

Biological Analysis Report

SW-DIST-2018-05-15-01

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: **Pinellas WBIDS By June**
Request ID: **RQ-2018-05-14-07**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 25-JUN-2018 15:01



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, Microbiology, 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: LONG BRANCH @ APPT WALKWAY

Collection Date/Time: 05/14/2018 09:45

Field ID: G1SW0098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992752	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P346382	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+04	I	TSC/100 mL	P346382	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P346382	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: LONG BRANCH @ APPT WALKWAY

Collection Date/Time: 05/14/2018 09:45

Field ID: G1SW0098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992755	EPA 1603	Escherichia coli-Membrane Filter**	2200		cfu/100 mL		

Sample Location: CEDAR CREEK @ PINEHURST

Collection Date/Time: 05/14/2018 11:00

Field ID: G5SW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992749	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0	V	ug/L	P345818	
		Phaeophytin-a	4.6		ug/L	P345818	
		Chlorophyll-a, Uncorrected	9.0		ug/L	P345818	
1992751	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P345731	

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. Lab blank failure. Chl-a Uncorr results >10 times blank.

Sample Location: CEDAR CREEK @ PINEHURST

Collection Date/Time: 05/14/2018 11:00

Field ID: G5SW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992750	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	JQ	MPN/100 mL	P345703	

Ref. Method and Comment:

SM 9223 Quanti-Tray: Precision data is unavailable due to the small amount of analyte in the QC sample. All Quanti-Tray wells were positive. Result may be higher than reported.

Sample Location: ALLIGATOR @ OLD COACHMAN

Collection Date/Time: 05/14/2018 10:25

Field ID: G1SW0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992753	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P346382	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P346382	
	SOP-PCR-1.3	GFD-purified-qPCR**	480	I	TSC/100 mL	P346882	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P346382	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: ALLIGATOR @ OLD COACHMAN

Collection Date/Time: 05/14/2018 10:25

Field ID: G1SW0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992756	EPA 1603	Escherichia coli-Membrane Filter**	3400		cfu/100 mL		

Sample Location: LONG BRANCH @ MICHIGAN

Collection Date/Time: 05/14/2018 10:00

Field ID: G1SW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992757	EPA 1603	Escherichia coli-Membrane Filter**	770		cfu/100 mL		

Sample Location: LONG BRANCH @ MICHIGAN

Collection Date/Time: 05/14/2018 10:00

Field ID: G1SW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992754	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P346382	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P346382	
	SOP-PCR-1.3	GFD-purified-qPCR**	9.57E+03	A	TSC/100 mL	P346882	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P346382	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P345818

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.76	I	ug/L
Chlorophyll-a, Uncorrected	0.71	I	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SM 9223 Quanti-Tray

Batch ID: P345703

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0

Batch ID: P345731

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

Reference Method: SOP-PCR-1.0

Batch ID: P346382

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

Reference Method: SOP-PCR-1.2

Batch ID: P346382

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

Reference Method: SOP-PCR-1.3

Batch ID: P346882

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P346382

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: P345818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	94.8		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P345731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	104	133	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P346382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	114	130	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P346382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.4	88.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P346882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	82.1	65.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P346382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	87.7	144	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P345731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989286	HF183-qPCR	91.2		P	50 - 175
1989729	HF183-qPCR	104		P	50 - 175
1989783	HF183-qPCR	96.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P345731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989842	HF183-qPCR	88.9		P	50 - 175
1989843	HF183-qPCR	101		P	50 - 175
1990326	HF183-qPCR	100		P	50 - 175
1990874	HF183-qPCR	93.6		P	50 - 175
1992743	HF183-qPCR	110		P	50 - 175
1992751	HF183-qPCR	93.8		P	50 - 175
1995147	HF183-qPCR	100		P	50 - 175
1995437	HF183-qPCR	92.2		P	50 - 175
1995445	HF183-qPCR	100	98.1	P/P	50 - 175

