

Biological Analysis Report

SO-DIST-2023-02-23-01

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 : Myakka**
Request ID: **RQ-2023-02-13-22**
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
Attn: William Mullen

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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 10-APR-2023 11:08

A handwritten signature in dark ink, appearing to be 'Sarah Menz', written in a cursive style.

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: BrandyBranch@NWLilyCoRd

Collection Date/Time: 02/22/2023 09:10

Field ID: G3SD0201

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2389680	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P426170	
	SOP-PCR-1.4	BacR-qPCR**	1.28E+05		TSC/100 mL	P426170	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P426170	
2389681	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	98		MPN/100 mL		

Sample Location: LAKE MYAKKA (UPPER) @ MIDDLE

Collection Date/Time: 02/22/2023 10:55

Field ID: G3SD0133

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2389679	SM 10200 H (mod.)	Chlorophyll-a, Corrected	12		ug/L	P426526	
		Phaeophytin-a	3.3	I	ug/L	P426526	
		Chlorophyll-a, Uncorrected	15		ug/L	P426526	

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: LAKE MYAKKA (LOWER) @ MIDDLE

Collection Date/Time: 02/22/2023 12:05

Field ID: G3SD0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2389678	SM 10200 H (mod.)	Chlorophyll-a, Corrected	30		ug/L	P426526	
		Phaeophytin-a	12	I	ug/L	P426526	
		Chlorophyll-a, Uncorrected	39		ug/L	P426526	

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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P426526

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P426170

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

Reference Method: SOP-PCR-1.4

Batch ID: P426170

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: P426170

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: P426526

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.7		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	98.1	101	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.2	131	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	108	130	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	HF183-qPCR	83.8		P	50 - 175
2388924	HF183-qPCR	83.0		P	50 - 175
2388987	HF183-qPCR	94.4	104	P/P	50 - 175
2388988	HF183-qPCR	113		P	50 - 175
2389048	HF183-qPCR	98.3		P	50 - 175
2389394	HF183-qPCR	87.7		P	50 - 175
2389395	HF183-qPCR	88.0		P	50 - 175
2389425	HF183-qPCR	79.4		P	50 - 175
2389426	HF183-qPCR	83.8		P	50 - 175
2389592	HF183-qPCR	87.1		P	50 - 175
2389680	HF183-qPCR	93.0		P	50 - 175
2389850	HF183-qPCR	88.3		P	50 - 175
2389851	HF183-qPCR	73.2		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	BacR-qPCR	86.8	93.5	P	50 - 175
2388924	BacR-qPCR	81.6		P	50 - 175
2388987	BacR-qPCR	96.8		P/P	50 - 175
2388988	BacR-qPCR	98.3		P	50 - 175
2389048	BacR-qPCR	83.4	93.5	P	50 - 175
2389394	BacR-qPCR	83.6		P	50 - 175
2389395	BacR-qPCR	88.3		P	50 - 175
2389425	BacR-qPCR	78.4		P	50 - 175
2389426	BacR-qPCR	79.1		P	50 - 175
2389592	BacR-qPCR	73.9		P	50 - 175
2389680	BacR-qPCR	79.8		P	50 - 175
2389850	BacR-qPCR	84.0		P	50 - 175
2389851	BacR-qPCR	72.6		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	DG3-qPCR	99.7	109	P	50 - 175
2388924	DG3-qPCR	97.6		P	50 - 175
2388987	DG3-qPCR	105		P/P	50 - 175
2388988	DG3-qPCR	114		P	50 - 175
2389048	DG3-qPCR	95.1	109	P	50 - 175
2389394	DG3-qPCR	88.2		P	50 - 175
2389395	DG3-qPCR	97.6		P	50 - 175
2389425	DG3-qPCR	85.5		P	50 - 175
2389426	DG3-qPCR	88.2		P	50 - 175
2389592	DG3-qPCR	92.0		P	50 - 175
2389680	DG3-qPCR	91.1		P	50 - 175
2389850	DG3-qPCR	93.5		P	50 - 175
2389851	DG3-qPCR	91.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P426526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389640	Chlorophyll-a, Corrected	4.72	Sample	P	0 - 25
2389640	Chlorophyll-a, Uncorrected	3.74	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P426170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2388987	HF183-qPCR	10.1	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P426170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2388987	BacR-qPCR	3.27	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P426170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2388987	DG3-qPCR	3.58	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2389680
Field Sample ID: G3SD0201

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	89.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	95.9	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	91.4	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision	MS
									SMP	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	95.7							4.72	
	Chlorophyll-a, Uncorrected								3.74	
SOP-PCR-1.0	HF183-qPCR	101	98.1		83.8	83.0	94.4			10.1
SOP-PCR-1.4	BacR-qPCR	131	98.2		86.8	81.6	96.8			3.27
SOP-PCR-1.5	DG3-qPCR	130	108		93.5	99.7	97.6	105		3.58
					109					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2389678, 2389679
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2389681
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2389680
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2389680
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2389680

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	02/23/2023	02/23/2023 14:02	Callie Williams	02/28/2023 10:40	Aidan Cronin	2389678, 2389679
SM 9223 Quanti-Tray	02/22/2023	02/22/2023 14:46		02/23/2023 15:21	Benchmark EnviroAnalytical in North Port	2389681
SOP-PCR-1.0	02/23/2023	02/23/2023 15:25	Claudia Castro	03/06/2023 15:08	Roberta Tatti	2389680
SOP-PCR-1.4	02/23/2023	02/23/2023 15:25	Claudia Castro	03/07/2023 12:31	Roberta Tatti	2389680
SOP-PCR-1.5	02/23/2023	02/23/2023 15:25	Claudia Castro	03/08/2023 09:22	Roberta Tatti	2389680