

Biological Analysis Report

SW-DIST-2018-10-25-01

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: **Wares, Wares, Mill, Gap, & Nonsense**

Request ID: **RQ-2018-10-22-02**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

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Date Certified: 06-DEC-2018 18:12



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: AlgalBio, 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 @ 45th ST

Collection Date/Time: 10/24/2018 12:00

Field ID: G2SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036154	SM 10200 H (mod.)	Chlorophyll-a, Corrected	14	A	ug/L	P354488	
		Phaeophytin-a	0.70	I	ug/L	P354488	
		Chlorophyll-a, Uncorrected	15	A	ug/L	P354488	
2036161	EPA 1603	Escherichia coli-Membrane Filter**	600		cfu/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Laboratory duplicate result is 0.69 U for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.

Sample Location: WARES CRK @ 36th AVE

Collection Date/Time: 10/24/2018 11:17

Field ID: G2SW0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036155	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.9		ug/L	P354402	
		Phaeophytin-a	3.3		ug/L	P354402	
		Chlorophyll-a, Uncorrected	6.0		ug/L	P354402	
2036162	EPA 1603	Escherichia coli-Membrane Filter**	80		cfu/100 mL		

Sample Location: WARES CRK @ 36th AVE

Collection Date/Time: 10/24/2018 11:17

Field ID: G2SW0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036118	SOP-AB05	Dominant sample taxon**	Xanthophyceae				

Ref. Method and Comment:

SOP-AB05: The dominant taxon was Vaucheria sp.

Sample Location: WARES CRK @ 9th AVE

Collection Date/Time: 10/24/2018 10:20

Field ID: G2SW0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036156	SM 10200 H (mod.)	Chlorophyll-a, Corrected	27		ug/L	P354402	
		Phaeophytin-a	2.6		ug/L	P354402	
		Chlorophyll-a, Uncorrected	30		ug/L	P354402	
2036163	SM 9230 C	Enterococci-Membrane Filter	192		cfu/100 mL		

Sample Location: MILL CREEK @ UPPER MANATEE RVR RD

Collection Date/Time: 10/24/2018 13:40

Field ID: G2SW0040

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036157	SM 10200 H (mod.)	Chlorophyll-a, Corrected	43		ug/L	P354488	
		Phaeophytin-a	5.4		ug/L	P354488	
		Chlorophyll-a, Uncorrected	48		ug/L	P354488	
2036164	SM 9230 C	Enterococci-Membrane Filter	132		cfu/100 mL		

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: MILL CREEK @ UPPER MANATEE RVR RD

Collection Date/Time: 10/24/2018 13:40

Field ID: G2SW0040

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036158	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P354413	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P354413	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P354991	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P354413	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A87894

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A87868

Sample Location: NONSENSE @ TARA PRESERVE

Collection Date/Time: 10/24/2018 13:10

Field ID: G2SW0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036159	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P354413	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P354413	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	210	IJ	TSC/100 mL	P354991	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P354413	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2036166	EPA 1603	Escherichia coli-Membrane Filter**	450		cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A87894

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

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A87868

Sample Location: NONSENSE CR @ LINGERLODGE RD

Collection Date/Time: 10/24/2018 12:50

Field ID: G2SW0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036160	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2036167	EPA 1603	Escherichia coli-Membrane Filter**	244		cfu/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P354402

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.60	U	ug/L

Reference Method: SM 10200 H (mod.)

Batch ID: P354488

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.60	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
 Batch ID: P354413

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

Reference Method: SOP-PCR-1.2
 Batch ID: P354413

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

Reference Method: SOP-PCR-1.3
 Batch ID: P354991

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

Reference Method: SOP-PCR-1.4
 Batch ID: P354413

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: P354402

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	98.0		P	84 - 116

Reference Method: SM 10200 H (mod.)
 Batch ID: P354488

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

Reference Method: SOP-PCR-1.0
 Batch ID: P354413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	95.6	154	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P354413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	103	232	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P354991

