Biological Analysis Report

WQAP-2017-10-20-03

Florida Department of Environmental Protection
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DOH Accreditation E31780

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

Event Description: **RUN 15**
Request ID: **RQ-2017-09-04-32**
Customer: **WQAP**
Project ID: **SMP**

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Date Certified: 20-DEC-2017 16:07

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: RICE CRK **Collection Date/Time: 10/19/2017 09:35**

Field ID: G2SW0033 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939007	SOP-PCR-1.0	HF183-qPCR**	9.3	T	GEU/100 mL	P333715	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1939012	EPA 1603	Escherichia coli-Membrane Filter**	240		cfu/100 mL		

Sample Location: RICE CRK **Collection Date/Time: 10/19/2017 09:35**

Field ID: G2SW0033 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939011	SOP-PCR-1.3	GFD-purified-qPCR**	72	T	TSC/100 mL	P333651	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: RICE CRK **Collection Date/Time: 10/19/2017 09:35**

Field ID: G2SW0033 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939000	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.3	I	ug/L	P334396	
		Phaeophytin-a	0.77	I	ug/L	P334396	
		Chlorophyll-a, Uncorrected	1.8		ug/L	P334396	

Sample Location: LITTLE MANATEE RIVER **Collection Date/Time: 10/19/2017 10:35**

Field ID: G2SW0023 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939008	SOP-PCR-1.0	HF183-qPCR**	14	T	GEU/100 mL	P333715	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1939013	EPA 1603	Escherichia coli-Membrane Filter**	50	B	cfu/100 mL		

Sample Location: GAP CRK **Collection Date/Time: 10/19/2017 11:35**

Field ID: G2SW0030 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939009	SOP-PCR-1.0	HF183-qPCR**	57	T	GEU/100 mL	P333715	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1939014	EPA 1603	Escherichia coli-Membrane Filter**	120	B	cfu/100 mL		

Sample Location: GAP CRK **Collection Date/Time: 10/19/2017 11:35**

Field ID: G2SW0030 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939001	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.1		ug/L	P334396	
		Phaeophytin-a	2.9		ug/L	P334396	
		Chlorophyll-a, Uncorrected	8.0		ug/L	P334396	

Sample Location: WARES CRK (FRESH) **Collection Date/Time: 10/19/2017 12:10**

Field ID: G2SW0031 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939002	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.1		ug/L	P334396	
		Phaeophytin-a	2.2		ug/L	P334396	
		Chlorophyll-a, Uncorrected	4.5		ug/L	P334396	

Sample Location: WARES CRK (FRESH) **Collection Date/Time: 10/19/2017 12:10**

Field ID: G2SW0031 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939010	SOP-PCR-1.0	HF183-qPCR**	15	T	GEU/100 mL	P333715	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1939015	EPA 1603	Escherichia coli-Membrane Filter**	280		cfu/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P334396

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: P333715

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

Reference Method: SOP-PCR-1.3
Batch ID: P333651

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P334396

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P333715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	105	P/P	50 - 175
HF183-qPCR	88.9	90.4	P/P	50 - 175

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P333651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	93.3	1.78	P/F	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P333715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938840	HF183-qPCR	83.1		P	50 - 175
1938841	HF183-qPCR	92.8		P	50 - 175
1938842	HF183-qPCR	102	80.5	P/P	50 - 175
1938843	HF183-qPCR	80.7		P	50 - 175
1938972	HF183-qPCR	81.0		P	50 - 175
1938973	HF183-qPCR	93.2		P	50 - 175
1938974	HF183-qPCR	81.2		P	50 - 175
1939007	HF183-qPCR	62.1		P	50 - 175
1939008	HF183-qPCR	99.6		P	50 - 175
1939009	HF183-qPCR	82.6		P	50 - 175
1939010	HF183-qPCR	82.9		P	50 - 175
1939200	HF183-qPCR	70.9		P	50 - 175
1939201	HF183-qPCR	71.3		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P333651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1937849	GFD-purified-qPCR	157		P	50 - 175
1938722	GFD-purified-qPCR	76.0	89.1	P/P	50 - 175
1938723	GFD-purified-qPCR	82.9		P	50 - 175
1938724	GFD-purified-qPCR	51.3		P	50 - 175
1938725	GFD-purified-qPCR	114		P	50 - 175
1938726	GFD-purified-qPCR	88.0		P	50 - 175
1938727	GFD-purified-qPCR	72.7		P	50 - 175
1938728	GFD-purified-qPCR	70.8		P	50 - 175
1938729	GFD-purified-qPCR	76.6		P	50 - 175
1938730	GFD-purified-qPCR	136		P	50 - 175
1938731	GFD-purified-qPCR	89.0		P	50 - 175
1938753	GFD-purified-qPCR	111		P	50 - 175
1939011	GFD-purified-qPCR	143		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P334396

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1938905	Chlorophyll-a, Corrected	3.12	Sample	P	0 - 25
1938905	Chlorophyll-a, Uncorrected	3.26	Sample	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P334396

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1938905	Phaeophytin-a	3.48	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P333715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1938842	HF183-qPCR	23.2	Spike	P	0 - 25
1943571	HF183-qPCR	5.40	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P333651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1938722	GFD-purified-qPCR	15.8	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: 1939007
Field Sample ID: G2SW0033

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	72.6	P	50 - 300

Lab Sample ID: 1939008
Field Sample ID: G2SW0023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	84.2	P	50 - 300

Lab Sample ID: 1939009
Field Sample ID: G2SW0030

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	83.1	P	50 - 300

Lab Sample ID: 1939010
Field Sample ID: G2SW0031

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	102			3.12	
	Chlorophyll-a, Uncorrected				3.26	
	Phaeophytin-a				3.48	
SOP-PCR-1.0	HF183-qPCR	117 90.4 88.9 105	83.1 92.8 102 80.5			23.2 5.40
SOP-PCR-1.3	GFD-purified-qPCR	1.78 93.3	76.0 89.1 157 82.9			15.8

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	1939012, 1939013, 1939014, 1939015
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1939000, 1939001, 1939002
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1939007, 1939008, 1939009, 1939010
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1939011
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1939007, 1939008, 1939009, 1939010, 1939011

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	10/19/2017	10/19/2017 16:00		10/20/2017 16:00	AEL - Tampa	1939012, 1939013, 1939014, 1939015
SM 10200 H (mod.)	10/20/2017	10/20/2017 14:45	Carina A. Tull	10/31/2017	Kim M. Spencer	1939000, 1939001, 1939002
SOP-PCR-1.0	10/20/2017	10/20/2017 12:30	Sarah Menz	11/03/2017	Sarah Menz	1939007, 1939008, 1939009, 1939010
SOP-PCR-1.3	10/20/2017	10/20/2017 12:30	Avril Wood	11/03/2017	Sarah Menz	1939011
SOP-PCR-4.0	10/20/2017	10/20/2017 12:30	Sarah Menz	11/14/2017	Puja Jasrotia	1939007, 1939008, 1939009, 1939010, 1939011