL-12	11-JUL-12	R239803
Pyrene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R239803
Quinoline	< 0.000030	DLM	0.000030	mg/L	06-JUL-12	11-JUL-12	R239803
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	06-JUL-12	11-JUL-12	R239803
Surrogate: Acenaphthene d10	60.5	1	50-150	%	06-JUL-12	11-JUL-12	R2398036

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	Analyzed	Batch
L1171564-3 REP-6						
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @	0 11:40					
Matrix: WASTE WATER						
Polyaromatic Hydrocarbons (PAHs)						
Surrogate: Acridine d9	68.0	50-150	%	06-JUL-12	11-JUL-12	R239803
Surrogate: Chrysene d12	80.8	50-150	%	06-JUL-12	11-JUL-12	R239803
Surrogate: Naphthalene d8	50.4	50-150	%	06-JUL-12	11-JUL-12	R239803
Surrogate: Phenanthrene d10	64.4	50-150	%	06-JUL-12	11-JUL-12	R239803
Routine Soluble + Metal scan	55546561	- ATGTESTATION	277			
Alkalinity						
Alkalinity, Total (as CaCO3)	130	20	mg/L		03-JUL-12	R239197
Bicarbonate (HCO3)	138	24	mg/L		03-JUL-12	R239197
Carbonate (CO3)	<12	12	mg/L		03-JUL-12	R239197
Hydroxide (OH)	<6.8	6.8	mg/L		03-JUL-12	R239197
Chloride by Ion Chromatography						10/06/15/09/04/05/0
Chloride	10.2	0.50	mg/L		04-JUL-12	R239316
Conductivity						
Conductivity	289	20	umhos/cm		03-JUL-12	R239197
Hardness Calculated						
Hardness (as CaCO3)	168	0.30	mg/L		06-JUL-12	
Nitrate as N by Ion Chromatography						
Nitrate-N	< 0.050	0.050	mg/L		04-JUL-12	R239316
Nitrate+Nitrite	100.00					
Nitrate and Nitrite as N	<0.071	0.071	mg/L		03-JUL-12	
Nitrite as N by Ion Chromatography						
Nitrite-N	<0.050	0.050	mg/L		04-JUL-12	R239316
Sulfate by Ion Chromatography						
Sulfate	26.7	0.50	mg/L		04-JUL-12	R239316
TDS calculated						
TDS (Calculated)	183	5.0	mg/L		06-JUL-12	
Total Metals by ICP-MS						
Aluminum (Al)-Total	0.046	0.020	mg/L	05-JUL-12	05-JUL-12	R239348
Antimony (Sb)-Total	<0.0010	0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Arsenic (As)-Total	<0.0010	0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Barium (Ba)-Total	0.0123	0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Beryllium (Be)-Total	<0.0010	0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Bismuth (Bi)-Total	<0.00050	0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Boron (B)-Total	<0.030	0.030	mg/L	05-JUL-12	05-JUL-12	R239348
Cadmium (Cd)-Total	<0.00020	0.00020	mg/L	05-JUL-12	05-JUL-12	R239348
Calcium (Ca)-Total	48.9	0.20	mg/L	05-JUL-12	05-JUL-12	R239348
Cesium (Cs)-Total	<0.00050	0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Chromium (Cr)-Total	<0.0020	0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Cobalt (Co)-Total	<0.00050	0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Copper (Cu)-Total	0.0042	0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Iron (Fe)-Total	<0.10	0.10	mg/L	05-JUL-12	05-JUL-12	R239348
Lead (Pb)-Total	<0.0010	0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Lithium (Li)-Total	0.0059	0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Magnesium (Mg)-Total	11.1	0.050	mg/L	05-JUL-12	05-JUL-12	R239348
Manganese (Mn)-Total	0.0011	0.0010	mg/L	05-JUL-12	05-JUL-12	R239348
Molybdenum (Mo)-Total	0.00125	0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Nickel (Ni)-Total	<0.0020	0.0020	mg/L	05-JUL-12	05-JUL-12	R239348
Phosphorus (P)-Total	<0.50	0.50	mg/L	05-JUL-12	05-JUL-12	R239348
Potassium (K)-Total	2.78	0.10	mg/L	05-JUL-12	05-JUL-12	R239348
Rubidium (Rb)-Total	0.00209	0.00050	mg/L	05-JUL-12	05-JUL-12	R239348
Selenium (Se)-Total	< 0.0050	0.0050	mg/L	05-JUL-12	05-JUL-12	R239348
Silicon (Si)-Total	0.70	0.30	mg/L	05-JUL-12	05-JUL-12	R239348

