

Biological Analysis Report

SO-DIST-2019-01-29-02

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: **SMP: Flint Creek**
Request ID: **RQ-2019-01-28-36**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP Southwest District Office
13051 N. Telecom Parkway
Temple Terrace, FL 33637
Attn: Ben Paswater

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

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 06-MAR-2019 10:06



NON-CONFORMANCE REPORT INCLUDED

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: BAKER CREEK @ THONOTOSASSA RD

Collection Date/Time: 01/28/2019 10:45

Field ID: G2SW0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057757	SM 10200 H (mod.)	Chlorophyll-a, Corrected	19	AJ	ug/L	P358494	
		Phaeophytin-a	9.0	AJ	ug/L	P358494	
		Chlorophyll-a, Uncorrected	25	AJ	ug/L	P358494	
2057759	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P357602	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P357602	
	SOP-PCR-1.3	GFD-purified-qPCR**	1.01E+03		TSC/100 mL	P358994	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P357602	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P357758	
2057763	EPA 1603	Escherichia coli-Membrane Filter**	1000	B	cfu/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Phaeophytin-a results may be biased high. Chlorophyll-a corrected results may be biased low. See nonconformance report #7482.

Sample Location: NEW RIVER @ MORRIS BRIDGE RD

Collection Date/Time: 01/28/2019 09:10

Field ID: G2SW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057758	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.1	IJ	ug/L	P358494	
		Phaeophytin-a	1.2	UJ	ug/L	P358494	
		Chlorophyll-a, Uncorrected	2.3	IJ	ug/L	P358494	

Ref. Method and Comment:

SM 10200 H (mod.): Phaeophytin-a results may be biased high. Chlorophyll-a corrected results may be biased low. See nonconformance report #7482.

Sample Location: NEW RIVER @ MORRIS BRIDGE RD

Collection Date/Time: 01/28/2019 09:10

Field ID: G2SW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057760	SOP-PCR-1.0	HF183-purified-qPCR**	170	J	GEU/100 mL	P357824	LCS, SUR
	SOP-PCR-1.4	BacR-purified-qPCR**	2.10E+05	J	TSC/100 mL	P357824	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P357758	
2057764	EPA 1603	Escherichia coli-Membrane Filter**	2100		cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: Quality control failure(s) observed. See QA report for details. Precision data unavailable for analysis Batch A89658.

SOP-PCR-1.4: Quality control failure(s) observed. See QA report for details. Precision data unavailable for Analysis Batch A89696

Sample Location: BAKER CREEK EAST @ PEMBERTON DR

Collection Date/Time: 01/28/2019 11:25

Field ID: G2SW0080

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057761	SOP-PCR-1.0	HF183-qPCR**	280	I	GEU/100 mL	P357602	
	SOP-PCR-1.4	BacR-qPCR**	7.1E+04		TSC/100 mL	P357602	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold			P357758	
2057765	EPA 1603	Escherichia coli-Membrane Filter**	212		cfu/100 mL		

Sample Location: BAKER CREEK EAST @ McINTOSH RD

Collection Date/Time: 01/28/2019 11:10

Field ID: G2SW0081

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057762	SOP-PCR-1.0	HF183-qPCR**	190	U	GEU/100 mL	P357602	
	SOP-PCR-1.4	BacR-qPCR**	8.8E+04		TSC/100 mL	P357602	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P357758	
2057766	EPA 1603	Escherichia coli-Membrane Filter**	1100	B	cfu/100 mL		

Non-Conformance Report

NCR ID: 7482

Event(s)

SO-DIST-2019-01-29-02

Job(s)

TLH-2019-01-29-71

Sample(s)

Test(s)

NCR Type: ANALYSIS

NCR Category: Analytical Measurement

Observation: Samples were inadvertently allowed to thaw overnight which does not comply with the method.

Resolution: Customers have been notified and results will be "J" qualified.

Authorized by/Date: Cheryl A. Swanson 2/25/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Colin Wright (850) 245-8085
Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P358494

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: P357602

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

Reference Method: SOP-PCR-1.0

Batch ID: P357824

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

Reference Method: SOP-PCR-1.2

Batch ID: P357602

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.3
Batch ID: P358994

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

Reference Method: SOP-PCR-1.4
Batch ID: P357602

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P357824

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: P358494

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	107		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P357602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	121	149	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P357824

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	96.7	17.3	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P357602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	128	128	P/P	50 - 300
GULL2-qPCR	119	198	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P358994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	185	18.5	F/F	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P357602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	90.1	118	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P357824