Reference Method: SOP-PCR-1.0

Batch ID: P346382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992752	HF183-qPCR	84.4		P	50 - 175
1992753	HF183-qPCR	85.2		P	50 - 175
1992754	HF183-qPCR	94.5		P	50 - 175
1992842	HF183-qPCR	85.7		P	50 - 175
1992844	HF183-qPCR	76.5		P	50 - 175
1997118	HF183-qPCR	89.6	101	P/P	50 - 175
1997119	HF183-qPCR	95.6		P	50 - 175
1997900	HF183-qPCR	72.5		P	50 - 175
1997901	HF183-qPCR	87.8		P	50 - 175
1997902	HF183-qPCR	93.8		P	50 - 175
1997903	HF183-qPCR	87.8		P	50 - 175
1997904	HF183-qPCR	93.2		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P346382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992752	GULL2-qPCR	66.3		P	50 - 300
1992753	GULL2-qPCR	71.0		P	50 - 300
1992754	GULL2-qPCR	61.7		P	50 - 300
1992842	GULL2-qPCR	91.8		P	50 - 300
1997118	GULL2-qPCR	93.7	73.8	P/P	50 - 300
1997119	GULL2-qPCR	83.1		P	50 - 300
1997901	GULL2-qPCR	81.7		P	50 - 300
1997902	GULL2-qPCR	76.9		P	50 - 300
1997903	GULL2-qPCR	90.0		P	50 - 300
1997904	GULL2-qPCR	79.9		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P346882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991767	GFD-purified-qPCR	88.8		P	50 - 175
1992753	GFD-purified-qPCR	64.0		P	50 - 175
1992754	GFD-purified-qPCR	56.9	67.9	P/P	50 - 175
1992842	GFD-purified-qPCR	62.5		P	50 - 175
1995474	GFD-purified-qPCR	133		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P346382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992752	BacR-qPCR	64.9		P	50 - 175
1992753	BacR-qPCR	62.9		P	50 - 175
1992754	BacR-qPCR	64.1		P	50 - 175
1992842	BacR-qPCR	71.9		P	50 - 175
1997118	BacR-qPCR	59.6	77.5	P/P	50 - 175
1997119	BacR-qPCR	62.1		P	50 - 175
1997901	BacR-qPCR	82.5		P	50 - 175
1997902	BacR-qPCR	59.8		P	50 - 175
1997903	BacR-qPCR	86.6		P	50 - 175
1997904	BacR-qPCR	84.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P345818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992784	Chlorophyll-a, Uncorrected	2.27	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P345731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995445	HF183-qPCR	2.16	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P346382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997118	HF183-qPCR	12.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P346382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997118	GULL2-qPCR	23.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P346882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992754	GFD-purified-qPCR	7.40	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
 Batch ID: P346382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997118	BacR-qPCR	26.2	Spike	F	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: 1992751
 Field Sample ID: G5SW0129

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	140	P	50 - 300

Lab Sample ID: 1992752
 Field Sample ID: G1SW0098

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	112	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	103	P	50 - 300

Lab Sample ID: 1992753
 Field Sample ID: G1SW0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	79.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	54.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	74.1	P	50 - 300

Lab Sample ID: 1992754
 Field Sample ID: G1SW0097

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	114	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	73.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	104	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	94.8						
	Chlorophyll-a, Uncorrected						2.27	
SOP-PCR-1.0	HF183-qPCR	133	104	91.2	104	88.9		2.16
				101				
	HF183-qPCR	130	114	89.6	101	95.6		12.2
				72.5				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.2	GULL2-qPCR	88.4	90.4	93.7	73.8	83.1			23.8
SOP-PCR-1.3	GFD-purified-qPCR	65.0	82.1	133	64.0	56.9		7.40	
SOP-PCR-1.4	BacR-qPCR	144	87.7	59.6	77.5	62.1			26.2
				81.7					
				67.9					
				82.5					

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	1992755, 1992756, 1992757
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1992749
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1992750
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1992751, 1992752, 1992753, 1992754
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1992752, 1992753, 1992754
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1992753, 1992754
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1992752, 1992753, 1992754
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1992752, 1992753, 1992754

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	05/14/2018	05/14/2018 15:00		05/15/2018 13:30	AEL - Tampa	1992755, 1992756, 1992757
SM 10200 H (mod.)	05/15/2018	05/15/2018 13:30	Mariam Hanna	05/23/2018 09:15	Carina A. Tull	1992749
SM 9223 Quanti-Tray	05/15/2018	05/15/2018 15:15	Peterson Janvier	05/16/2018 12:15	Peterson Janvier	1992750
SOP-PCR-1.0	05/15/2018	05/15/2018 13:25	Angela Smith	06/13/2018 12:42	Mailin Lopez	1992752, 1992753, 1992754
	05/15/2018	05/15/2018 13:25	Puja Jasrotia	06/01/2018 08:57	Mailin Lopez	1992751
SOP-PCR-1.2	05/15/2018	05/15/2018 13:25	Angela Smith	06/15/2018 17:29	Mailin Lopez	1992752, 1992753, 1992754
SOP-PCR-1.3	05/15/2018	05/15/2018 13:25	Sarah Menz	06/20/2018 12:44	Sarah Menz	1992753, 1992754
SOP-PCR-1.4	05/15/2018	05/15/2018 13:25	Angela Smith	06/14/2018 11:34	Mailin Lopez	1992752, 1992753, 1992754
SOP-PCR-4.0	05/15/2018	05/15/2018 13:25	Angela Smith	06/07/2018 09:21	Puja Jasrotia	1992752, 1992753, 1992754