

Biological Analysis Report

TLH-ROC-2022-05-04-03

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-2022-02-21-76**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 14-JUN-2022 17:08



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: Beaver Creek

Collection Date/Time: 05/04/2022 12:10

Field ID: G1TLHR0165

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2324759	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.5	U	ug/L	P413775	
		Phaeophytin-a	1.6	U	ug/L	P413775	
		Chlorophyll-a, Uncorrected	1.1	U	ug/L	P413775	
2324760	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1046.2		MPN/100 mL	P413523	
2324761	SOP-PCR-1.0	HF183-qPCR**	2.2E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.2	GULL2-qPCR**	2.4E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.3	GFD-qPCR**	480	U	TSC/100 mL	P413055	
	SOP-PCR-1.4	BacR-qPCR**	2.0E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.5	DG3-qPCR**	1.7E+03	U	TSC/100 mL	P413055	

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: P413775

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: SM 9223 B Quanti-Tray

Batch ID: P413523

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

Reference Method: SOP-PCR-1.0

Batch ID: P413055

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

Reference Method: SOP-PCR-1.2

Batch ID: P413055

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

Reference Method: SOP-PCR-1.3

Batch ID: P413055

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

Reference Method: SOP-PCR-1.4

Batch ID: P413055

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P413055

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

Reference Method: SOP-PCR-1.5
Batch ID: P413055

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: P413775

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	93.4		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	91.0	72.7	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	106	70.9	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	89.5	80.1	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	96.6	63.8	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	100	87.0	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	HF183-qPCR	85.0	85.9	P/P	50 - 175
2323219	HF183-qPCR	83.9		P	50 - 175
2323353	HF183-qPCR	82.9		P	50 - 175
2323611	HF183-qPCR	80.0		P	50 - 175
2323612	HF183-qPCR	85.5		P	50 - 175
2323613	HF183-qPCR	76.9		P	50 - 175
2323614	HF183-qPCR	76.3		P	50 - 175
2323751	HF183-qPCR	75.8		P	50 - 175
2324122	HF183-qPCR	84.2		P	50 - 175
2324123	HF183-qPCR	81.2		P	50 - 175
2324124	HF183-qPCR	86.8		P	50 - 175
2324165	HF183-qPCR	84.1		P	50 - 175
2324761	HF183-qPCR	73.5		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	GULL2-qPCR	88.4	78.8	P/P	50 - 300
2323611	GULL2-qPCR	55.5		P	50 - 300
2323612	GULL2-qPCR	52.8		P	50 - 300
2323613	GULL2-qPCR	68.0		P	50 - 300
2323614	GULL2-qPCR	53.4		P	50 - 300
2323751	GULL2-qPCR	60.1		P	50 - 300
2324122	GULL2-qPCR	63.7		P	50 - 300
2324124	GULL2-qPCR	58.4		P	50 - 300
2324165	GULL2-qPCR	93.1		P	50 - 300
2324761	GULL2-qPCR	68.8		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	GFD-qPCR	99.3	92.4	P/P	50 - 175
2323611	GFD-qPCR	102		P	50 - 175
2323612	GFD-qPCR	99.6		P	50 - 175
2323613	GFD-qPCR	103		P	50 - 175
2323614	GFD-qPCR	94.2		P	50 - 175
2323751	GFD-qPCR	99.5		P	50 - 175
2324122	GFD-qPCR	91.5		P	50 - 175
2324124	GFD-qPCR	79.3		P	50 - 175
2324165	GFD-qPCR	97.7		P	50 - 175
2324761	GFD-qPCR	93.6		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	BacR-qPCR	72.2	79.0	P/P	50 - 175
2323219	BacR-qPCR	55.0		P	50 - 175
2323353	BacR-qPCR	58.1		P	50 - 175
2323611	BacR-qPCR	57.6		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323612	BacR-qPCR	52.4		P	50 - 175
2323613	BacR-qPCR	58.5		P	50 - 175
2323614	BacR-qPCR	57.8		P	50 - 175
2323751	BacR-qPCR	56.5		P	50 - 175
2324122	BacR-qPCR	57.9		P	50 - 175
2324123	BacR-qPCR	62.8		P	50 - 175
2324124	BacR-qPCR	63.6		P	50 - 175
2324165	BacR-qPCR	85.4		P	50 - 175
2324761	BacR-qPCR	52.6		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	DG3-qPCR	95.0	92.4	P/P	50 - 175
2323219	DG3-qPCR	40.1		F	50 - 175
2323353	DG3-qPCR	91.1		P	50 - 175
2323611	DG3-qPCR	85.4		P	50 - 175
2323612	DG3-qPCR	78.8		P	50 - 175
2323613	DG3-qPCR	91.2		P	50 - 175
2323614	DG3-qPCR	91.6		P	50 - 175
2323751	DG3-qPCR	91.8		P	50 - 175
2324122	DG3-qPCR	98.2		P	50 - 175
2324123	DG3-qPCR	94.0		P	50 - 175
2324124	DG3-qPCR	104		P	50 - 175
2324165	DG3-qPCR	98.2		P	50 - 175
2324761	DG3-qPCR	92.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P413523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324067	Escherichia Coli-Quanti-Tray	18.2	Sample	P	0 - 80
2324452	Escherichia Coli-Quanti-Tray	17.2	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	HF183-qPCR	1.04	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P413055

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-1.2
 Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	GULL2-qPCR	11.5	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	GFD-qPCR	7.22	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	BacR-qPCR	9.11	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
 Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	DG3-qPCR	2.78	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2324761
 Field Sample ID: G1TLHR0165

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	84.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	112	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	121	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	74.7	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	93.4								
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray							18.2	17.2	
SOP-PCR-1.0	HF183-qPCR	72.7	91.0	85.0	85.9	83.9				1.04
SOP-PCR-1.2	GULL2-qPCR	70.9	106	88.4	78.8	55.5				11.5
				52.8						

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.3	GFD-qPCR	80.1	89.5	99.3	92.4	102		7.22
SOP-PCR-1.4	BacR-qPCR	63.8	96.6	72.2	79.0	55.0		9.11
SOP-PCR-1.5	DG3-qPCR	87.0	100	95.0	92.4	40.1		2.78

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2324759
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2324760
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2324761
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2324761
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2324761
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2324761
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2324761

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	05/04/2022	05/04/2022 15:40	Jillian G Hanley	05/11/2022 15:16	Jillian G Hanley	2324759
SM 9223 B Quanti-Tray	05/04/2022	05/04/2022 16:22	Caitlyn Owens	05/05/2022 10:48	Austin Nolan	2324760
SOP-PCR-1.0	05/04/2022	05/05/2022 09:25	Claudia Castro	06/06/2022 09:14	DeAsia Armster	2324761
SOP-PCR-1.2	05/04/2022	05/05/2022 09:25	Claudia Castro	06/07/2022 09:23	DeAsia Armster	2324761
SOP-PCR-1.3	05/04/2022	05/05/2022 09:25	Claudia Castro	06/07/2022 11:06	DeAsia Armster	2324761
SOP-PCR-1.4	05/04/2022	05/05/2022 09:25	Claudia Castro	06/06/2022 11:18	Roberta Tatti	2324761
SOP-PCR-1.5	05/04/2022	05/05/2022 09:25	Claudia Castro	06/06/2022 14:10	Roberta Tatti	2324761