

Biological Analysis Report

TLH-ROC-2022-06-08-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 15**
Request ID: **RQ-2022-06-06-67**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 22-JUL-2022 15:12

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, Microbiology and Molecular.

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: Little Creek @ Treatment Plant Rd

Collection Date/Time: 06/08/2022 10:15

Field ID: G3TLHR0002

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2333237	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.0	I	ug/L	P415543	
		Phaeophytin-a	0.90	U	ug/L	P415543	
		Chlorophyll-a, Uncorrected	2.2		ug/L	P415543	
2333239	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1178.0		MPN/100 mL	P415048	
2333241	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P414926	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P414926	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P414926	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P414926	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P414926	

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: Little Creek @ Ezell Rd

Collection Date/Time: 06/08/2022 10:00

Field ID: G3TLHR0003

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2333240	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	85.5	A	MPN/100 mL	P415048	
2333242	SOP-PCR-1.0	HF183-qPCR**	2.2E+03	U	TSC/100 mL	P414926	
	SOP-PCR-1.2	GULL2-qPCR**	2.4E+03	U	TSC/100 mL	P414926	
	SOP-PCR-1.3	GFD-qPCR**	480	U	TSC/100 mL	P414926	
	SOP-PCR-1.4	BacR-qPCR**	2.0E+03	U	TSC/100 mL	P414926	
	SOP-PCR-1.5	DG3-qPCR**	1.7E+03	U	TSC/100 mL	P414926	

Sample Location: Alligator Creek @ Hwy273

Collection Date/Time: 06/08/2022 11:00

Field ID: G3TLHR0045

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2333236	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.7	I	ug/L	P415543	
		Phaeophytin-a	3.0	U	ug/L	P415543	
		Chlorophyll-a, Uncorrected	4.6	I	ug/L	P415543	
2333238	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	613.1		MPN/100 mL	P415048	

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: Camp Branch @ US90

Collection Date/Time: 06/08/2022 11:40

Field ID: G3TLHR0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2333234	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.1	I	ug/L	P415543	
		Phaeophytin-a	2.2	U	ug/L	P415543	
		Chlorophyll-a, Uncorrected	3.2	I	ug/L	P415543	
2333255	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	160.7		MPN/100 mL	P415048	

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: Camp Branch @ CR173

Collection Date/Time: 06/08/2022 12:40

Field ID: G3TLHR0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2333235	SM 10200 H (mod.)	Chlorophyll-a, Corrected	39	A	ug/L	P415543	
		Phaeophytin-a	4.4	I	ug/L	P415543	
		Chlorophyll-a, Uncorrected	43	A	ug/L	P415543	

Ref. Method and Comment:

SM 10200 H (mod.): Laboratory duplicate result is 3.8 I for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P415543