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

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© 11:40
<0.0010
<0.0010
4.96 0.050 mg/L 05-JUL-12 05-JUL-12 R239348 0.0401 0.00050 mg/L 05-JUL-12 05-JUL-12 R239348 <0.0010
4.96 0.050 mg/L 05-JUL-12 05-JUL-12 R2393489 0.0401 0.00050 mg/L 05-JUL-12 05-JUL-12 R2393489 <0.0010
4.96 0.050 mg/L 05-JUL-12 05-JUL-12 R239348 0.0401 0.00050 mg/L 05-JUL-12 05-JUL-12 R239348 <0.0010
0.0401 0.00050 mg/L 05-JUL-12 05-JUL-12 R239348 <0.0010
<0.0050
<0.0010 0.0010 mg/L 05-JUL-12 05-JUL-12 R2393489
<0.00060 0.00060 mg/L 05-JUL-12 05-JUL-12 R2393489
0.0016 0.0010 mg/L 05-JUL-12 05-JUL-12 R2393489
 <0.0020 0.0020 mg/L 05-JUL-12 05-JUL-12 R2393489 0.00439 0.00050 mg/L 05-JUL-12 05-JUL-12 R2393489 R2393489
0.00439
<0.0020 mg/L 05-JUL-12 05-JUL-12 R2393488
<0.0010 0.0010 mg/L 05-JUL-12 05-JUL-12 R239348
7,2556.15
8.72 0.10 pH units 03-JUL-12 R2391974

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1171564 CONTD

Reference Information

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Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**	The state of the s
			The same and the s	
ALK-TOT-WP	Water	Alkalinity	APHA 2320B	

Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BOD-CBOD-WP

Water

Carbonaceous BOD

APHA 5210 B-5 day Incub.-O2 electrode

A sample of water is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at beginning and end of incubation provides a measure of Biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis.

BOD-WP

Water

Biochemical Oxygen Demand (BOD)

APHA 5210 B

The sample is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at the beginning and end of incubation provides a measure of biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.

BTEXS+F1-HSMS-WP

Water

BTX plus F1 by GCMS

EPA SW846 8260B REV 2 SEPT 1994

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

C-TOT-ORG-WP

Water

Total Organic Carbon

APHA 5310 B-INSTRUMENTAL-WP

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-WP

Water

Chloride by Ion Chromatography

EPA 300.1 (modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

FC-WE

Water

Conductivity

APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-HARDNESS-TOT-WP Water

ornania and

Hardness Calculated

HARDNESS CALCULATED

ETL-SOLIDS-CALC-WP

Water

TDS calculated

CALCULATION

F1-F4-CALC-WP

Water

CCME Total Hydrocarbons

CCME CWS-PHC DEC-2000 - PUB# 1310-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

L1171564 CONTD

Reference Information

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Test Method References:

ALS Test Code Matrix Test Description Method Reference**

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.

2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.

3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.

Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-WS-WP

Water

F2-F4 PHC method

EPA 3510/8000

This is the determination of the Petroleum Hydrocarbon fractions in water (F2, F3 and F4). A water sample volume of 200 mL in a 250 mL glass amber bottle is shaken with 10 mL hexane for two hours on a wrist action shaker, and then sonicated for 5 minutes. After extraction, the solvent layer is drawn off and analyzed against C10, C16 and C34 standards on a gas chromatograph equipped with a flame ionization detector.

FC-MPN-WP

Water

Fecal Coliform

ΔΡΗΔ 9221Δ-C

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.

IONBALANCE-OP05-WP

Water

Ion Balance Calculation No Reporting

APHA 1030E

MET-T-MS-WP

Water

Total Metals by ICP-MS

U.S. EPA 200.8-T

Total Metals by ICP-MS: This analysis is carried out using sample preparation procedures adapted from Standard Methods for the examination of Water and Wastewater Method 3030E and analytical procedures adapted from U.S EPA Method 200.8 for analysi of metals by inductively coupled-mass spectrometery.

