

Biological Analysis Report

TLH-ROC-2018-03-27-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **A-b/t/m**
Request ID: **RQ-2018-02-26-64**
Customer: **TLH-ROC**
Project ID: **SMP**

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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 01-MAY-2018 15:10

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line underneath it.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Chlorophyll/Grain Size/BOD, Microbiology and Molecular.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Lexington Creek @ Timberlane Rd

Collection Date/Time: 03/27/2018 09:30

Field ID: G1TLHR0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978223	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.4	I	ug/L	P342393	
		Phaeophytin-a	0.68	I	ug/L	P342393	
		Chlorophyll-a, Uncorrected	1.8		ug/L	P342393	
1978228	SM 9222 D	Fecal Coliforms-Membrane Filter	1.3E+03	B	cfu/100 mL	P342570	
1978233	SOP-PCR-1.0	HF183-qPCR**	9.28E+04		GEU/100 mL	P343695	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

Sample Location: Lake Overstreet Drain @ N Meridian Rd

Collection Date/Time: 03/27/2018 09:50

Field ID: G1TLHR0069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978224	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.0		ug/L	P342393	
		Phaeophytin-a	0.40	U	ug/L	P342393	
		Chlorophyll-a, Uncorrected	7.2		ug/L	P342393	
1978229	SM 9222 D	Fecal Coliforms-Membrane Filter	470		cfu/100 mL	P342570	
1978234	SOP-PCR-1.0	HF183-qPCR**	70	T	GEU/100 mL	P343698	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

Sample Location: BIG CREEK @ CR 2224

Collection Date/Time: 03/27/2018 11:20

Field ID: G1TLHR0057

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978225	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P342393	
		Phaeophytin-a	0.40	U	ug/L	P342393	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P342393	
1978230	SM 9222 D	Fecal Coliforms-Membrane Filter	56		cfu/100 mL	P342570	
1978235	SOP-PCR-1.0	HF183-qPCR**	100	T	GEU/100 mL	P343698	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

Sample Location: BEAR CREEK @ SR 267

Collection Date/Time: 03/27/2018 12:00

Field ID: G1TLHR0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978226	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	I	ug/L	P342571	
		Phaeophytin-a	0.57	I	ug/L	P342571	
		Chlorophyll-a, Uncorrected	2.0	A	ug/L	P342571	

Field ID: G1TLHR0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978231	SM 9222 D	Fecal Coliforms-Membrane Filter	1.1E+03	B	cfu/100 mL	P342570	
1978236	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P343698	
	SOP-PCR-1.4	BacR-qPCR**	2.53E+05		TSC/100 mL	P343698	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
 SM 10200 H (mod.): Laboratory duplicate result is 1.6 I for Chlorophyll-a Corrected and 0.52 I for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.
 SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.
 SOP-PCR-1.0: No amplification of HF183 marker.

Sample Location: OCKLAWAHA CREEK @ SR 267

Collection Date/Time: 03/27/2018 12:10

Field ID: G1TLHR0053

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978227	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P342571	
		Phaeophytin-a	0.40	U	ug/L	P342571	
		Chlorophyll-a, Uncorrected	0.49	I	ug/L	P342571	
1978232	SM 9222 D	Fecal Coliforms-Membrane Filter	280		cfu/100 mL	P342570	
1978237	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P343698	
	SOP-PCR-1.4	BacR-qPCR**	1.1E+03	T	TSC/100 mL	P343698	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
 SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.
 SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.
 SOP-PCR-1.0: No amplification of HF183 marker.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P342393

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SM 10200 H (mod.)
 Batch ID: P342571

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SM 9222 D
 Batch ID: P342570

Component	Result	Code	Units
Fecal Coliforms-Membrane Filter	2	U	cfu/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P343695

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P343698

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P343698

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P342393

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	103		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P342571

