

Biological Analysis Report

SW-DIST-2018-09-20-02

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: **Spartman, Bellows, Flint, Baker**
Request ID: **RQ-2018-08-20-09**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Ben Paswater

For additional information please contact
Cheryl Swanson - Administrator
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 07-NOV-2018 11:04



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: Flint Creek @ SR 301, TP39

Collection Date/Time: 09/19/2018 10:10

Field ID: G2SW0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2026984	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2026991	EPA 1603	Escherichia coli-Membrane Filter**	64	B	cfu/100 mL		

Sample Location: Flint Creek @ Knights Griffin Rd

Collection Date/Time: 09/19/2018 10:20

Field ID: G2SW0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2026985	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2026992	EPA 1603	Escherichia coli-Membrane Filter**	132		cfu/100 mL		

Sample Location: Baker Creek @ Thonotosassa Rd

Collection Date/Time: 09/19/2018 10:40

Field ID: G2SW0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2026986	SOP-PCR-1.0	HF183-qPCR**	490	I	GEU/100 mL	P353497	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2026993	EPA 1603	Escherichia coli-Membrane Filter**	17400	B	cfu/100 mL		

Sample Location: Spartman Branch at Harvey Tew Rd

Collection Date/Time: 09/19/2018 13:00

Field ID: G2SW0067

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2026987	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P353497	LCS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+04	A	TSC/100 mL	P353497	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2026994	EPA 1603	Escherichia coli-Membrane Filter**	6000		cfu/100 mL		

Sample Location: Spartman Branch @ US 92

Collection Date/Time: 09/19/2018 13:30

Field ID: G2SW0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2026988	SOP-PCR-1.0	HF183-qPCR**	200	I	GEU/100 mL	P353497	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2026995	EPA 1603	Escherichia coli-Membrane Filter**	2400		cfu/100 mL		

Sample Location: Bellows Lake Outlet

Collection Date/Time: 09/19/2018 11:40

Field ID: G1SW0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2026983	SM 10200 H (mod.)	Chlorophyll-a, Corrected	58		ug/L	P352767	
		Phaeophytin-a	18		ug/L	P352767	
		Chlorophyll-a, Uncorrected	71		ug/L	P352767	

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 Lake Outlet

Collection Date/Time: 09/19/2018 11:40

Field ID: G1SW0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2026989	SOP-PCR-1.0	HF183-purified-qPCR**	1.29E+05	J	GEU/100 mL	P353626	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2026996	EPA 1603	Escherichia coli-Membrane Filter**	15600	B	cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P352767

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: SOP-PCR-1.0

Batch ID: P353497

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

Reference Method: SOP-PCR-1.0

Batch ID: P353626

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

Reference Method: SOP-PCR-1.4

Batch ID: P353497

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: P352767

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	101		P	84 - 116

Reference Method: SOP-PCR-1.0

Batch ID: P353497

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	108	187	P/F	50 - 175

Reference Method: SOP-PCR-1.0

Batch ID: P353626

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	122	32.6	P/F	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P353497

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	126	298	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P353497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023642	HF183-qPCR	85.1		P	50 - 175
2023643	HF183-qPCR	85.9		P	50 - 175
2023644	HF183-qPCR	106		P	50 - 175
2023645	HF183-qPCR	95.6		P	50 - 175
2026896	HF183-qPCR	68.3		P	50 - 175
2026986	HF183-qPCR	92.9		P	50 - 175
2026987	HF183-qPCR	61.3	54.7	P/P	50 - 175
2026988	HF183-qPCR	78.4		P	50 - 175
2027411	HF183-qPCR	90.0		P	50 - 175
2027445	HF183-qPCR	79.0		P	50 - 175
2030524	HF183-qPCR	94.6		P	50 - 175
2034865	HF183-qPCR	83.6		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P353626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2026989	HF183-purified-qPCR	100	88.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P353497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2026896	BacR-qPCR	90.7		P	50 - 175
2026987	BacR-qPCR	83.0	97.8	P/P	50 - 175
2027411	BacR-qPCR	109		P	50 - 175
2030524	BacR-qPCR	108		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P352767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2027029	Chlorophyll-a, Corrected	4.47	Sample	P	0 - 25
2027029	Chlorophyll-a, Uncorrected	4.48	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P353497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2026987	HF183-qPCR	11.3	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P353626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2026989	HF183-purified-qPCR	5.02	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P353497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2026987	BacR-qPCR	16.2	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: 2026986
Field Sample ID: G2SW0012

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	152	P	50 - 300

Lab Sample ID: 2026987
Field Sample ID: G2SW0067

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	106	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	92.0	P	50 - 300

Lab Sample ID: 2026988
Field Sample ID: G2SW0013

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	116	P	50 - 300

Lab Sample ID: 2026989
Field Sample ID: G1SW0060

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	16.6	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	101						4.47	
	Chlorophyll-a, Uncorrected							4.48	
SOP-PCR-1.0	HF183-purified-qPCR	32.6	122	100	88.4				5.02
	HF183-qPCR	187	108	85.1	85.9	106			11.3
SOP-PCR-1.4	BacR-qPCR			95.6					
		298	126	83.0	97.8	109			16.2
				90.7					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter Advanced Environmental Laboratory in Tampa	2026991, 2026992, 2026993, 2026994, 2026995, 2026996
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2026983
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2026986, 2026987, 2026988
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2026989
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2026987
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2026984, 2026985, 2026986, 2026987, 2026988, 2026989

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	09/19/2018	09/19/2018 15:30		09/20/2018 14:00	AEL - Tampa	2026993, 2026994, 2026995, 2026996
SM 10200 H (mod.)	09/20/2018	09/20/2018 14:10	Peterson Janvier	10/03/2018 11:00	Peterson Janvier	2026983
SOP-PCR-1.0	09/20/2018	09/20/2018 15:30	Mailin Lopez	10/30/2018 09:55	Mailin Lopez	2026989
	09/20/2018	09/20/2018 15:30	Sarah Menz	10/24/2018 14:19	Mailin Lopez	2026986, 2026987, 2026988
SOP-PCR-1.4	09/20/2018	09/20/2018 15:30	Sarah Menz	10/25/2018 12:56	Mailin Lopez	2026987
SOP-PCR-4.0	09/20/2018	09/20/2018 15:30	Angela Smith	10/23/2018 09:59	Sarah Menz	2026984, 2026985, 2026986, 2026987, 2026988, 2026989