

Biological Analysis Report

SO-DIST-2022-09-27-02

Florida DEP 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: **2022 SMP : Bonnet Creek**
Request ID: **RQ-2022-09-26-38**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
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Date Certified: 04-NOV-2022 15:24



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 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: BonnetCreekAtoldBmbngRd

Collection Date/Time: 09/26/2022 12:15

Field ID: G4SD0211

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2359599	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.3		ug/L	P421209	
		Phaeophytin-a	2.2	I	ug/L	P421209	
		Chlorophyll-a, Uncorrected	7.9		ug/L	P421209	
2359600	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P419997	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	UJ	TSC/100 mL	P419997	MS
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P419997	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P419997	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P419997	
2359601	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	391		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.
 SOP-PCR-1.2: Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P421209

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SOP-PCR-1.0
 Batch ID: P419997

Component	Result	Code	Units
HF183-qPCR	3.3E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.2
 Batch ID: P419997

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

Reference Method: SOP-PCR-1.3
 Batch ID: P419997

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

Reference Method: SOP-PCR-1.4
 Batch ID: P419997

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P419997

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P421209

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	87.4		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P419997

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	102	90.9	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P419997

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	102	86.0	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P419997

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	97.4	87.6	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P419997

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	111	71.6	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P419997

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	106	94.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P419997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358711	HF183-qPCR	86.6	83.6	P/P	50 - 175
2359387	HF183-qPCR	79.2		P	50 - 175
2359518	HF183-qPCR	88.4		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P419997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359519	HF183-qPCR	82.5		P	50 - 175
2359520	HF183-qPCR	78.1		P	50 - 175
2359600	HF183-qPCR	63.3		P	50 - 175
2359814	HF183-qPCR	73.0		P	50 - 175
2359919	HF183-qPCR	94.0		P	50 - 175
2360797	HF183-qPCR	83.9		P	50 - 175
2360799	HF183-qPCR	83.6		P	50 - 175
2361347	HF183-qPCR	83.0		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P419997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358711	GULL2-qPCR	80.1	79.2	P/P	50 - 300
2359518	GULL2-qPCR	78.0		P	50 - 300
2359519	GULL2-qPCR	85.5		P	50 - 300
2359520	GULL2-qPCR	71.9		P	50 - 300
2359600	GULL2-qPCR	32.3		F	50 - 300
2359814	GULL2-qPCR	79.1		P	50 - 300
2359919	GULL2-qPCR	68.3		P	50 - 300
2360797	GULL2-qPCR	53.6		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P419997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358711	GFD-qPCR	106	101	P/P	50 - 175
2359518	GFD-qPCR	101		P	50 - 175
2359519	GFD-qPCR	89.2		P	50 - 175
2359520	GFD-qPCR	99.4		P	50 - 175
2359600	GFD-qPCR	103		P	50 - 175
2359814	GFD-qPCR	92.6		P	50 - 175
2359919	GFD-qPCR	92.3		P	50 - 175
2360797	GFD-qPCR	91.4		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P419997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358711	BacR-qPCR	79.7	89.0	P/P	50 - 175
2359387	BacR-qPCR	76.1		P	50 - 175
2359415	BacR-qPCR	59.6		P	50 - 175
2359518	BacR-qPCR	95.6		P	50 - 175
2359519	BacR-qPCR	78.6		P	50 - 175
2359520	BacR-qPCR	73.5		P	50 - 175
2359600	BacR-qPCR	50.6		P	50 - 175
2359814	BacR-qPCR	79.2		P	50 - 175
2359919	BacR-qPCR	72.1		P	50 - 175
2360797	BacR-qPCR	80.7		P	50 - 175
2360798	BacR-qPCR	65.2		P	50 - 175
2360799	BacR-qPCR	70.2		P	50 - 175
2361347	BacR-qPCR	73.9		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P419997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358711	DG3-qPCR	86.7	83.1	P/P	50 - 175
2359387	DG3-qPCR	69.3		P	50 - 175
2359518	DG3-qPCR	88.3		P	50 - 175
2359519	DG3-qPCR	97.6		P	50 - 175
2359520	DG3-qPCR	109		P	50 - 175
2359600	DG3-qPCR	83.0		P	50 - 175
2359814	DG3-qPCR	103		P	50 - 175
2359919	DG3-qPCR	92.4		P	50 - 175
2360797	DG3-qPCR	80.2		P	50 - 175
2360799	DG3-qPCR	98.7		P	50 - 175
2361347	DG3-qPCR	97.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P419997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358711	HF183-qPCR	3.50	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P419997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358711	GULL2-qPCR	1.03	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P419997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358711	GFD-qPCR	4.54	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P419997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358711	BacR-qPCR	11.0	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P419997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358711	DG3-qPCR	4.23	Spike	P	0 - 25

Quality Assurance Report Precision

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

Quality Assurance Report Surrogates

Lab Sample ID: 2359600
Field Sample ID: G4SD0211

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	58.1	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	59.0	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	67.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	57.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	56.5	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	87.4							
SOP-PCR-1.0	HF183-qPCR	90.9	102	86.6	83.6	79.2			3.50
				88.4					
SOP-PCR-1.2	GULL2-qPCR	86.0	102	80.1	79.2	78.0			1.03
				85.5					
SOP-PCR-1.3	GFD-qPCR	87.6	97.4	106	101	101			4.54
				89.2					
SOP-PCR-1.4	BacR-qPCR	71.6	111	79.7	89.0	76.1			11.0
				59.6					
SOP-PCR-1.5	DG3-qPCR	94.2	106	109	83.0	103			4.23
				92.4					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2359599
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2359601
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2359600
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2359600
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2359600
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2359600
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2359600

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	09/27/2022	09/27/2022 13:00	Megan Higbee	10/12/2022 16:00	Carina A. Tull	2359599
SM 9223 Quanti-Tray	09/26/2022	09/26/2022 17:01		09/27/2022 17:11	Benchmark EnviroAnalytical in North Port	2359601
SOP-PCR-1.0	09/27/2022	09/27/2022 12:10	Claudia Castro	10/18/2022 12:41	Roberta Tatti	2359600
SOP-PCR-1.2	09/27/2022	09/27/2022 12:10	Claudia Castro	10/20/2022 13:39	DeAsia Armster	2359600
SOP-PCR-1.3	09/27/2022	09/27/2022 12:10	Claudia Castro	10/21/2022 13:13	DeAsia Armster	2359600
SOP-PCR-1.4	09/27/2022	09/27/2022 12:10	Claudia Castro	10/17/2022 13:00	DeAsia Armster	2359600
SOP-PCR-1.5	09/27/2022	09/27/2022 12:10	Claudia Castro	10/20/2022 12:08	Roberta Tatti	2359600