

Biological Analysis Report

SO-DIST-2018-08-09-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
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DOH Accreditation E31780

Overflow Analyses Performed By:
Benchmark EnviroAnalytical, Inc. - North Port
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North Port, FL 34289
DOH Accreditation E85086

Event Description: **Sarasota Gators**
Request ID: **RQ-2018-08-06-44**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 14-SEP-2018 16:57



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: Curry(Tidal)@AlbeeFarm

Collection Date/Time: 08/08/2018 10:15

Field ID: G3SD0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015780	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.1		ug/L	P350083	
		Phaeophytin-a	1.4		ug/L	P350083	
		Chlorophyll-a, Uncorrected	5.1		ug/L	P350083	
2015786	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P350805	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P350805	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P351074	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P350805	LCS, MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2015794	Enterolert/QT	Enterococci-Quanti-Tray	134		MPN/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: HatchettCrk@PinebrookRd

Collection Date/Time: 08/08/2018 10:50

Field ID: G3SD0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015783	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2015791	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41		MPN/100 mL		

Sample Location: Alligator @ Jacaranda

Collection Date/Time: 08/08/2018 11:15

Field ID: G2SD0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015779	SM 10200 H (mod.)	Chlorophyll-a, Corrected	31		ug/L	P350885	
		Phaeophytin-a	5.6		ug/L	P350885	
		Chlorophyll-a, Uncorrected	36		ug/L	P350885	
2015790	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	107		MPN/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: Alligator Tidal @ US 41

Collection Date/Time: 08/08/2018 11:45

Field ID: G2SD0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015781	SM 10200 H (mod.)	Chlorophyll-a, Corrected	10		ug/L	P350083	
		Phaeophytin-a	2.3		ug/L	P350083	
		Chlorophyll-a, Uncorrected	12		ug/L	P350083	
2015787	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2015795	Enterolert/QT	Enterococci-Quanti-Tray	109		MPN/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: Woodmere Creek@Heron Rd

Collection Date/Time: 08/08/2018 12:20

Field ID: G2SD0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015784	SOP-PCR-1.0	HF183-qPCR**	510	I	GEU/100 mL	P350805	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2015792	Enterolert/QT	Enterococci-Quanti-Tray	538		MPN/100 mL		

Sample Location: Gottfried@DeerCrkMobile

Collection Date/Time: 08/08/2018 13:15

Field ID: G2SD0028

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015785	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2015793	Enterolert/QT	Enterococci-Quanti-Tray	10		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P350083

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

Reference Method: SM 10200 H (mod.)

Batch ID: P350885

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

Reference Method: SOP-PCR-1.0

Batch ID: P350805

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

Reference Method: SOP-PCR-1.2

Batch ID: P350805

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

Reference Method: SOP-PCR-1.3

Batch ID: P351074

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

Reference Method: SOP-PCR-1.4

Batch ID: P350805

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: P350083

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	85.6		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P350885

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	90.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P350805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	104	83.9	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P350805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	99.7	94.6	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P351074

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	121	49.7	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P350805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	82.3	216	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P350805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015784	HF183-qPCR	99.7		P	50 - 175
2015786	HF183-qPCR	94.6		P	50 - 175
2017669	HF183-qPCR	114		P	50 - 175
2018777	HF183-qPCR	84.3		P	50 - 175
2020672	HF183-qPCR	90.5		P	50 - 175
2020673	HF183-qPCR	96.2	105	P/P	50 - 175
2020674	HF183-qPCR	97.4		P	50 - 175
2020675	HF183-qPCR	89.6		P	50 - 175
2020676	HF183-qPCR	79.0		P	50 - 175
2020677	HF183-qPCR	109		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P350805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015786	GULL2-qPCR	98.5		P	50 - 300
2017669	GULL2-qPCR	99.3		P	50 - 300
2020672	GULL2-qPCR	99.7		P	50 - 300
2020673	GULL2-qPCR	111	108	P/P	50 - 300
2020674	GULL2-qPCR	105		P	50 - 300
2020675	GULL2-qPCR	101		P	50 - 300
2020676	GULL2-qPCR	117		P	50 - 300
2020677	GULL2-qPCR	102		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P351074

