

Biological Analysis Report

SO-DIST-2024-02-07-03

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
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 12-MAR-2024 23:34



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: 02/06/2024 11:40

Field ID: G3SD0245

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2466847	SOP-PCR-1.0	HF183-qPCR**	2.2E+03	U	TSC/100 mL	P440703	
	SOP-PCR-1.2	GULL2-qPCR**	2.4E+03	U	TSC/100 mL	P440703	
	SOP-PCR-1.3	GFD-qPCR**	480	U	TSC/100 mL	P440703	
	SOP-PCR-1.4	BacR-qPCR**	2.0E+03	U	TSC/100 mL	P440703	
	SOP-PCR-1.5	DG3-qPCR**	1.7E+03	U	TSC/100 mL	P440703	
2466848	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	187		MPN/100 mL		

Quality Assurance Report

Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P440703

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

Reference Method: SOP-PCR-1.2

Batch ID: P440703

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

Reference Method: SOP-PCR-1.3

Batch ID: P440703

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

Reference Method: SOP-PCR-1.4

Batch ID: P440703

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

Reference Method: SOP-PCR-1.5

Batch ID: P440703

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: P440703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.6	82.2	P/P	50 - 175

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P440703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.4	69.8	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P440703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	77.7	69.7	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P440703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	103	70.6	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P440703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	104	70.1	P/P	50 - 175

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P440703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464567	HF183-qPCR	92.4	91.6	P/P	50 - 175
2464568	HF183-qPCR	110		P	50 - 175
2464595	HF183-qPCR	121		P	50 - 175
2464597	HF183-qPCR	95.1		P	50 - 175
2465303	HF183-qPCR	98.9		P	50 - 175
2465731	HF183-qPCR	102		P	50 - 175
2465732	HF183-qPCR	105		P	50 - 175
2466651	HF183-qPCR	79.0		P	50 - 175
2466698	HF183-qPCR	90.5		P	50 - 175
2466817	HF183-qPCR	89.8		P	50 - 175
2466847	HF183-qPCR	94.7		P	50 - 175
2468368	HF183-qPCR	92.2		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P440703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464567	GULL2-qPCR	77.4	87.4	P/P	50 - 175
2464595	GULL2-qPCR	55.4		P	50 - 175
2464597	GULL2-qPCR	88.9		P	50 - 175
2465303	GULL2-qPCR	98.9		P	50 - 175
2465304	GULL2-qPCR	93.6		P	50 - 175
2465731	GULL2-qPCR	74.1		P	50 - 175
2465732	GULL2-qPCR	82.7		P	50 - 175

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P440703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466698	GULL2-qPCR	86.5		P	50 - 175
2466847	GULL2-qPCR	71.9		P	50 - 175
2468368	GULL2-qPCR	77.9		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P440703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464567	GFD-qPCR	99.1	95.9	P/P	50 - 175
2464595	GFD-qPCR	103		P	50 - 175
2464597	GFD-qPCR	103		P	50 - 175
2465303	GFD-qPCR	96.2		P	50 - 175
2465304	GFD-qPCR	93.5		P	50 - 175
2465731	GFD-qPCR	91.9		P	50 - 175
2465732	GFD-qPCR	135		P	50 - 175
2466698	GFD-qPCR	96.3		P	50 - 175
2466847	GFD-qPCR	94.9		P	50 - 175
2468368	GFD-qPCR	88.0		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P440703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464567	BacR-qPCR	83.3	89.3	P/P	50 - 175
2464568	BacR-qPCR	94.8		P	50 - 175
2464595	BacR-qPCR	80.9		P	50 - 175
2464597	BacR-qPCR	86.0		P	50 - 175
2465303	BacR-qPCR	91.1		P	50 - 175
2465304	BacR-qPCR	85.8		P	50 - 175
2465731	BacR-qPCR	74.4		P	50 - 175
2465732	BacR-qPCR	87.9		P	50 - 175
2466651	BacR-qPCR	90.5		P	50 - 175
2466698	BacR-qPCR	88.1		P	50 - 175
2466817	BacR-qPCR	64.2		P	50 - 175
2466847	BacR-qPCR	74.6		P	50 - 175
2468368	BacR-qPCR	74.8		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P440703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464567	DG3-qPCR	101	101	P/P	50 - 175
2464568	DG3-qPCR	110		P	50 - 175
2464595	DG3-qPCR	101		P	50 - 175
2464597	DG3-qPCR	106		P	50 - 175
2465303	DG3-qPCR	106		P	50 - 175
2465304	DG3-qPCR	114		P	50 - 175
2465731	DG3-qPCR	105		P	50 - 175
2465732	DG3-qPCR	115		P	50 - 175
2466651	DG3-qPCR	100		P	50 - 175
2466698	DG3-qPCR	106		P	50 - 175
2466817	DG3-qPCR	94.3		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P440703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466847	DG3-qPCR	98.5		P	50 - 175
2468368	DG3-qPCR	108		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.0
Batch ID: P440703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464567	HF183-qPCR	0.868	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P440703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464567	GULL2-qPCR	12.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P440703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464567	GFD-qPCR	3.22	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P440703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464567	BacR-qPCR	6.89	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P440703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464567	DG3-qPCR	0.558	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2466847
Field Sample ID: G3SD0245

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
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Quality Assurance Report

Surrogates

Lab Sample ID: 2466847

Field Sample ID: G3SD0245

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	79.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	114	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	96.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	82.1	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	70.0	P	50 - 300

Quality Assurance Report

Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	82.2	88.6	92.4	91.6	110			0.868
SOP-PCR-1.2	GULL2-qPCR	69.8	90.4	77.4	87.4	55.4			12.1
SOP-PCR-1.3	GFD-qPCR	69.7	77.7	99.1	95.9	103			3.22
SOP-PCR-1.4	BacR-qPCR	70.6	103	83.3	89.3	94.8			6.89
SOP-PCR-1.5	DG3-qPCR	70.1	104	101	101	110			0.558

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2466848
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2466847
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2466847
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2466847
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2466847
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2466847

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	02/06/2024	02/06/2024 13:40		02/07/2024 14:21	Benchmark EnviroAnalytical in North Port	2466848
SOP-PCR-1.0	02/07/2024	02/07/2024 13:20	Lily Gregson	02/16/2024 08:51	Roberta Tatti	2466847
SOP-PCR-1.2	02/07/2024	02/07/2024 13:20	Lily Gregson	02/28/2024 18:02	Madeline Gruver	2466847
SOP-PCR-1.3	02/07/2024	02/07/2024 13:20	Lily Gregson	02/28/2024 15:51	Madeline Gruver	2466847
SOP-PCR-1.4	02/07/2024	02/07/2024 13:20	Lily Gregson	02/19/2024 12:40	Roberta Tatti	2466847
SOP-PCR-1.5	02/07/2024	02/07/2024 13:20	Lily Gregson	02/19/2024 13:41	Roberta Tatti	2466847