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P354991

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	101	34.0	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P354413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	117	141	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P354413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033479	HF183-qPCR	81.4	98.2	P	50 - 175
2034496	HF183-qPCR	113		P/P	50 - 175
2034498	HF183-qPCR	68.3		P	50 - 175
2034499	HF183-qPCR	69.4		P	50 - 175
2034929	HF183-qPCR	88.9		P	50 - 175
2035204	HF183-qPCR	111		P	50 - 175
2035205	HF183-qPCR	89.6		P	50 - 175
2035356	HF183-qPCR	91.7		P	50 - 175
2035358	HF183-qPCR	85.1		P	50 - 175
2036158	HF183-qPCR	65.3		P	50 - 175
2036159	HF183-qPCR	110		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P354413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034498	GULL2-qPCR	29.1		F	50 - 300
2034499	GULL2-qPCR	61.2		P	50 - 300
2034929	GULL2-qPCR	92.9		P	50 - 300
2035204	GULL2-qPCR	81.4		P	50 - 300
2035205	GULL2-qPCR	84.7		P	50 - 300
2035356	GULL2-qPCR	195		P	50 - 300
2035358	GULL2-qPCR	81.3		P	50 - 300
2036158	GULL2-qPCR	71.0		P	50 - 300
2036159	GULL2-qPCR	118		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P354991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034498	GFD-purified-qPCR	95.5		P	50 - 175
2034499	GFD-purified-qPCR	91.2		P	50 - 175
2034929	GFD-purified-qPCR	148		P	50 - 175
2035204	GFD-purified-qPCR	146		P	50 - 175
2035205	GFD-purified-qPCR	111		P	50 - 175
2035356	GFD-purified-qPCR	120		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P354991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036158	GFD-purified-qPCR	94.7		P	50 - 175
2036159	GFD-purified-qPCR	105	188	P/F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P354413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033479	BacR-qPCR	56.0		P	50 - 175
2034498	BacR-qPCR	59.3		P	50 - 175
2034499	BacR-qPCR	61.3		P	50 - 175
2034929	BacR-qPCR	86.1		P	50 - 175
2035204	BacR-qPCR	90.0		P	50 - 175
2035205	BacR-qPCR	95.5		P	50 - 175
2035356	BacR-qPCR	93.9		P	50 - 175
2035358	BacR-qPCR	88.6		P	50 - 175
2036158	BacR-qPCR	59.5		P	50 - 175
2036159	BacR-qPCR	86.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P354402

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035989	Chlorophyll-a, Corrected	4.48	Sample	P	0 - 25
2035989	Chlorophyll-a, Uncorrected	1.24	Sample	P	0 - 25
2035989	Phaeophytin-a	21.1	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)

Batch ID: P354488

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036154	Chlorophyll-a, Corrected	6.13	Sample	P	0 - 25
2036154	Chlorophyll-a, Uncorrected	6.58	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P354413

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034496	HF183-qPCR	14.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3

Batch ID: P354991

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036159	GFD-purified-qPCR	56.5	Spike	F	0 - 25

Quality Assurance Report Precision

* 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: 2036158
Field Sample ID: G2SW0040

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	147	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	96.5	P	50 - 300

Lab Sample ID: 2036159
Field Sample ID: G2SW0015

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	169	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	113	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	98.0						4.48	
	Chlorophyll-a, Corrected	103						6.13	
	Chlorophyll-a, Uncorrected							1.24	
	Chlorophyll-a, Uncorrected							6.58	
	Phaeophytin-a							21.1	
SOP-PCR-1.0	HF183-qPCR	154	95.6	89.6	91.7	85.1			14.1
SOP-PCR-1.2	GULL2-qPCR	232	103	81.4	84.7	195			
				81.3					
SOP-PCR-1.3	GFD-purified-qPCR	34.0	101	95.5	91.2	148			56.5
SOP-PCR-1.4	BacR-qPCR	141	117	146	90.0	95.5	93.9		
				88.6					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter	2036161, 2036162, 2036166, 2036167
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2036154, 2036155, 2036156, 2036157
SM 9230 C / E84589	Enterococci by membrane filter method by Advanced Environmental Overflow Laboratories for SWD	2036163, 2036164
SOP-AB05 / E31780	Qualitative assessment of algal taxa present without counts	2036118
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2036158, 2036159
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2036158, 2036159
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2036158, 2036159

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2036158, 2036159
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2036158, 2036159, 2036160

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	10/24/2018	10/24/2018 17:00		10/25/2018 15:30	AEL - Tampa	2036161, 2036162, 2036166, 2036167
SM 10200 H (mod.)	10/25/2018	10/25/2018 14:30	Avril Wood	11/07/2018 10:20	Peterson Janvier	2036155, 2036156
	10/25/2018	10/26/2018 10:30	Avril Wood	11/08/2018 14:10	Peterson Janvier	2036154, 2036157
	10/24/2018	10/24/2018 17:00		10/25/2018 15:00	AEL - Tampa	2036163, 2036164
SM 9230 C	10/25/2018			10/26/2018 09:50	Rachael Dragon	2036118
SOP-PCR-1.0	10/25/2018	10/25/2018 15:15	Sarah Menz	11/19/2018 09:26	Mailin Lopez	2036158, 2036159
SOP-PCR-1.2	10/25/2018	10/25/2018 15:15	Sarah Menz	11/20/2018 12:30	Mailin Lopez	2036158, 2036159
SOP-PCR-1.3	10/25/2018	10/25/2018 15:15	Sarah Menz	11/28/2018 11:22	Sarah Menz	2036158, 2036159
SOP-PCR-1.4	10/25/2018	10/25/2018 15:15	Sarah Menz	11/19/2018 13:20	Mailin Lopez	2036158, 2036159
SOP-PCR-4.0	10/25/2018	10/25/2018 15:15	Angela Smith	11/14/2018 10:21	Sarah Menz	2036158, 2036159, 2036160