NH3-COL-WP

Water

Ammonia by colour

APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-WP

Water

Nitrate+Nitrite

CALCULATION

NO2-IC-WP

Water

Nitrite as N by Ion Chromatography

EPA 300.1 (modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

NO3-IC-WP

Water

Nitrate as N by Ion Chromatography

EPA 300.1 (modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

OGG-TOT-WT

Water

Oil and Grease, Total

APHA 5520 B

Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.

P-T-COL-WP

Water

Phosphorus, Total

APHA 4500 P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PAH, PANH-WP

Water

Polyaromatic Hydrocarbons (PAHs)

EPA SW 846/8270-GC/MS

Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.

PH-WP

Water

pH

APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

PHENOLS-4AAP-WT

Water

Phenol (4AAP)

FPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-WP

Water

Sulfate by Ion Chromatography

EPA 300.1 (modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

SOLIDS-TOTSUS-WP

Water

Total Suspended Solids

APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105 C.

^{**} ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

L1171564 CONTD.... PAGE 10 of 10 Version: FINAL

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

 Laboratory Definition Code
 Laboratory Location

 WP
 ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

 WT
 ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.
D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

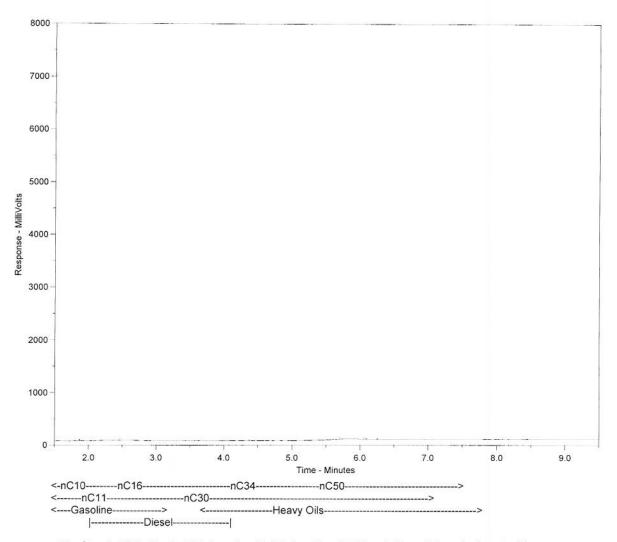
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report



ALS Sample ID: L1171564-3 Client ID: REP-6



The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

www.alsglobal.com

DIF166

o O Page

COC#

Number of Containers 00 Observations: Service Requested (Rush for routine analysis subject to availability) Polyaromatic Hydrocarbons Please indicate below Filtered, Preserved or both (F, P, F/P) Yes / No ? SHIPMENT RECEPTION (lab.use.of))). The state of the state of the late. BTEX plus F1-F4 Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses. Fecal Coliforms L1171564-COFC Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details Total Suispended Solids Routine Soluble + Metal Scan [9AA4] lonsriq By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab. Phosphorus, Total Oil and Grease, Total Ammonia by colour Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. Total Organic Carbon Regular (St O Emergency O Priority (2-O Same Day Biochemical Oxygen Demand Carbonaceous BOD 15pm Waste Water V 10;50 am Noste Water 1 11:40am Oaste Water ပွ Sample Type Sampler: Keya gama Z F Repulse Bay Monitoring Program Digital 3:60 mmorepulse@qiniq.com saorepulse@qiniq.com Report Format / Distribution Email 3: mlusty@gov.nu.ca Client / Project Information 296412 21/20112 03 JUL- 12 C1/20/68 Excel (dd-mmm-bb) Craig Riddell Osher Date Standard > PO / AFE: Contact: Email 1: Email 2: Quote #: Job #: Spore. > P ALS LSD: Received by: (This description will appear on the report) (867) 462-4411 Date (dd-mmm-yy) Time (hh-mm) 29/06/12 1:5gm Sample Identification 2 P.O. Box 10, Repulse Bay, NU X0C 0H0 SHIPMENT RELEASE (client use) Fax: Fax ✓ Yes √es Hamlet of Repulse Bay Hardcopy of Invoice with Report? Same as Report? Kevin Tagumiar (867) 462-9952 Lab Work Order # (lab use only) REP-6 REP-2 REP-4 Released by: Invoice To Report To Company: Sample Company: Address: Address: Contact Contact Phone: Phone: #

If Yes add SIF

GENF 20.00 Front

** ** ** **



Hamlet of Repulse Bay ATTN: KEVIN TEGUMIAR

PO Box 10

Repulse Bay NU X0C 0H0

Date Received: 01-AUG-12

Report Date:

