

Biological Analysis Report

SW-DIST-2018-04-03-02

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

Overflow Analyses Performed By:
Advanced Environmental Laboratories - Tampa
9610 Princess Palm Avenue
Tampa, Florida 33619
DOH Accreditation E84589

Event Description: **Horsehole Creek**
Request ID: **RQ-2018-04-02-21**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 06-JUN-2018 16:03



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, Molecular and Overflow.

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: HORSEHOLE CREEK @ 19

Collection Date/Time: 04/02/2018 12:50

Field ID: G1SW0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980248	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.4		ug/L	P343265	
		Phaeophytin-a	0.40	U	ug/L	P343265	
		Chlorophyll-a, Uncorrected	2.6		ug/L	P343265	

Sample Location: HORSEHOLE CREEK @ 19

Collection Date/Time: 04/02/2018 12:50

Field ID: G1SW0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980249	SOP-PCR-1.0	HF183-qPCR**	16	T	GEU/100 mL	P342625	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P342625	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	85	TJ	TSC/100 mL	P342626	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P342625	LCS, RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1980250	EPA 1603	Escherichia coli-Membrane Filter**	1600	B	cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: Duplicate was analyzed and result is 140 U.

SOP-PCR-1.2: No amplification of GULL2 marker.

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.4: No amplification of BACR marker.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P343265

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: SOP-PCR-1.0

Batch ID: P342625

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

Reference Method: SOP-PCR-1.2

Batch ID: P342625

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3

Batch ID: P342626

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
 Batch ID: P342625

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: P343265

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	107		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P342625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	115	53.9	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P342625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	88.7	23.9	P/F	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P342626

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	130	14.3	P/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P342625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	92.5	32.6	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P342625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973482	HF183-qPCR	85.4		P	50 - 175
1973483	HF183-qPCR	92.6		P	50 - 175
1974249	HF183-qPCR	90.6		P	50 - 175
1974550	HF183-qPCR	102		P	50 - 175
1974551	HF183-qPCR	86.7		P	50 - 175
1974753	HF183-qPCR	93.3		P	50 - 175
1974758	HF183-qPCR	99.5		P	50 - 175
1974759	HF183-qPCR	87.1		P	50 - 175
1974760	HF183-qPCR	92.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P342625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975532	HF183-qPCR	86.4		P	50 - 175
1975533	HF183-qPCR	90.0		P	50 - 175
1975535	HF183-qPCR	91.4		P	50 - 175
1980249	HF183-qPCR	97.5	95.6	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P342625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973482	GULL2-qPCR	69.4		P	50 - 300
1974759	GULL2-qPCR	88.6		P	50 - 300
1980249	GULL2-qPCR	88.3	79.8	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P342626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973138	GFD-purified-qPCR	124		P	50 - 175
1973139	GFD-purified-qPCR	181		F	50 - 175
1973140	GFD-purified-qPCR	181		F	50 - 175
1973481	GFD-purified-qPCR	136		P	50 - 175
1973482	GFD-purified-qPCR	98.7		P	50 - 175
1974759	GFD-purified-qPCR	66.7		P	50 - 175
1980249	GFD-purified-qPCR	215	183	F/F	50 - 175
1981851	GFD-purified-qPCR	174		P	50 - 175
1983204	GFD-purified-qPCR	243		F	50 - 175
1983223	GFD-purified-qPCR	149		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P342625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973482	BacR-qPCR	80.9		P	50 - 175
1974758	BacR-qPCR	67.1		P	50 - 175
1974759	BacR-qPCR	74.8		P	50 - 175
1975533	BacR-qPCR	87.4		P	50 - 175
1980249	BacR-qPCR	92.5	66.8	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P343265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1980049	Chlorophyll-a, Corrected	1.39	Sample	P	0 - 25
1980049	Chlorophyll-a, Uncorrected	1.86	Sample	P	0 - 25
1980049	Phaeophytin-a	2.39	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P342625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1980249	HF183-qPCR	1.97	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P342625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1980249	GULL2-qPCR	10.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P342626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1980249	GFD-purified-qPCR	15.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P342625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1980249	BacR-qPCR	32.3	Spike	F	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: 1980249
 Field Sample ID: G1SW0103

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	117	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	110	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	107						1.39	
	Chlorophyll-a, Uncorrected							1.86	
	Phaeophytin-a							2.39	
SOP-PCR-1.0	HF183-qPCR	53.9	115	97.5	95.6	99.5			1.97
SOP-PCR-1.2	GULL2-qPCR	23.9	88.7	87.1					
				88.3	79.8	88.6			10.2
				69.4					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.3	GFD-purified-qPCR	14.3	130	215	183	174			15.7
SOP-PCR-1.4	BacR-qPCR	32.6	92.5	92.5	66.8	67.1			32.3
				74.8					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter method using modified mTEC by Advanced Environmental Tampa Lab for SWD	1980250
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1980248
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1980249
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1980249
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1980249
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1980249
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1980249

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	04/02/2018	04/02/2018 17:15		04/03/2018 16:45	AEL - Tampa	1980250
SM 10200 H (mod.)	04/03/2018	04/03/2018 13:06	Mariam Hanna	04/09/2018 15:25	Jennifer Mihalic	1980248
SOP-PCR-1.0	04/03/2018	04/03/2018 14:10	Angela Smith	04/05/2018 10:03	Mailin Lopez	1980249
SOP-PCR-1.2	04/03/2018	04/03/2018 14:10	Angela Smith	04/09/2018 12:39	Sarah Menz	1980249
SOP-PCR-1.3	04/03/2018	04/03/2018 14:10	Angela Smith	04/13/2018 12:53	Sarah Menz	1980249
SOP-PCR-1.4	04/03/2018	04/03/2018 14:10	Angela Smith	04/06/2018 10:36	Sarah Menz	1980249
SOP-PCR-4.0	04/03/2018	04/03/2018 14:10	Angela Smith	05/16/2018 09:24	Puja Jasrotia	1980249