

Biological Analysis Report

WQAP-2017-06-07-02

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 15**
Request ID: **RQ-2017-06-05-39**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
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Certified by: Jacqueline Savage, Environmental Specialist III

Date Certified: 26-JUL-2017 19:35

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: GAP CREEK

Collection Date/Time: 06/06/2017 10:05

Field ID: G2SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1904177	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16	A	ug/L	P326638	
		Phaeophytin-a	3.9	A	ug/L	P326638	
		Chlorophyll/Phaeophytin Ratio	1.6	A		P326638	
		Chlorophyll-a, Uncorrected	19	A	ug/L	P326638	
1904189	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P326360	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
SOP-PCR-1.0: No amplification of HF183 marker.

Sample Location: GAP CREEK

Collection Date/Time: 06/06/2017 10:05

Field ID: G2SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1904192	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1904200	EPA 1603	Escherichia coli-Membrane Filter**	360		cfu/100 mL		

Sample Location: WARES FRESH

Collection Date/Time: 06/06/2017 10:40

Field ID: G2SW0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1904178	SM 10200 H (mod.)	Chlorophyll-a, Corrected	9.2		ug/L	P326639	
		Phaeophytin-a	1.9		ug/L	P326639	
		Chlorophyll/Phaeophytin Ratio	1.6			P326639	
		Chlorophyll-a, Uncorrected	11		ug/L	P326639	

Sample Location: WARES FRESH

Collection Date/Time: 06/06/2017 10:40

Field ID: G2SW0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1904193	SOP-PCR-1.0	HF183-qPCR**	61	T	GEU/100 mL	P328003	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1904201	EPA 1603	Escherichia coli-Membrane Filter**	440		cfu/100 mL		

Sample Location: RICE CREEK

Collection Date/Time: 06/06/2017 12:30

Field ID: G2SW0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1904179	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.3		ug/L	P326639	
		Phaeophytin-a	0.62	I	ug/L	P326639	
		Chlorophyll/Phaeophytin Ratio	1.6			P326639	
		Chlorophyll-a, Uncorrected	3.8		ug/L	P326639	
1904191	SOP-PCR-1.0	HF183-qPCR**	27	T	GEU/100 mL	P326360	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

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

Sample Location: RICE CREEK

Collection Date/Time: 06/06/2017 12:30

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1904194	SOP-PCR-1.0	HF183-qPCR**	40	T	GEU/100 mL	P328003	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1904202	EPA 1603	Escherichia coli-Membrane Filter**	2400		cfu/100 mL		

Collection Date/Time: 06/06/2017 09:15

Field ID: G2SW0023

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1904195	SOP-PCR-1.0	HF183-qPCR**	26	T	GEU/100 mL	P328003	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1904203	EPA 1603	Escherichia coli-Membrane Filter**	600		cfu/100 mL		

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

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P326639

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	97.0		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P326360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	97.6	84.0	P/P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P328003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	108	113	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P326360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1886657	HF183-qPCR	122		P	50 - 175
1904189	HF183-qPCR	110		P	50 - 175
1904191	HF183-qPCR	96.5	113	P/P	50 - 175
1904428	HF183-qPCR	116		P	50 - 175
1904434	HF183-qPCR	112		P	50 - 175
1904435	HF183-qPCR	89.9		P	50 - 175
1904518	HF183-qPCR	93.2		P	50 - 175
1904519	HF183-qPCR	123		P	50 - 175
1904999	HF183-qPCR	102		P	50 - 175
1905000	HF183-qPCR	97.8		P	50 - 175
1905378	HF183-qPCR	87.5		P	50 - 175
1905467	HF183-qPCR	95.6		P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P328003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903778	HF183-qPCR	114		P	50 - 175
1903779	HF183-qPCR	117		P	50 - 175
1903824	HF183-qPCR	84.8		P	50 - 175
1903826	HF183-qPCR	83.5		P	50 - 175
1904117	HF183-qPCR	101	118	P/P	50 - 175
1904193	HF183-qPCR	91.8		P	50 - 175
1904194	HF183-qPCR	120		P	50 - 175
1904195	HF183-qPCR	146		P	50 - 175
1905561	HF183-qPCR	125		P	50 - 175
1908822	HF183-qPCR	143		P	50 - 175
1909880	HF183-qPCR	113		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P326638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904177	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1904177	Chlorophyll-a, Corrected	1.68	Sample	P	0 - 25
1904177	Chlorophyll-a, Uncorrected	0.797	Sample	P	0 - 25
1904177	Phaeophytin-a	5.68	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P326639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904273	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1904273	Chlorophyll-a, Corrected	2.20	Sample	P	0 - 25
1904273	Chlorophyll-a, Uncorrected	2.97	Sample	P	0 - 25
1904273	Phaeophytin-a	7.11	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P326360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904191	HF183-qPCR	15.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P328003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904117	HF183-qPCR	15.6	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: 1904189
Field Sample ID: G2SW0030

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	98.7	P	50 - 300

Lab Sample ID: 1904191
Field Sample ID: G2SW0033

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	113	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 1904193
Field Sample ID: G2SW0031

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	80.0	P	50 - 300

Lab Sample ID: 1904194
Field Sample ID: G2SW0033

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	112	P	50 - 300

Lab Sample ID: 1904195
Field Sample ID: G2SW0023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	118	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio						0.0		
	Chlorophyll/Phaeophytin Ratio						0.0		
	Chlorophyll-a, Corrected	103					1.68		
	Chlorophyll-a, Corrected	97.0					2.20		
	Chlorophyll-a, Uncorrected						0.797		
	Chlorophyll-a, Uncorrected						2.97		
	Phaeophytin-a						5.68		
	Phaeophytin-a						7.11		
SOP-PCR-1.0	HF183-qPCR	84.0	97.6	110	96.5	113		15.8	
				112					
	HF183-qPCR	113	108	114	117	84.8		15.6	
				83.5					

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	1904200, 1904201, 1904202, 1904203
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1904177, 1904178, 1904179
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1904189, 1904191, 1904193, 1904194, 1904195
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1904189, 1904191, 1904192, 1904193, 1904194, 1904195

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	06/06/2017			06/06/2017 15:55	AEL - Tampa	1904200, 1904201, 1904202, 1904203
SM 10200 H (mod.)	06/07/2017	06/07/2017 14:15	Cathy Sherrer	06/12/2017	Kim M. Spencer	1904177, 1904178, 1904179
SOP-PCR-1.0	06/07/2017	06/07/2017 13:35	Puja Jasrotia	07/11/2017	Puja Jasrotia	1904193, 1904194, 1904195
	06/07/2017	06/07/2017 14:02	Avril Wood	06/16/2017	Puja Jasrotia	1904189, 1904191
SOP-PCR-4.0	06/07/2017	06/07/2017 13:35	Avril Wood	07/06/2017	Puja Jasrotia	1904192, 1904193, 1904194, 1904195
	06/07/2017	06/07/2017 14:02	Avril Wood	07/06/2017	Puja Jasrotia	1904189, 1904191