15-AUG-12 15:27 (MT)

Version:

FINAL

Client Phone: 867-462-9952

Certificate of Analysis

Lab Work Order #:

L1187839

Project P.O. #:

NOT SUBMITTED

Job Reference:

REPULSE BAY MONITORING PROGRAM

C of C Numbers: Legal Site Desc:

Paul Necolas

Paul Nicolas Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721

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L1187839 CONTD.... PAGE 2 of 6 Version: FINAL

Sample Details	/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1187839-1	REP-2							
Sampled By:	KEVIN TEGUMIAL on 30-JUL-12 @ 14:0)4						
Matrix:	WASTEWATER							
Miscellaneo	ous Parameters							
Ammonia, To	otal (as N)	0.043	DLA	0.010	mg/L		13-AUG-12	R241604
Biochemical	Oxygen Demand	<6.0		6.0	mg/L	02-AUG-12	07-AUG-12	R241182
BOD Carbon	aceous	<6.0		6.0	mg/L	02-AUG-12	07-AUG-12	R241177
Fecal Colifor	ms	4		3	MPN/100mL		05-AUG-12	R241152
Oil and Grea	se, Total	<2.0		2.0	mg/L	07-AUG-12	07-AUG-12	R241279
Phenols (4A)	AP)	<0.0010		0.0010	mg/L	09-AUG-12	09-AUG-12	R241533
Phosphorus	(P)-Total	< 0.010		0.010	mg/L		13-AUG-12	R241708
Total Organic		7.4		1.0	mg/L		14-AUG-12	R241692
Total Susper		5.0		5.0	mg/L		02-AUG-12	R241095
	ole + Metal scan	5.0		5.0	mg/L		02-700-12	11241030
Alkalinity								
	tal (as CaCO3)	165		20	mg/L		02-AUG-12	R241048
Bicarbonate		202		24	mg/L		02-AUG-12	R241048
Carbonate (C	CO3)	<12		12	mg/L		02-AUG-12	R241048
Hydroxide (O	PH)	<6.8		6.8	mg/L		02-AUG-12	R241048
Chloride by Chloride	Ion Chromatography	00.7		0.50			00 4110 40	D044046
Conductivity	v	29.7		0.50	mg/L		03-AUG-12	R241212
Conductivity		434		20	umhos/cm		02-AUG-12	R241048
Hardness Ca Hardness (as		183		0.30	mg/L		07-AUG-12	
Nitrate as N Nitrate-N	by Ion Chromatography	0.100		0.050	mg/L		03-AUG-12	R241212
Nitrate+Nitri	te	15.5.1.5.5		0.000			SF 145 F 47	
Nitrate and N	litrite as N	0.100		0.071	mg/L		14-AUG-12	
Nitrite as N I Nitrite-N	by Ion Chromatography	<0.050		0.050	mg/L		03-AUG-12	R241212
	on Chromatography	47.0		0.50			00 4110 40	D044040
Sulfate		17.0	1	0.50	mg/L		03-AUG-12	R241212
TDS calculated TDS (Calculated)		238		5.0	mg/L		07-AUG-12	
Total Metals		230		5.0	mg/L		07-A0G-12	
Aluminum (Al		0.027		0.020	mg/L	03-AUG-12	03-AUG-12	R241171
Antimony (Sb		< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Arsenic (As)-	1 To	< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Barium (Ba)-	Total	0.0162		0.00050	mg/L	03-AUG-12	03-AUG-12	R241171
Beryllium (Be	e)-Total	< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Bismuth (Bi)-	Total	< 0.00050		0.00050	mg/L	03-AUG-12	03-AUG-12	R241171
Boron (B)-Tot	tal	0.085		0.030	mg/L	03-AUG-12	03-AUG-12	R241171
Cadmium (Co	d)-Total	< 0.00020		0.00020	mg/L	03-AUG-12	03-AUG-12	R241171
Calcium (Ca)	-Total	56.0		0.20	mg/L	03-AUG-12	03-AUG-12	R241171
Cesium (Cs)-	Total	< 0.00050		0.00050	mg/L	03-AUG-12	03-AUG-12	R241171
Chromium (C	2000	<0.0020		0.0020	mg/L	03-AUG-12	03-AUG-12	R241171
Cobalt (Co)-T	otal	<0.00050		0.00050	mg/L	03-AUG-12	03-AUG-12	R241171
Copper (Cu)-	Total	0.0025		0.0020	mg/L	03-AUG-12	03-AUG-12	R241171
Iron (Fe)-Tota	al	< 0.10		0.10	mg/L	03-AUG-12	03-AUG-12	R241171
Lead (Pb)-To	tal	< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Lithium (Li)-Te	otal	0.0049		0.0020	mg/L	03-AUG-12	03-AUG-12	R241171
Magnesium (I		10.6		0.050	mg/L	03-AUG-12	03-AUG-12	R241171
Manganese (I	NOTE AND ADDRESS OF THE ADDRESS OF T	0.0053		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Molybdenum	(Mo)-Total	0.00064	1	0.00050	mg/L	03-AUG-12	03-AUG-12	R241171

