

Biological Analysis Report

SO-DIST-2018-08-31-01

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 Streams**
Request ID: **RQ-2018-09-03-20**
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
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Amelia G. Rankin,

Date Certified: 18-OCT-2018 11:11



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: Phillippi Creek@Proctor

Collection Date/Time: 08/30/2018 10:00

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2021222	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41	J	MPN/100 mL		

Ref. Method and Comment:

SM 9223 Quanti-Tray: Estimated value. Quality control criteria for precision or accuracy not met. Sample result was 41#/100mL and replicate sample was 120#/100mL. Did not meet precision criteria, likely caused by the sample not mixed well between 2 aliquots being removed.

Sample Location: Matheny Creek @BenevaRd

Collection Date/Time: 08/30/2018 10:45

Field ID: G3SD0092

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2021219	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2021224	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	318		MPN/100 mL		

Sample Location: North Creek(Tidal)@US41

Collection Date/Time: 08/30/2018 11:00

Field ID: G3SD0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2021221	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P352338	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P352338	
	SOP-PCR-1.3	GFD-purified-qPCR**	1.23E+03		TSC/100 mL	P352926	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P352338	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2021226	Enterolert/QT	Enterococci-Quanti-Tray	145		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable due for Analysis Batch A86969

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A86946

Sample Location: North Creek byOaksCrkCt

Collection Date/Time: 08/30/2018 12:00

Field ID: G3SD0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2021223	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	185		MPN/100 mL		

Sample Location: South Creek @ HonoreAve

Collection Date/Time: 08/30/2018 13:00

Field ID: G3SD0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2021220	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2021225	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P352338

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
 Batch ID: P352338

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

Reference Method: SOP-PCR-1.3
 Batch ID: P352926

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

Reference Method: SOP-PCR-1.4
 Batch ID: P352338

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: P352338

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	99.0	124	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P352338

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	103	124	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P352926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	116	62.6	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P352338

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	97.6	108	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P352338

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021221	HF183-qPCR	89.7		P	50 - 175
2022139	HF183-qPCR	93.8		P	50 - 175
2025115	HF183-qPCR	97.6		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P352338

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025116	HF183-qPCR	93.8		P	50 - 175
2025192	HF183-qPCR	94.9		P	50 - 175
2025197	HF183-qPCR	99.9		P	50 - 175
2025925	HF183-qPCR	88.9		P	50 - 175
2026344	HF183-qPCR	86.8		P	50 - 175
2028907	HF183-qPCR	88.0		P	50 - 175
2028908	HF183-qPCR	81.6	85.1	P/P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P352338

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021221	GULL2-qPCR	145		P	50 - 300
2025116	GULL2-qPCR	97.8		P	50 - 300
2025192	GULL2-qPCR	104		P	50 - 300
2025925	GULL2-qPCR	108		P	50 - 300
2026344	GULL2-qPCR	93.3		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P352926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021221	GFD-purified-qPCR	94.3		P	50 - 175
2021428	GFD-purified-qPCR	76.4	62.9	P/P	50 - 175
2021429	GFD-purified-qPCR	71.7		P	50 - 175
2025116	GFD-purified-qPCR	53.0		P	50 - 175
2025192	GFD-purified-qPCR	98.8		P	50 - 175
2025198	GFD-purified-qPCR	88.3		P	50 - 175
2025925	GFD-purified-qPCR	98.1		P	50 - 175
2026344	GFD-purified-qPCR	92.3		P	50 - 175
2028725	GFD-purified-qPCR	191		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P352338

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021221	BacR-qPCR	84.7		P	50 - 175
2025116	BacR-qPCR	92.7		P	50 - 175
2025192	BacR-qPCR	92.0		P	50 - 175
2025925	BacR-qPCR	96.0		P	50 - 175
2026344	BacR-qPCR	86.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0

Batch ID: P352338

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028908	HF183-qPCR	4.17	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P352926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021428	GFD-purified-qPCR	19.2	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: 2021221
Field Sample ID: G3SD0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	92.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	98.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	91.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	124	99.0	88.9	86.8	88.0			4.17
SOP-PCR-1.2	GULL2-qPCR	124	103	108	93.3	145			
SOP-PCR-1.3	GFD-purified-qPCR	62.6	116	94.3	53.0	98.8			19.2
SOP-PCR-1.4	BacR-qPCR	108	97.6	96.0	86.0	84.7			

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	2021226
SM 9223 Quanti-Tray / E85086	Escherichia coli by Colilert 18 Quanti-Tray method by Benchmark EA South in North Port	2021222, 2021223, 2021224, 2021225
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2021221
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2021221
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2021221
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2021221
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2021219, 2021220, 2021221

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	08/30/2018	08/30/2018 15:05		08/31/2018 15:59	Benchmark EnviroAnalytical in North Port	2021226
SM 9223 Quanti-Tray	08/30/2018	08/30/2018 15:35		08/31/2018 16:23	Benchmark EnviroAnalytical in North Port	2021222, 2021223, 2021224, 2021225
SOP-PCR-1.0	08/31/2018	08/31/2018 12:10	Sarah Menz	10/04/2018 14:55	Mailin Lopez	2021221
SOP-PCR-1.2	08/31/2018	08/31/2018 12:10	Sarah Menz	10/08/2018 08:46	Mailin Lopez	2021221
SOP-PCR-1.3	08/31/2018	08/31/2018 12:10	Sarah Menz	10/16/2018 11:23	Sarah Menz	2021221
SOP-PCR-1.4	08/31/2018	08/31/2018 12:10	Sarah Menz	10/05/2018 12:23	Mailin Lopez	2021221
SOP-PCR-4.0	08/31/2018	08/31/2018 12:10	Angela Smith	09/28/2018 08:28	Sarah Menz	2021219, 2021220, 2021221