

Biological Analysis Report

SO-DIST-2021-02-12-03

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: **2021 SMP : Sarasota Cricks**
Request ID: **RQ-2021-02-08-49**
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: Chris Hormuth

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Bench Biology & Aquatic
Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 25-MAR-2021 17:44



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 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: South Creek near Legacy

Collection Date/Time: 02/11/2021 10:05

Field ID: G3SD0183

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2225179	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P393711	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P393711	MS
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P393711	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P393711	MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P393711	
2225180	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	84		MPN/100 mL		

Sample Location: Hatchett Creek Tidal 1

Collection Date/Time: 02/11/2021 11:00

Field ID: G3SD0191

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2225181	Enterolert/QT	Enterococci-Quanti-Tray	404		MPN/100 mL		

Sample Location: Hatchett Creek Tidal 2

Collection Date/Time: 02/11/2021 11:10

Field ID: G3SD0192

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2225182	Enterolert/QT	Enterococci-Quanti-Tray	712		MPN/100 mL		

Sample Location: Hatchett Creek Tidal 3

Collection Date/Time: 02/11/2021 11:25

Field ID: G3SD0193

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2225183	Enterolert/QT	Enterococci-Quanti-Tray	880		MPN/100 mL		

Sample Location: HatchettCreek@GroveStN

Collection Date/Time: 02/11/2021 11:40

Field ID: G3SD0194

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2225184	Enterolert/QT	Enterococci-Quanti-Tray	3448		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P393711

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

Reference Method: SOP-PCR-1.2

Batch ID: P393711

Component	Result	Code	Units
GULL2-qPCR	3.6E+03	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.3
Batch ID: P393711

Component	Result	Code	Units
GFD-qPCR	720	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P393711

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

Reference Method: SOP-PCR-1.5
Batch ID: P393711

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P393711

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.9	96.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P393711

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	89.0	93.7	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P393711

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	66.6	74.9	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P393711

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	90.5	85.1	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P393711

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	87.4	85.0	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P393711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225179	HF183-qPCR	85.4		P	50 - 175
2225334	HF183-qPCR	89.7		P	50 - 175
2225550	HF183-qPCR	60.9	52.0	P/P	50 - 175
2226117	HF183-qPCR	80.9		P	50 - 175
2226118	HF183-qPCR	76.2		P	50 - 175
2226119	HF183-qPCR	64.2		P	50 - 175
2226120	HF183-qPCR	78.2		P	50 - 175
2226121	HF183-qPCR	83.5		P	50 - 175
2226122	HF183-qPCR	81.2		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P393711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225179	GULL2-qPCR	70.7		P	50 - 300
2225334	GULL2-qPCR	43.3		F	50 - 300
2225550	GULL2-qPCR	12.2	9.76	F/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P393711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225179	GFD-qPCR	71.1		P	50 - 175
2225334	GFD-qPCR	77.4		P	50 - 175
2225550	GFD-qPCR	62.2	59.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P393711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225179	BacR-qPCR	74.6		P	50 - 175
2225334	BacR-qPCR	67.5		P	50 - 175
2225550	BacR-qPCR	44.1	43.1	F/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P393711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225179	DG3-qPCR	81.7		P	50 - 175
2225334	DG3-qPCR	72.5		P	50 - 175
2225550	DG3-qPCR	67.7	67.5	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P393711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225550	HF183-qPCR	15.8	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
Batch ID: P393711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225550	GULL2-qPCR	22.4	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P393711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225550	GFD-qPCR	4.60	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P393711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225550	BacR-qPCR	2.19	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P393711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225550	DG3-qPCR	0.309	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2225179
Field Sample ID: G3SD0183

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	94.3	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	95.5	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	82.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	95.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	75.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	96.8	88.9	85.4	89.7	60.9			15.8
SOP-PCR-1.2	GULL2-qPCR	93.7	89.0	70.7	43.3	12.2			22.4
SOP-PCR-1.3	GFD-qPCR	74.9	66.6	71.1	77.4	62.2			4.60
				52.0					
				9.76					
				59.4					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.4	BacR-qPCR	85.1	90.5	74.6	67.5	44.1		2.19
SOP-PCR-1.5	DG3-qPCR	85.0	87.4	81.7	72.5	67.7		0.309
				43.1				
				67.5				

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA South in North Port	2225181, 2225182, 2225183, 2225184
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2225180
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2225179
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2225179
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2225179
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2225179
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2225179

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	02/11/2021	02/11/2021 13:27		02/12/2021 13:50	Benchmark EnviroAnalytical in North Port	2225181, 2225182, 2225183, 2225184
SM 9223 Quanti-Tray	02/11/2021	02/11/2021 13:22		02/12/2021 13:50	Benchmark EnviroAnalytical in North Port	2225180
SOP-PCR-1.0	02/12/2021	02/12/2021 14:20	DeAsia Armster	02/23/2021 11:28	Mailin Lopez	2225179
SOP-PCR-1.2	02/12/2021	02/12/2021 14:20	DeAsia Armster	03/10/2021 08:43	Mailin Lopez	2225179
SOP-PCR-1.3	02/12/2021	02/12/2021 14:20	DeAsia Armster	03/11/2021 08:24	Mailin Lopez	2225179
SOP-PCR-1.4	02/12/2021	02/12/2021 14:20	DeAsia Armster	03/08/2021 10:11	Mailin Lopez	2225179
SOP-PCR-1.5	02/12/2021	02/12/2021 14:20	DeAsia Armster	03/08/2021 11:03	Mailin Lopez	2225179