

Biological Analysis Report

WQ-ASSESS-2017-08-10-01

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

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

Event Description: **RUN 9**
Request ID: **RQ-2017-08-07-24**
Customer: **WQ-ASSESS**
Project ID: **SMP**

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Certified by: Jacqueline Savage, Environmental Specialist III

Date Certified: 10-JAN-2018 08:30

A handwritten signature in black ink that reads "Jackie Savage". The signature is written in a cursive, flowing style.

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: Armistead

Collection Date/Time: 08/09/2017 10:25

Field ID: G1SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1920844	SM 10200 H (mod.)	Chlorophyll-a, Corrected	14		ug/L	P330495	
		Phaeophytin-a	2.3		ug/L	P330495	
		Chlorophyll-a, Uncorrected	16		ug/L	P330495	

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.

Sample Location: Magdalene

Collection Date/Time: 08/09/2017 11:25

Field ID: G1SW0059

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1920843	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.2		ug/L	P330495	
		Phaeophytin-a	0.78	I	ug/L	P330495	
		Chlorophyll-a, Uncorrected	8.9		ug/L	P330495	

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.

Sample Location: Bellows Outlet

Collection Date/Time: 08/09/2017 12:20

Field ID: G1SW0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1920845	SM 10200 H (mod.)	Chlorophyll-a, Corrected	150		ug/L	P330495	
		Phaeophytin-a	13		ug/L	P330495	
		Chlorophyll-a, Uncorrected	170		ug/L	P330495	

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.

Sample Location: Bellows Outlet

Collection Date/Time: 08/09/2017 12:20

Field ID: G1SW0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1920846	SOP-PCR-1.0	HF183-purified-qPCR**	24	UJ	GEU/100 mL	P331151	LCS, SUR
	SOP-PCR-1.2	GULL2-purified-qPCR**	1.4E+03	UJ	TSC/100 mL	P331151	LCS, SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	110	T	TSC/100 mL	P331151	LCS
	SOP-PCR-1.4	BacR-purified-qPCR**	250	UJ	TSC/100 mL	P331151	LCS, MS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1920847	EPA 1603	Escherichia coli-Membrane Filter**	480		cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of PURHF marker. Quality control failure(s) observed. See QA report for details.
 SOP-PCR-1.2: No amplification of PURG2 marker. Quality control failure(s) observed. See QA report for details.
 SOP-PCR-1.4: No amplification of PURBR marker. Quality control failure(s) observed. See QA report for details.

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P330495

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: P331151

Component	Result	Code	Units
HF183-purified-qPCR	47	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
 Batch ID: P331151

Component	Result	Code	Units
GULL2-purified-qPCR	2.8E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
 Batch ID: P331151

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

Reference Method: SOP-PCR-1.4
 Batch ID: P331151

Component	Result	Code	Units
BacR-purified-qPCR	510	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P330495

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	111		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P331151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	112	1.92	P/F	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P331151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-purified-qPCR	120	13.9	P/F	50 - 300

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P331151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	122	17.9	P/F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P331151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	73.1	2.64	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P331151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920846	HF183-purified-qPCR	104		P	50 - 175
1925833	HF183-purified-qPCR	103		P	50 - 175
1926394	HF183-purified-qPCR	97.7		P	50 - 175
1928591	HF183-purified-qPCR	110	101	P/P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P331151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920846	GULL2-purified-qPCR	116	119	P/P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P331151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920846	GFD-purified-qPCR	91.4	92.6	P/P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P331151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920846	BacR-purified-qPCR	39.1	36.0	F/F	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P330495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921244	Chlorophyll-a, Corrected	1.02	Sample	P	0 - 25
1921244	Chlorophyll-a, Uncorrected	0.0144	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P331151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1928591	HF183-purified-qPCR	7.76	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P331151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920846	GULL2-purified-qPCR	2.45	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P331151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920846	GFD-purified-qPCR	1.30	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P331151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920846	BacR-purified-qPCR	8.22	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: 1920846
 Field Sample ID: G1SW0060

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	7.82	F	30 - 300
SOP-PCR-1.2	SKETA-qPCR	6.65	F	30 - 300
SOP-PCR-1.4	SKETA-qPCR	5.97	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	111						1.02	
	Chlorophyll-a, Uncorrected							0.0144	
SOP-PCR-1.0	HF183-purified-qPCR	1.92	112	103	97.7	104			7.76
				110					
SOP-PCR-1.2	GULL2-purified-qPCR	13.9	120	116	119				2.45
SOP-PCR-1.3	GFD-purified-qPCR	17.9	122	91.4	92.6				1.30
SOP-PCR-1.4	BacR-purified-qPCR	2.64	73.1	39.1	36.0				8.22

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 1603 / E84589	Escherichia coli by membrane filter method using modified mTEC by Advanced Environmental Tampa Lab for SWD	1920847
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1920843, 1920844, 1920845
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1920846
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1920846
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1920846
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1920846
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1920846

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	08/09/2017	08/09/2017 13:34		08/10/2017 13:34	AEL - Tampa	1920847
SM 10200 H (mod.)	08/10/2017	08/10/2017 15:47	Cathy Sherrer	08/18/2017	Kim M. Spencer	1920843, 1920844, 1920845
SOP-PCR-1.0	08/10/2017	08/10/2017 15:30	Puja Jasrotia	09/20/2017	Sarah Menz	1920846
SOP-PCR-1.2	08/10/2017	08/10/2017 15:30	Puja Jasrotia	09/22/2017	Sarah Menz	1920846
SOP-PCR-1.3	08/10/2017	08/10/2017 15:30	Puja Jasrotia	09/22/2017	Sarah Menz	1920846
SOP-PCR-1.4	08/10/2017	08/10/2017 15:30	Puja Jasrotia	09/21/2017	Sarah Menz	1920846
SOP-PCR-4.0	08/10/2017	08/10/2017 15:30	Avril Wood	09/14/2017	Puja Jasrotia	1920846