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1187839 CONTD.... PAGE 3 of 6 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1187839-1 REP-2							
Sampled By: KEVIN TEGUMIAL on 30-JUL-12 @ 14:04							
Matrix: WASTEWATER							
Total Metals by ICP-MS							
Nickel (Ni)-Total	< 0.0020		0.0020	mg/L	03-AUG-12	03-AUG-12	R241171
Phosphorus (P)-Total	< 0.50		0.50	mg/L	03-AUG-12	03-AUG-12	R241171
Potassium (K)-Total	2.38		0.10	mg/L	03-AUG-12	03-AUG-12	R241171
Rubidium (Rb)-Total	0.00216		0.00050	mg/L	03-AUG-12	03-AUG-12	R241171
Selenium (Se)-Total	< 0.0050		0.0050	mg/L	03-AUG-12	03-AUG-12	R241171
Silicon (Si)-Total	0.79		0.30	mg/L	03-AUG-12	03-AUG-12	R241171
Silver (Ag)-Total	<0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Sodium (Na)-Total	22.9		0.050	mg/L	03-AUG-12	03-AUG-12	R241171
Strontium (Sr)-Total	0.0597		0.00050	mg/L	03-AUG-12	03-AUG-12	R241171
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Thallium (TI)-Total	<0.0050		0.0050	mg/L	03-AUG-12	03-AUG-12	R241171
Thorium (Th)-Total	<0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
Tin (Sn)-Total Titanium (Ti)-Total	<0.00060		0.00060	mg/L	03-AUG-12 03-AUG-12	03-AUG-12 03-AUG-12	R241171
Tungsten (W)-Total	0.0019 <0.0020		0.0010 0.0020	mg/L mg/L	03-AUG-12 03-AUG-12	03-AUG-12 03-AUG-12	R241171 R241171
Uranium (U)-Total	0.00557		0.0020	mg/L	03-AUG-12	03-AUG-12	R241171
Vanadium (V)-Total	<0.0020		0.0020	mg/L	03-AUG-12	03-AUG-12	R241171
Zinc (Zn)-Total	<0.020		0.020	mg/L	03-AUG-12	03-AUG-12	R241171
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R241171
pH	0.0010		0.00.10				
pH	8.23		0.10	pH units		02-AUG-12	R241048
Matrix: WASTEWATER Miscellaneous Parameters Ammonia Total (as N)	0.80	DLA	0.10	ma/l		13-AUG-12	R241604
Ammonia, Total (as N)	0.80	DLA	0.10	mg/L		13-AUG-12	R241604
Biochemical Oxygen Demand	19.9		6.0	mg/L	02-AUG-12	07-AUG-12	R241182
BOD Carbonaceous	10.8		6.0	mg/L	02-AUG-12	07-AUG-12	R241177
Fecal Coliforms	<3		3	MPN/100mL		05-AUG-12	R241152
Oil and Grease, Total	<2.0		2.0	mg/L	07-AUG-12	07-AUG-12	R241279
Phenols (4AAP)	< 0.0010		0.0010	mg/L	09-AUG-12	09-AUG-12	R241533
Phosphorus (P)-Total	0.742		0.010	mg/L		13-AUG-12	R241708
Total Organic Carbon	17.8		1.0	mg/L		14-AUG-12	R241692
Total Suspended Solids	20.0		5.0	mg/L		02-AUG-12	R241095
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	132		20	mg/L		02-AUG-12	R241048
Bicarbonate (HCO3)	128		24	mg/L		02-AUG-12	R241048
Carbonate (CO3)	16		12	mg/L		02-AUG-12	R241048
Hydroxide (OH)	<6.8		6.8	mg/L		02-AUG-12	R2410487
Chloride by Ion Chromatography Chloride Conductivity	20.9		0.50	mg/L		03-AUG-12	R2412129
Conductivity Conductivity	320		20	umhos/cm		02-AUG-12	R2410487
Hardness Calculated Hardness (as CaCO3)	140		0.30	mg/L		07-AUG-12	
Nitrate as N by Ion Chromatography Nitrate-N	0.599		0.050	mg/L		03-AUG-12	R2412129
Nitrate+Nitrite Nitrate and Nitrite as N	0.710		0.071	mg/L		14-AUG-12	1