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013669	GFD-purified-qPCR	157		P	50 - 175
2015786	GFD-purified-qPCR	172		P	50 - 175
2016247	GFD-purified-qPCR	50.0		F	50 - 175
2016293	GFD-purified-qPCR	138		P	50 - 175
2017669	GFD-purified-qPCR	177		F	50 - 175
2017670	GFD-purified-qPCR	130		P	50 - 175
2017671	GFD-purified-qPCR	143		P	50 - 175
2018597	GFD-purified-qPCR	172		P	50 - 175
2018598	GFD-purified-qPCR	133		P	50 - 175
2019428	GFD-purified-qPCR	153		P	50 - 175
2023260	GFD-purified-qPCR	153		P	50 - 175
2023261	GFD-purified-qPCR	172	150	P/P	50 - 175
2023262	GFD-purified-qPCR	95.4		P	50 - 175
2023263	GFD-purified-qPCR	44.8		F	50 - 175
2023264	GFD-purified-qPCR	66.9		P	50 - 175
2023265	GFD-purified-qPCR	106		P	50 - 175
2023266	GFD-purified-qPCR	131		P	50 - 175
2023267	GFD-purified-qPCR	160		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P350805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015786	BacR-qPCR	72.5		P	50 - 175
2017669	BacR-qPCR	85.4		P	50 - 175
2018777	BacR-qPCR	57.1		P	50 - 175
2020672	BacR-qPCR	57.7		P	50 - 175
2020673	BacR-qPCR	127	99.3	P/P	50 - 175
2020674	BacR-qPCR	78.3		P	50 - 175
2020675	BacR-qPCR	75.2		P	50 - 175
2020676	BacR-qPCR	105		P	50 - 175
2020677	BacR-qPCR	48.9		F	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P350805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020673	HF183-qPCR	8.33	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P350805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020673	GULL2-qPCR	3.03	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P351074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023261	GFD-purified-qPCR	13.4	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P350805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020673	BacR-qPCR	24.8	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: 2015784
Field Sample ID: G2SD0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	110	P	50 - 300

Lab Sample ID: 2015786
Field Sample ID: G3SD0066

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	122	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	104	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	85.6				
	Chlorophyll-a, Corrected	90.1				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	83.9	104	99.7	94.6	84.3			8.33
SOP-PCR-1.2	GULL2-qPCR	94.6	99.7	98.5	99.7	111			3.03
SOP-PCR-1.3	GFD-purified-qPCR	49.7	121	172	177	157			13.4
SOP-PCR-1.4	BacR-qPCR	216	82.3	48.9	85.4	72.5			24.8
				90.5					
				108					
				50.0					
				57.1					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E85086 SM 10200 H (mod.) / E31780	Enterococci by Enterolert Quanti-Tray method by Benchmark EA South in North Port	2015792, 2015793, 2015794, 2015795
SM 9223 Quanti-Tray / E85086	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2015779, 2015780, 2015781
SOP-PCR-1.0 / E31780	Escherichia coli by Colilert 18 Quanti-Tray method by Benchmark EA South in North Port	2015790, 2015791
SOP-PCR-1.2 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2015784, 2015786
SOP-PCR-1.3 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2015786
SOP-PCR-1.4 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2015786
SOP-PCR-4.0 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2015786
	Preparation of Samples by Filtration and held for qPCR Analysis	2015783, 2015784, 2015785, 2015786, 2015787

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	08/08/2018	08/08/2018 15:55		08/09/2018 16:20	Benchmark EnviroAnalytical in North Port	2015792, 2015793, 2015794, 2015795
SM 10200 H (mod.)	08/09/2018	08/09/2018 12:00	Jennifer Mihalic	08/14/2018 10:00	Jennifer Mihalic	2015780, 2015781
	08/09/2018	08/09/2018 12:00	Jennifer Mihalic	08/21/2018 15:50	Carina A. Tull	2015779
SM 9223 Quanti-Tray	08/08/2018	08/08/2018 15:37		08/09/2018 16:11	Benchmark EnviroAnalytical in North Port	2015790, 2015791
SOP-PCR-1.0	08/09/2018	08/09/2018 14:20	Sarah Menz	08/31/2018 09:08	Mailin Lopez	2015784, 2015786
SOP-PCR-1.2	08/09/2018	08/09/2018 14:20	Sarah Menz	09/04/2018 11:03	Sarah Menz	2015786
SOP-PCR-1.3	08/09/2018	08/09/2018 14:20	Sarah Menz	09/13/2018 15:38	Sarah Menz	2015786
SOP-PCR-1.4	08/09/2018	08/09/2018 14:20	Sarah Menz	08/31/2018 13:44	Mailin Lopez	2015786
SOP-PCR-4.0	08/09/2018	08/09/2018 14:20	Angela Smith	08/28/2018 11:11	Sarah Menz	2015783, 2015784, 2015785, 2015786, 2015787