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: SM 9223 B Quanti-Tray

Batch ID: P415048

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0

Batch ID: P414926

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

Reference Method: SOP-PCR-1.2

Batch ID: P414926

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

Reference Method: SOP-PCR-1.3

Batch ID: P414926

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

Reference Method: SOP-PCR-1.4

Batch ID: P414926

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

Reference Method: SOP-PCR-1.5

Batch ID: P414926

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: P415543

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: P414926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.0	86.1	P/P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P414926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	101	88.3	P/P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P414926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	72.4	86.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P414926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	103	101	P/P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P414926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	98.5	97.5	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P414926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2333241	HF183-qPCR	87.1	86.6	P/P	50 - 175
2333242	HF183-qPCR	85.8		P	50 - 175
2333425	HF183-qPCR	92.1		P	50 - 175
2333553	HF183-qPCR	101		P	50 - 175
2333598	HF183-qPCR	84.8		P	50 - 175
2333755	HF183-qPCR	76.8		P	50 - 175
2333756	HF183-qPCR	97.6		P	50 - 175
2333757	HF183-qPCR	78.3		P	50 - 175
2334407	HF183-qPCR	90.0		P	50 - 175
2334408	HF183-qPCR	82.2		P	50 - 175
2334409	HF183-qPCR	79.3		P	50 - 175
2334484	HF183-qPCR	89.2		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P414926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2333241	GULL2-qPCR	93.2	94.9	P/P	50 - 300
2333242	GULL2-qPCR	92.5		P	50 - 300
2333553	GULL2-qPCR	89.7		P	50 - 300
2333755	GULL2-qPCR	74.1		P	50 - 300
2333756	GULL2-qPCR	82.9		P	50 - 300
2333757	GULL2-qPCR	75.8		P	50 - 300
2334407	GULL2-qPCR	76.2		P	50 - 300
2334408	GULL2-qPCR	84.9		P	50 - 300
2334409	GULL2-qPCR	79.9		P	50 - 300
2334484	GULL2-qPCR	79.2		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P414926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2333241	GFD-qPCR	82.4	90.0	P/P	50 - 175
2333242	GFD-qPCR	90.0		P	50 - 175
2333553	GFD-qPCR	96.3		P	50 - 175
2333755	GFD-qPCR	90.6		P	50 - 175
2333756	GFD-qPCR	96.0		P	50 - 175
2333757	GFD-qPCR	81.3		P	50 - 175
2334407	GFD-qPCR	87.3		P	50 - 175
2334408	GFD-qPCR	89.8		P	50 - 175
2334409	GFD-qPCR	89.0		P	50 - 175
2334484	GFD-qPCR	94.5		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P414926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2333241	BacR-qPCR	84.9	81.4	P/P	50 - 175
2333242	BacR-qPCR	87.9		P	50 - 175
2333553	BacR-qPCR	99.0		P	50 - 175
2333598	BacR-qPCR	82.0		P	50 - 175
2333755	BacR-qPCR	74.0		P	50 - 175
2333756	BacR-qPCR	84.9		P	50 - 175
2333757	BacR-qPCR	68.5		P	50 - 175
2334407	BacR-qPCR	51.0		P	50 - 175
2334408	BacR-qPCR	76.6		P	50 - 175
2334409	BacR-qPCR	72.1		P	50 - 175
2334484	BacR-qPCR	83.0		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P414926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2333241	DG3-qPCR	91.9	89.0	P/P	50 - 175
2333242	DG3-qPCR	93.8		P	50 - 175
2333553	DG3-qPCR	97.4		P	50 - 175
2333598	DG3-qPCR	84.5		P	50 - 175
2333755	DG3-qPCR	79.8		P	50 - 175
2333756	DG3-qPCR	98.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P414926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2333757	DG3-qPCR	92.1		P	50 - 175
2334407	DG3-qPCR	88.3		P	50 - 175
2334408	DG3-qPCR	87.1		P	50 - 175
2334409	DG3-qPCR	89.3		P	50 - 175
2334484	DG3-qPCR	96.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P415543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2333235	Chlorophyll-a, Corrected	3.71	Sample	P	0 - 25
2333235	Chlorophyll-a, Uncorrected	4.38	Sample	P	0 - 25

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P415048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2332884	Escherichia Coli-Quanti-Tray	14.4	Sample	P	0 - 80
2333240	Escherichia Coli-Quanti-Tray	24.6	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P414926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2333241	HF183-qPCR	0.517	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P414926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2333241	GULL2-qPCR	1.77	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P414926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2333241	GFD-qPCR	8.88	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P414926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P414926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2333241	BacR-qPCR	4.22	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P414926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2333241	DG3-qPCR	3.17	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2333241
Field Sample ID: G3TLHR0002

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.0	SKETA-qPCR	123	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	128	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	132	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	128	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	119	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	120	P	50 - 300

Lab Sample ID: 2333242
Field Sample ID: G3TLHR0003

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	122	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	136	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	131	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	119	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision	
							LCS	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	87.4					3.71	
	Chlorophyll-a, Uncorrected						4.38	
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray						24.6	14.4
SOP-PCR-1.0	HF183-qPCR	86.1	94.0	87.1	86.6	85.8		0.517
				92.1				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.2	GULL2-qPCR	88.3	101	79.2	93.2	94.9		1.77
SOP-PCR-1.3	GFD-qPCR	86.4	72.4	82.4	90.0	90.0		8.88
SOP-PCR-1.4	BacR-qPCR	103	101	84.9	81.4	87.9		4.22
SOP-PCR-1.5	DG3-qPCR	97.5	98.5	91.9	89.0	93.8		3.17

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2333234, 2333235, 2333236, 2333237
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2333238, 2333239, 2333240, 2333255
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2333241, 2333242
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2333241, 2333242
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2333241, 2333242
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2333241, 2333242
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2333241, 2333242

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	06/08/2022	06/09/2022 13:25	Tynan A Branch	06/21/2022 10:06	Jillian G Hanley	2333234, 2333235, 2333236, 2333237
SM 9223 B Quanti-Tray	06/08/2022	06/08/2022 16:28	Ethan Wickline	06/09/2022 11:05	Carina A. Tull	2333238, 2333239, 2333240, 2333255
SOP-PCR-1.0	06/08/2022	06/09/2022 09:45	Claudia Castro	07/08/2022 11:03	Roberta Tatti	2333241, 2333242
SOP-PCR-1.2	06/08/2022	06/09/2022 09:45	Claudia Castro	07/19/2022 14:01	Roberta Tatti	2333241, 2333242
SOP-PCR-1.3	06/08/2022	06/09/2022 09:45	Claudia Castro	07/14/2022 14:38	Roberta Tatti	2333241, 2333242
SOP-PCR-1.4	06/08/2022	06/09/2022 09:45	Claudia Castro	07/13/2022 10:28	Roberta Tatti	2333241, 2333242
SOP-PCR-1.5	06/08/2022	06/09/2022 09:45	Claudia Castro	07/14/2022 09:29	Roberta Tatti	2333241, 2333242