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1187839 CONTD.... PAGE 4 of 6 Version: FINAL

REP-4 KEVIN TEGUMIAL on 30-JUL-12 @ 1 WASTEWATER y Ion Chromatography c Chromatography d ed ed) by ICP-MS -Total -Total otal otal otal otal otal	0.111 16.6 194 0.049 <0.0010 <0.0010 0.00628 <0.0010		0.050 0.50 5.0 0.020	mg/L mg/L mg/L		03-AUG-12 03-AUG-12 07-AUG-12	R2412129
WASTEWATER y Ion Chromatography cd ed) py ICP-MS -Total -Total otal otal -Total otal otal	0.111 16.6 194 0.049 <0.0010 <0.0010 0.00628		0.50 5.0	mg/L		03-AUG-12	
y Ion Chromatography d Chromatography ed ed) by ICP-MS -Total -Total otal otal -Total otal otal	16.6 194 0.049 <0.0010 <0.0010 0.00628		0.50 5.0	mg/L		03-AUG-12	
c Chromatography ed ed) by ICP-MS -Total -Total otal otal -Total otal	16.6 194 0.049 <0.0010 <0.0010 0.00628		0.50 5.0	mg/L		03-AUG-12	
ed ed) by ICP-MS -Total -Total otal -Total otal -Total	194 0.049 <0.0010 <0.0010 0.00628		5.0	mg/L			
ed) py ICP-MS -Total -Total otal otal -Total otal	194 0.049 <0.0010 <0.0010 0.00628		5.0			07-AUG-12	
-Total -Total otal otal -Total otal	0.049 <0.0010 <0.0010 0.00628						
-Total otal otal -Total otal	<0.0010 <0.0010 0.00628		0.020				
otal otal -Total otal	<0.0010 0.00628			mg/L	03-AUG-12	03-AUG-12	R2411716
otal -Total otal	0.00628		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
-Total otal			0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
otal	< 0.0010		0.00050	mg/L	03-AUG-12	03-AUG-12	R2411716
	0,00.0		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
ıl .	<0.00050		0.00050	mg/L	03-AUG-12	03-AUG-12	R2411716
	0.126		0.030	mg/L	03-AUG-12	03-AUG-12	R2411716
-Total	<0.00020		0.00020	mg/L	03-AUG-12	03-AUG-12	R2411716
Total	43.1		0.20	mg/L	03-AUG-12	03-AUG-12	R2411716
otal	< 0.00050		0.00050	mg/L	03-AUG-12	03-AUG-12	R2411716
)-Total	<0.0020		0.0020	mg/L	03-AUG-12	03-AUG-12	R2411716
tal	< 0.00050		0.00050	mg/L	03-AUG-12	03-AUG-12	R2411716
otal	0.0043		0.0020	mg/L	03-AUG-12	03-AUG-12	R2411716
	0.41		0.10	mg/L	03-AUG-12	03-AUG-12	R2411716
al	< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
tal	0.0053		0.0020	mg/L	03-AUG-12	03-AUG-12	R2411716
lg)-Total	7.91		0.050	mg/L	03-AUG-12	03-AUG-12	R2411716
In)-Total	0.0433		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
Mo)-Total	0.00053		0.00050	mg/L	03-AUG-12	03-AUG-12	R2411716
al	<0.0020		0.0020	mg/L	03-AUG-12	03-AUG-12	R2411716
	0.76		0.50	mg/L	03-AUG-12	03-AUG-12	R2411716
•	4.47		0.10	mg/L	03-AUG-12	03-AUG-12	R2411716
-Total	0.00588	1	0.00050	mg/L	03-AUG-12	03-AUG-12	R2411716
			0.0050		03-AUG-12	03-AUG-12	R2411716
	1.31		0.30	mg/L	03-AUG-12	03-AUG-12	R2411716
	<0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
otal			0.050		03-AUG-12	03-AUG-12	R2411716
Total	0.0862		0.00050		03-AUG-12	03-AUG-12	R2411716
	< 0.0010		0.0010		03-AUG-12	03-AUG-12	R2411716
			0.0050	mg/L	03-AUG-12	03-AUG-12	R2411716
otal	< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
				mg/L	03-AUG-12	03-AUG-12	R2411716
otal	< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
Total	<0.0020		0.0020		03-AUG-12	03-AUG-12	R2411716
otal			0.00050	mg/L	03-AUG-12	03-AUG-12	R2411716
Total	< 0.0020		0.0020	mg/L	03-AUG-12	03-AUG-12	R2411716
	< 0.020		0.020	mg/L	03-AUG-12	03-AUG-12	R2411716
Total	< 0.0010		0.0010	mg/L	03-AUG-12	03-AUG-12	R2411716
	vs-130030476600700						
And the second s	8.99		0.10	pH units		02-AUG-12	R2410487
	otal tal tal tg)-Total In)-Total Mo)-Total al t)-Total -Total -Total -Total total Total Total otal Total otal Total Total Total	otal 0.0043 0.41 0.0010 tal <0.0010	0.0043 0.41	otal 0.0043 0.0020 ola 0.41 0.10 ola <0.0010	otal 0.0043 0.0020 mg/L otal 0.41 0.10 mg/L otal <0.0010	obtail 0.0043 0.0020 mg/L 03-AUG-12 ola 0.41 0.10 mg/L 03-AUG-12 ola <0.0010	0.0043

