

Permits

From: Miki Ehrlich
Sent: Tuesday, December 15, 2015 12:00 PM
To: Permits
Subject: FW: Emailing: 5120255_1 RPT_CARO-M0 Dec 10 15 1544.pdf
Attachments: 5120255_1 RPT_CARO-M0 Dec 10 15 1544.pdf

Please post email and attachment to MV2009L3-0025 - Reports and Studies - Operations and Notifications
Title: Ft Liard - Lab results for post decant sampling - Dec15-15

-----Original Message-----

From: Manager Works and Services [mailto:mws@fortliard.com]
Sent: Monday, December 14, 2015 10:20 AM
To: Wendy Bidwell
Cc: Miki Ehrlich
Subject: Emailing: 5120255_1 RPT_CARO-M0 Dec 10 15 1544.pdf

Good morning Wendy,

You will find attached the post decant samples sub-mitted for testing. The results are in line with what I had explained to you when we spoke. I could only obtain samples from what was primarily only effluent/mud left in the bottom of the lagoon after the ice had collapsed. The results definitely reflect this in the analysis. If you have any questions please give me a call.

Alan

Alan Harris
Manager Municipal Operations
Hamlet of Fort Liard
867 770 4104 ext. 103
mws@fortliard.com

Your message is ready to be sent with the following file or link attachments:

5120255_1 RPT_CARO-M0 Dec 10 15 1544.pdf

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

REPORTED TO Fort Liard, Hamlet of
174 Valley Main Street
Fort Liard, NT X0G 0A0

TEL (867) 770-4104
FAX (867) 770-4004

ATTENTION Alan Harris

WORK ORDER 5120255

PO NUMBER 3900

RECEIVED / TEMP Dec-03-15 09:00 / 12°C

PROJECT Sewage Lagoon

REPORTED Dec-10-15

PROJECT INFO Sewage Lagoon 3

COC NUMBER A03620

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition 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.



Authorized By:

Michelle LaBonte, B.Sc., P.Chem.
Lab Manager, Edmonton

***If you have any questions or concerns, please contact your Account Manager:
Sarah Cunningham-Fleming (scunningham-fleming@caro.ca)***

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REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 5120255 Dec-10-15

Analysis Description	Method Reference	Technique	Location
Ammonia-N in Water (total)	APHA 4500-NH3 D	Ion Selective Electrode	Edmonton
BOD (5-day)	APHA 5210 B	Dissolved Oxygen Meter	Edmonton
BOD, Carbonaceous (5-day)	APHA 5210 B	Dissolved Oxygen Meter	Edmonton
Conductivity in Water	APHA 2510 B	Conductivity Meter	Edmonton
Fecal Coliforms (Quanti-Tray)	APHA 9223 B*	Most Probable Number / Enzyme Substrate Endo Agar	Edmonton
pH in Water	APHA 4500-H+ B	Electrometry	Edmonton
Total Dissolved Solids (Gravimetric)	APHA 2540 C*	Gravimetry (Dried at 103-105C)	Edmonton
Total Suspended Solids	APHA 2540 D*	Gravimetry (Dried at 103-105C)	Edmonton

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

Method Reference Descriptions:

APHA Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health Association/American Water Works Association/Water Environment Federation

Glossary of Terms:

MRL Method Reporting Limit
 < Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences
 mg/L Milligrams per litre
 MPN/100 mL Most Probable Number per 100 millilitres
 pH units pH < 7 = acidic, pH > 7 = basic
 µS/cm Microsiemens per centimetre

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 5120255 Dec-10-15

Analyte	Result / Recovery	MRL / Units Limits	Prepared	Analyzed	Notes
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Sample ID: Lagoon End of Decent Sample (5120255-01) [Water] Sampled: Dec-01-15 12:00

General Parameters

BOD, 5-day	<1710	2 mg/L	Dec-03-15	Dec-08-15	BOD2, HT1
BOD, 5-day Carbonaceous	<1410	2 mg/L	Dec-03-15	Dec-08-15	BOD2, HT1
Conductivity (EC)	1850	2 µS/cm	N/A	Dec-04-15	
Ammonia as N, Total	138	0.05 mg/L	N/A	Dec-08-15	
pH	7.23	0.01 pH units	N/A	Dec-04-15	HT2
Solids, Total Dissolved	914	10 mg/L	N/A	Dec-08-15	
Solids, Total Suspended	24800	2 mg/L	N/A	Dec-04-15	

Microbiological Parameters

Coliforms, Fecal (Q-Tray)	42000	1.0 MPN/100 mL	Dec-03-15	Dec-04-15	HT3
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Sample / Analysis Qualifiers:

BOD2	The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criterion of at least 2 mg/L.
HT1	The sample was prepared / analyzed past the recommended holding time.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
HT3	Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.