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	109		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P343695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	121	79.5	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P343698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	107	66.6	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P343698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	99.2	23.5	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P343695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975972	HF183-qPCR	117	94.3	P	50 - 175
1976130	HF183-qPCR	98.8		P/P	50 - 175
1976661	HF183-qPCR	87.9		P	50 - 175
1976662	HF183-qPCR	96.7		P	50 - 175
1976663	HF183-qPCR	94.3	94.3	P	50 - 175
1976664	HF183-qPCR	96.7		P	50 - 175
1976665	HF183-qPCR	80.7		P	50 - 175
1976666	HF183-qPCR	95.4		P	50 - 175
1977094	HF183-qPCR	101	94.3	P	50 - 175
1977095	HF183-qPCR	102		P	50 - 175
1977096	HF183-qPCR	99.4		P	50 - 175
1977097	HF183-qPCR	80.2		P	50 - 175
1978233	HF183-qPCR	81.0		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P343698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976549	HF183-qPCR	85.3	94.3	P	50 - 175
1978234	HF183-qPCR	99.6		P	50 - 175
1978235	HF183-qPCR	107		P	50 - 175
1978236	HF183-qPCR	86.9		P	50 - 175
1978237	HF183-qPCR	94.0	94.3	P	50 - 175
1978253	HF183-qPCR	88.9		P	50 - 175
1978580	HF183-qPCR	76.0		P	50 - 175
1978725	HF183-qPCR	88.1		P	50 - 175
1979260	HF183-qPCR	77.8	94.3	P	50 - 175
1979313	HF183-qPCR	82.2		P	50 - 175
1979459	HF183-qPCR	90.3		P	50 - 175
1980763	HF183-qPCR	83.5		P	50 - 175
1981252	HF183-qPCR	86.4	83.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P343698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976549	BacR-qPCR	91.8	94.3	P	50 - 175
1978236	BacR-qPCR	53.9		P	50 - 175
1978237	BacR-qPCR	65.8		P	50 - 175
1978253	BacR-qPCR	55.7		P	50 - 175
1978725	BacR-qPCR	103	94.3	P	50 - 175
1979260	BacR-qPCR	66.5		P	50 - 175
1979313	BacR-qPCR	61.2		P	50 - 175
1981252	BacR-qPCR	66.3	78.6	P/P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P342393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978063	Chlorophyll-a, Uncorrected	9.23	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P342571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978226	Chlorophyll-a, Uncorrected	3.15	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P343695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976130	HF183-qPCR	4.65	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P343698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981252	HF183-qPCR	3.58	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P343698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981252	BacR-qPCR	16.9	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1978233
Field Sample ID: G1TLHR0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	84.4	P	50 - 300

Lab Sample ID: 1978234
Field Sample ID: G1TLHR0069

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	106	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 1978235
Field Sample ID: G1TLHR0057

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	107	P	50 - 300

Lab Sample ID: 1978236
Field Sample ID: G1TLHR0052

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	93.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	97.5	P	50 - 300

Lab Sample ID: 1978237
Field Sample ID: G1TLHR0053

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	95.4	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	103				
	Chlorophyll-a, Corrected	109				
	Chlorophyll-a, Uncorrected				9.23	
	Chlorophyll-a, Uncorrected				3.15	
SOP-PCR-1.0	HF183-qPCR	79.5 121	117 87.9 96.7			4.65
			94.3			
	HF183-qPCR	66.6 107	99.6 107 86.9			3.58
			94.0			
SOP-PCR-1.4	BacR-qPCR	23.5 99.2	53.9 65.8 55.7			16.9
			103			

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1978223, 1978224, 1978225, 1978226, 1978227
SM 9222 D / E31780	Fecal coliforms by membrane filter method - non-chlorinated water systems	1978228, 1978229, 1978230, 1978231, 1978232
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1978233, 1978234, 1978235, 1978236, 1978237
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1978236, 1978237
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1978233, 1978234, 1978235, 1978236, 1978237

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	03/27/2018	03/27/2018 14:38	Cathy Sherrer	03/28/2018 10:35	Kim M. Spencer	1978223, 1978224, 1978225
	03/27/2018	03/27/2018 14:38	Cathy Sherrer	04/02/2018 09:10	Jennifer Mihalic	1978226, 1978227
SM 9222 D	03/27/2018	03/27/2018 15:30	Peterson Janvier	03/28/2018 14:00	Carina A. Tull	1978228, 1978229, 1978230, 1978231, 1978232
SOP-PCR-1.0	03/27/2018	03/27/2018 15:00	Puja Jasrotia	04/20/2018 11:41	Mailin Lopez	1978233
	03/27/2018	03/27/2018 15:00	Puja Jasrotia	04/24/2018 11:38	Mailin Lopez	1978234, 1978235, 1978236, 1978237
SOP-PCR-1.4	03/27/2018	03/27/2018 15:00	Puja Jasrotia	04/27/2018 09:56	Sarah Menz	1978236, 1978237
SOP-PCR-4.0	03/27/2018	03/27/2018 15:00	Angela Smith	04/18/2018 15:52	Puja Jasrotia	1978233, 1978234, 1978235, 1978236, 1978237