

Biological Analysis Report

SO-DIST-2024-03-06-01

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: **2024 SMP : Myakka River - Snook Haven**
Request ID: **RQ-2024-02-05-27**
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: Nicole Reistad

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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 09-APR-2024 13:23

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: 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: MYAKKA RIVER SNOOK HAVEN

Collection Date/Time: 03/05/2024 11:50

Field ID: G3SD0245

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2473491	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P441875	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P441875	
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P441875	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P441875	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P441875	
2473492	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	231		MPN/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P441875

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

Reference Method: SOP-PCR-1.2
Batch ID: P441875

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

Reference Method: SOP-PCR-1.3
Batch ID: P441875

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

Reference Method: SOP-PCR-1.4
Batch ID: P441875

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

Reference Method: SOP-PCR-1.5
Batch ID: P441875

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: P441875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	87.8	86.4	P/P	50 - 175

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P441875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	96.4	81.3	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P441875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	92.4	85.2	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P441875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	103	86.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P441875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	91.3	85.3	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P441875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2471321	HF183-qPCR	82.9	89.8	P/P	50 - 175
2471875	HF183-qPCR	94.9		P	50 - 175
2472610	HF183-qPCR	83.0		P	50 - 175
2473084	HF183-qPCR	95.2		P	50 - 175
2473110	HF183-qPCR	89.0		P	50 - 175
2473491	HF183-qPCR	90.0		P	50 - 175
2473514	HF183-qPCR	84.7		P	50 - 175
2473515	HF183-qPCR	86.3		P	50 - 175
2473516	HF183-qPCR	78.2		P	50 - 175
2473517	HF183-qPCR	88.7		P	50 - 175
2473518	HF183-qPCR	88.0		P	50 - 175
2473688	HF183-qPCR	77.1		P	50 - 175
2473782	HF183-qPCR	87.7		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P441875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2471321	GULL2-qPCR	70.5	71.0	P/P	50 - 175
2471875	GULL2-qPCR	73.2		P	50 - 175
2472610	GULL2-qPCR	73.3		P	50 - 175
2473110	GULL2-qPCR	58.5		P	50 - 175
2473491	GULL2-qPCR	62.3		P	50 - 175
2473514	GULL2-qPCR	76.2		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P441875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2473515	GULL2-qPCR	88.2		P	50 - 175
2473516	GULL2-qPCR	28.6		F	50 - 175
2473517	GULL2-qPCR	66.1		P	50 - 175
2473518	GULL2-qPCR	56.3		P	50 - 175
2473782	GULL2-qPCR	78.0		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P441875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2471321	GFD-qPCR	99.3	105	P/P	50 - 175
2471875	GFD-qPCR	99.0		P	50 - 175
2472610	GFD-qPCR	88.0		P	50 - 175
2473110	GFD-qPCR	91.3		P	50 - 175
2473491	GFD-qPCR	91.9		P	50 - 175
2473514	GFD-qPCR	94.8		P	50 - 175
2473515	GFD-qPCR	97.8		P	50 - 175
2473516	GFD-qPCR	98.5		P	50 - 175
2473517	GFD-qPCR	90.5		P	50 - 175
2473518	GFD-qPCR	96.2		P	50 - 175
2473782	GFD-qPCR	95.3		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P441875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2471321	BacR-qPCR	81.8	78.5	P/P	50 - 175
2471875	BacR-qPCR	83.2		P	50 - 175
2472610	BacR-qPCR	67.6		P	50 - 175
2473084	BacR-qPCR	80.8		P	50 - 175
2473110	BacR-qPCR	70.2		P	50 - 175
2473491	BacR-qPCR	69.3		P	50 - 175
2473514	BacR-qPCR	71.2		P	50 - 175
2473515	BacR-qPCR	81.8		P	50 - 175
2473516	BacR-qPCR	54.3		P	50 - 175
2473517	BacR-qPCR	78.3		P	50 - 175
2473518	BacR-qPCR	64.7		P	50 - 175
2473688	BacR-qPCR	52.4		P	50 - 175
2473782	BacR-qPCR	73.8		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P441875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2471321	DG3-qPCR	96.4	96.6	P/P	50 - 175
2471875	DG3-qPCR	101		P	50 - 175
2472610	DG3-qPCR	95.2		P	50 - 175
2473084	DG3-qPCR	104		P	50 - 175
2473110	DG3-qPCR	92.9		P	50 - 175
2473491	DG3-qPCR	91.1		P	50 - 175
2473514	DG3-qPCR	96.6		P	50 - 175
2473515	DG3-qPCR	89.8		P	50 - 175

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5

Batch ID: P441875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2473516	DG3-qPCR	76.4		P	50 - 175
2473517	DG3-qPCR	95.3		P	50 - 175
2473518	DG3-qPCR	89.9		P	50 - 175
2473688	DG3-qPCR	80.5		P	50 - 175
2473782	DG3-qPCR	76.8		P	50 - 175

Quality Assurance Report

Precision

Reference Method: SOP-PCR-1.0

Batch ID: P441875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2471321	HF183-qPCR	8.01	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2

Batch ID: P441875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2471321	GULL2-qPCR	0.723	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3

Batch ID: P441875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2471321	GFD-qPCR	5.87	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4

Batch ID: P441875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2471321	BacR-qPCR	4.05	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5

Batch ID: P441875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2471321	DG3-qPCR	0.263	Spike	P	0 - 25

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

Quality Assurance Report

Surrogates

Quality Assurance Report
Surrogates

Lab Sample ID: 2473491
Field Sample ID: G3SD0245

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	88.4	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	96.9	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	119	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	107	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	120	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	86.4	87.8	82.9	89.8	94.9		8.01
SOP-PCR-1.2	GULL2-qPCR	81.3	96.4	70.5	71.0	73.2		0.723
SOP-PCR-1.3	GFD-qPCR	85.2	92.4	99.3	105	99.0		5.87
SOP-PCR-1.4	BacR-qPCR	86.9	103	81.8	78.5	83.2		4.05
SOP-PCR-1.5	DG3-qPCR	85.3	91.3	96.4	96.6	101		0.263

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2473492
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2473491
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2473491
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2473491
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2473491
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2473491

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	03/05/2024	03/05/2024 14:13		03/06/2024 14:54	Benchmark EnviroAnalytical in North Port	2473492
SOP-PCR-1.0	03/06/2024	03/06/2024 14:45	Roberta Tatti	03/20/2024 08:45	Roberta Tatti	2473491
SOP-PCR-1.2	03/06/2024	03/06/2024 14:45	Roberta Tatti	04/01/2024 11:26	Roberta Tatti	2473491
SOP-PCR-1.3	03/06/2024	03/06/2024 14:45	Roberta Tatti	03/28/2024 14:35	Madeline Gruver	2473491
SOP-PCR-1.4	03/06/2024	03/06/2024 14:45	Roberta Tatti	03/21/2024 08:38	Roberta Tatti	2473491
SOP-PCR-1.5	03/06/2024	03/06/2024 14:45	Roberta Tatti	03/21/2024 09:34	Roberta Tatti	2473491