

Biological Analysis Report

SO-DIST-2018-11-08-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Overflow Analyses Performed By:
Benchmark EnviroAnalytical, Inc. - North Port
1001 Corporate Avenue, Suite 102
North Port, FL 34289
DOH Accreditation E85086

Event Description: **Sarasota Gators**
Request ID: **RQ-2018-09-24-05**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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: 20-DEC-2018 16:08



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: 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: 11/07/2018 13:20

Field ID: G3SD0066

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2040324	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P355487	
	SOP-PCR-1.2	GULL2-qPCR**	2.0E+04	I	TSC/100 mL	P355487	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P355487	LCS, MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2040331	Enterolert/QT	Enterococci-Quanti-Tray	169		MPN/100 mL		

Sample Location: HatchettCrk@PinebrookRd

Collection Date/Time: 11/07/2018 13:50

Field ID: G3SD0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2040326	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2045575	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	379		MPN/100 mL		

Sample Location: Alligator @ Jacaranda

Collection Date/Time: 11/07/2018 14:15

Field ID: G2SD0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2040327	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	309		MPN/100 mL		

Sample Location: Alligator Tidal @ US 41

Collection Date/Time: 11/07/2018 14:25

Field ID: G2SD0025

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2040325	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2040332	Enterolert/QT	Enterococci-Quanti-Tray	75		MPN/100 mL		

Sample Location: Woodmere Creek@Heron Rd

Collection Date/Time: 11/07/2018 14:55

Field ID: G2SD0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2040322	SOP-PCR-1.0	HF183-qPCR**	250	I	GEU/100 mL	P355487	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2040329	Enterolert/QT	Enterococci-Quanti-Tray	262		MPN/100 mL		

Sample Location: Gottfried@DeerCrkMobile

Collection Date/Time: 11/07/2018 15:20

Field ID: G2SD0028

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2040323	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2040330	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

**Quality Assurance Report
Method Blank Results**

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P355487

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

Reference Method: SOP-PCR-1.2
Batch ID: P355487

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

Reference Method: SOP-PCR-1.4
Batch ID: P355487

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P355487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	121	135	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P355487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	139	126	P/P	50 - 300

Reference Method: SOP-PCR-1.4
Batch ID: P355487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	82.5	182	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P355487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038761	HF183-qPCR	89.4		P	50 - 175
2038762	HF183-qPCR	104	107	P/P	50 - 175
2040322	HF183-qPCR	102		P	50 - 175
2040324	HF183-qPCR	93.8		P	50 - 175
2040451	HF183-qPCR	106		P	50 - 175
2041068	HF183-qPCR	99.9		P	50 - 175
2041138	HF183-qPCR	120		P	50 - 175
2041703	HF183-qPCR	113		P	50 - 175
2041704	HF183-qPCR	108		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P355487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041706	HF183-qPCR	105		P	50 - 175
2042736	HF183-qPCR	105		P	50 - 175
2043410	HF183-qPCR	95.0		P	50 - 175
2043414	HF183-qPCR	105		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P355487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038762	GULL2-qPCR	134	144	P/P	50 - 300
2040324	GULL2-qPCR	128		P	50 - 300
2040451	GULL2-qPCR	118		P	50 - 300
2041703	GULL2-qPCR	136		P	50 - 300
2041706	GULL2-qPCR	123		P	50 - 300
2042736	GULL2-qPCR	120		P	50 - 300
2043410	GULL2-qPCR	101		P	50 - 300
2043414	GULL2-qPCR	118		P	50 - 300

Reference Method: SOP-PCR-1.4
 Batch ID: P355487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038762	BacR-qPCR	66.0	66.4	P/P	50 - 175
2040324	BacR-qPCR	52.8		P	50 - 175
2040451	BacR-qPCR	54.0		P	50 - 175
2041068	BacR-qPCR	52.1		P	50 - 175
2041703	BacR-qPCR	60.5		P	50 - 175
2041706	BacR-qPCR	52.9		P	50 - 175
2042736	BacR-qPCR	56.1		P	50 - 175
2043410	BacR-qPCR	48.7		F	50 - 175
2043414	BacR-qPCR	54.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P355487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038762	HF183-qPCR	2.28	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P355487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038762	GULL2-qPCR	7.45	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
 Batch ID: P355487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038762	BacR-qPCR	0.687	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: 2040322
 Field Sample ID: G2SD0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	90.5	P	50 - 300

Lab Sample ID: 2040324
 Field Sample ID: G3SD0066

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	77.2	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	133	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	102	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
				LCS				
SOP-PCR-1.0	HF183-qPCR	135	121	89.4	104	107		2.28
SOP-PCR-1.2	GULL2-qPCR	126	139	134	144	128		7.45
SOP-PCR-1.4	BacR-qPCR	182	82.5	66.0	66.4	52.8		0.687
				54.0				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E85086	Enterococci by Enterolert Quanti-Tray method by Benchmark EA South in North Port	2040329, 2040330, 2040331, 2040332
SM 9223 Quanti-Tray / E85086	Escherichia coli by Colilert 18 Quanti-Tray method by Benchmark EA South in North Port	2040327, 2045575
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2040322, 2040324
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2040324
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2040324
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2040322, 2040323, 2040324, 2040325, 2040326

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	11/07/2018	11/07/2018 16:42		11/08/2018 17:03	Benchmark EnviroAnalytical in North Port	2040329, 2040330, 2040331, 2040332
SM 9223 Quanti-Tray	11/07/2018	11/07/2018 16:51		11/08/2018 17:08	Benchmark EnviroAnalytical in North Port	2040327, 2045575
SOP-PCR-1.0	11/08/2018	11/08/2018 14:00	Sarah Menz	12/06/2018 09:05	Mailin Lopez	2040322, 2040324
SOP-PCR-1.2	11/08/2018	11/08/2018 14:00	Sarah Menz	12/07/2018 09:10	Mailin Lopez	2040324
SOP-PCR-1.4	11/08/2018	11/08/2018 14:00	Sarah Menz	12/06/2018 14:02	Mailin Lopez	2040324
SOP-PCR-4.0	11/08/2018	11/08/2018 14:00	Angela Smith	12/03/2018 15:06	Sarah Menz	2040322, 2040323, 2040324, 2040325, 2040326