APPENDIX 1: QUALITY CONTROL DATA

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 5120255 Dec-10-15

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):** Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup):** Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- **Blank Spike (BS):** A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- **Standard Reference Material (SRM):** A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are 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 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	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B5L0171									
Blank (B5L0171-BLK1)			Prepared: Dec-03-15, Analyzed: Dec-08-15						
BOD, 5-day	< 2	2 mg/L							
Blank (B5L0171-BLK2)			Prepared: Dec-03-15, Analyzed: Dec-08-15						
BOD, 5-day	< 2	2 mg/L							
LCS (B5L0171-BS1)			Prepared: Dec-03-15, Analyzed: Dec-08-15						
BOD, 5-day	198	2 mg/L	198		100	85-115			
General Parameters, Batch B5L0173									
Blank (B5L0173-BLK1)			Prepared: Dec-03-15, Analyzed: Dec-08-15						
BOD, 5-day Carbonaceous	< 1	2 mg/L							
Blank (B5L0173-BLK2)			Prepared: Dec-03-15, Analyzed: Dec-08-15						
BOD, 5-day Carbonaceous	< 1	2 mg/L							
LCS (B5L0173-BS1)			Prepared: Dec-03-15, Analyzed: Dec-08-15						
BOD, 5-day Carbonaceous	187	2 mg/L	198		94	85-115			
General Parameters, Batch B5L0223									
Blank (B5L0223-BLK1)			Prepared: Dec-04-15, Analyzed: Dec-04-15						
Solids, Total Suspended	< 2	2 mg/L							
LCS (B5L0223-BS1)			Prepared: Dec-04-15, Analyzed: Dec-04-15						
Solids, Total Suspended	49	2 mg/L	50.0		98	93-105			
General Parameters, Batch B5L0275									
Reference (B5L0275-SRM1)			Prepared: Dec-04-15, Analyzed: Dec-04-15						
pH	7.00	0.01 pH units	7.00		100	98-102			

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Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B5L0276									
Blank (B5L0276-BLK1)			Prepared: Dec-04-15, Analyzed: Dec-04-15						
Conductivity (EC)	< 2	2 µS/cm							
LCS (B5L0276-BS1)			Prepared: Dec-04-15, Analyzed: Dec-04-15						
Conductivity (EC)	1430	2 µS/cm	1410		101	99-103			
General Parameters, Batch B5L0419									
Blank (B5L0419-BLK1)			Prepared: Dec-08-15, Analyzed: Dec-08-15						
Ammonia as N, Total	< 0.05	0.05 mg/L							
LCS (B5L0419-BS1)			Prepared: Dec-08-15, Analyzed: Dec-08-15						
Ammonia as N, Total	0.21	0.05 mg/L	0.200		107	92-111			
General Parameters, Batch B5L0423									
Blank (B5L0423-BLK1)			Prepared: Dec-08-15, Analyzed: Dec-08-15						
Solids, Total Dissolved	< 20	10 mg/L							
Duplicate (B5L0423-DUP1)			Source: 5120255-01 Prepared: Dec-08-15, Analyzed: Dec-08-15						
Solids, Total Dissolved	920	10 mg/L		914			< 1	5	
Reference (B5L0423-SRM1)			Prepared: Dec-08-15, Analyzed: Dec-08-15						
Solids, Total Dissolved	238	10 mg/L	240		99	85-115			
Microbiological Parameters, Batch B5L0197									
Blank (B5L0197-BLK1)			Prepared: Dec-03-15, Analyzed: Dec-04-15						
Coliforms, Fecal (Q-Tray)	< 1.0	1.0 MPN/100 mL							