^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1187839 CONTD

Reference Information

PAGE 5 of 6 Version: FINAL

Sample Parameter Qualifier Key:

Qualifier Description

DLA

Detection Limit Adjusted For required dilution

Test Method References:

ALS Test Code Matrix **Test Description** Method Reference**

ALK-TOT-WP

Water

Alkalinity

APHA 2320B

Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BOD-CBOD-WP

Water

Carbonaceous BOD

APHA 5210 B-5 day Incub.-O2 electrode

A sample of water is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at beginning and end of incubation provides a measure of Biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis.

BOD-WP

Water

Biochemical Oxygen Demand (BOD)

APHA 5210 B

The sample is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at the beginning and end of incubation provides a measure of biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.

C-TOT-ORG-WP

Water

Total Organic Carbon

APHA 5310 B-INSTRUMENTAL-WP

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-WP

Water

Chloride by Ion Chromatography

EPA 300.1 (modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

EC-WP

Water

Conductivity

APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-HARDNESS-TOT-WP Water

Hardness Calculated

HARDNESS CALCULATED

ETL-SOLIDS-CALC-WP

Water

TDS calculated

CALCULATION

FC-MPN-WP

Water

Fecal Coliform

APHA 9221A-C

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.

IONBALANCE-OP05-WP

Water

Ion Balance Calculation No Reporting

APHA 1030E

MET-T-MS-WP

Water

Total Metals by ICP-MS

U.S. EPA 200.8-T

Total Metals by ICP-MS: This analysis is carried out using sample preparation procedures adapted from Standard Methods for the examination of Water and Wastewater Method 3030E and analytical procedures adapted from U.S EPA Method 200.8 for analysi of metals by inductively coupled-mass spectrometery.

NH3-COL-WP

Water

Ammonia by colour

APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-WP

Water

Nitrate+Nitrite

CALCULATION

NO2-IC-WP

Water

Nitrite as N by Ion Chromatography

EPA 300.1 (modified)

L1187839 CONTD

PAGE 6 of 6 Reference Information Version: FINAL

Test Method References:

ALS Test Code Matrix **Test Description** Method Reference**

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

Water

Nitrate as N by Ion Chromatography

EPA 300.1 (modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

OGG-TOT-WT

Water

Oil and Grease, Total

APHA 5520 B

Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.

P-T-COL-WP

Water

Phosphorus, Total

APHA 4500 P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-WP

Water

APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

PHENOLS-4AAP-WT

Water

Phenol (4AAP)

EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-WP

Water

Sulfate by Ion Chromatography

EPA 300.1 (modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

SOLIDS-TOTSUS-WP

Water

Total Suspended Solids

APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105 C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

WP

WT

ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS) Environmental

L1187839-COFC

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