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	92.2	9.62	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P357602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047013	HF183-qPCR	88.4		P	50 - 175
2049763	HF183-qPCR	98.8		P	50 - 175
2055951	HF183-qPCR	98.8		P	50 - 175
2056897	HF183-qPCR	89.0		P	50 - 175
2056898	HF183-qPCR	83.9		P	50 - 175
2056899	HF183-qPCR	107		P	50 - 175
2057759	HF183-qPCR	97.0	96.6	P/P	50 - 175
2057761	HF183-qPCR	85.1		P	50 - 175
2057762	HF183-qPCR	84.8		P	50 - 175
2058102	HF183-qPCR	95.4		P	50 - 175
2058250	HF183-qPCR	100		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P357824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057760	HF183-purified-qPCR	96.5		P	50 - 175
2058103	HF183-purified-qPCR	93.5		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P357602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2049763	GULL2-qPCR	174		P	50 - 300
2057759	GULL2-qPCR	70.0	67.5	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P358994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057759	GFD-purified-qPCR	125		P	50 - 175
2058484	GFD-purified-qPCR	265		F	50 - 175
2060793	GFD-purified-qPCR	246		F	50 - 175
2063185	GFD-purified-qPCR	264	289	F/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P357602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2049763	BacR-qPCR	74.0		P	50 - 175
2057759	BacR-qPCR	65.9	71.7	P/P	50 - 175
2057761	BacR-qPCR	63.2		P	50 - 175
2057762	BacR-qPCR	68.4		P	50 - 175
2058102	BacR-qPCR	74.0		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P357824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057760	BacR-purified-qPCR	93.0		P	50 - 175
2058103	BacR-purified-qPCR	88.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P358494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057757	Chlorophyll-a, Corrected	14.1	Sample	P	0 - 25
2057757	Chlorophyll-a, Uncorrected	14.4	Sample	P	0 - 25
2057757	Phaeophytin-a	15.7	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P357602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057759	HF183-qPCR	0.494	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P357602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057759	GULL2-qPCR	3.73	Spike	P	0 - 25
2059326	GULL2-qPCR	3.59	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P358994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063185	GFD-purified-qPCR	9.05	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
 Batch ID: P357602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057759	BacR-qPCR	8.34	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: 2057759
 Field Sample ID: G2SW0012

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	80.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	81.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	87.8	P	50 - 300

Lab Sample ID: 2057760
 Field Sample ID: G2SW0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	12.9	F	30 - 300
SOP-PCR-1.4	SKETA-qPCR	11.4	F	30 - 300

Lab Sample ID: 2057761
 Field Sample ID: G2SW0080

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	89.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	89.6	P	50 - 300

Lab Sample ID: 2057762
 Field Sample ID: G2SW0081

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	94.1	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	107							14.1	
	Chlorophyll-a, Uncorrected								14.4	
	Phaeophytin-a								15.7	
SOP-PCR-1.0	HF183-purified-qPCR	17.3	96.7		96.5	93.5				
	HF183-qPCR	149	121		88.4	98.8	98.8			0.494
					89.0					
SOP-PCR-1.2	GULL2-qPCR	128	198	119	174	70.0	67.5			3.59
		128								3.73

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.3	GFD-purified-qPCR	18.5	185	264	289	125			9.05
				265					
SOP-PCR-1.4	BacR-purified-qPCR	9.62	92.2	93.0	88.3				
	BacR-qPCR	118	90.1	74.0	65.9	71.7			8.34
				63.2					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter	Advanced Environmental Laboratory in Tampa
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2057763, 2057764, 2057765, 2057766 2057757, 2057758
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2057759, 2057761, 2057762
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2057760
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2057759
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2057759
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2057759, 2057761, 2057762
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2057760
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2057759, 2057760, 2057761, 2057762

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	01/28/2019	01/28/2019 15:51		01/29/2019 14:32	AEL - Tampa	2057763, 2057764, 2057765, 2057766
SM 10200 H (mod.)	01/29/2019	01/29/2019 14:00	Edwin Gonzalez-Soto	02/05/2019 14:50	Jennifer Mihalic	2057757, 2057758
SOP-PCR-1.0	01/29/2019	01/29/2019 14:30	Sarah Menz	02/05/2019 14:56	Mailin Lopez	2057759, 2057761, 2057762
	01/29/2019	01/29/2019 14:30	Sarah Menz	02/26/2019 11:56	Mailin Lopez	2057760
SOP-PCR-1.2	01/29/2019	01/29/2019 14:30	Sarah Menz	02/28/2019 11:09	Mailin Lopez	2057759
SOP-PCR-1.3	01/29/2019	01/29/2019 14:30	Mailin Lopez	03/04/2019 13:19	Sarah Menz	2057759
SOP-PCR-1.4	01/29/2019	01/29/2019 14:30	Sarah Menz	02/06/2019 12:29	Mailin Lopez	2057759, 2057761, 2057762
	01/29/2019	01/29/2019 14:30	Sarah Menz	02/27/2019 12:19	Mailin Lopez	2057760
SOP-PCR-4.0	01/29/2019	01/29/2019 14:30	Angela Smith	02/22/2019 09:32	Sarah Menz	2057759, 2057760, 2057761, 2057762