

Biological Analysis Report

TLH-ROC-2021-06-23-02

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

Event Description: **Run 16**
Request ID: **RQ-2021-04-19-25**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Bench Biology & Aquatic
Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 06-AUG-2021 11:57



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: Mosquito Creek @ SR269

Collection Date/Time: 06/23/2021 10:15

Field ID: G2TLHR0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2256758	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.2	I	ug/L	P400561	
		Phaeophytin-a	2.8	U	ug/L	P400561	
		Chlorophyll-a, Uncorrected	4.1	I	ug/L	P400561	
2256759	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2495.0		MPN/100 mL	P400266	
2256760	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P400109	
	SOP-PCR-1.4	BacR-qPCR**	1.9E+03	I J	TSC/100 mL	P400109	MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P400109	

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.

SOP-PCR-1.4: Duplicate was analyzed and result is 1.5E+03 U. Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P400561

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.96	U	ug/L
Chlorophyll-a, Uncorrected	0.70	U	ug/L
Phaeophytin-a	1.0	U	ug/L

Reference Method: SM 9223 Quanti-Tray

Batch ID: P400266

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

Reference Method: SOP-PCR-1.0

Batch ID: P400109

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

Reference Method: SOP-PCR-1.4

Batch ID: P400109

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

Reference Method: SOP-PCR-1.5

Batch ID: P400109

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P400561

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	100		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P400109

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	76.8	126	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P400109

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	85.5	59.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P400109

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	132	130	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P400109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256760	HF183-qPCR	76.1	81.1	P/P	50 - 175
2256949	HF183-qPCR	77.4		P	50 - 175
2256950	HF183-qPCR	77.9		P	50 - 175
2257598	HF183-qPCR	57.9		P	50 - 175
2257599	HF183-qPCR	77.0		P	50 - 175
2257600	HF183-qPCR	69.0		P	50 - 175
2257601	HF183-qPCR	74.0		P	50 - 175
2257805	HF183-qPCR	65.6		P	50 - 175
2257983	HF183-qPCR	60.3		P	50 - 175
2257984	HF183-qPCR	59.1		P	50 - 175
2257985	HF183-qPCR	66.4		P	50 - 175
2257986	HF183-qPCR	57.7		P	50 - 175
2257987	HF183-qPCR	55.5		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P400109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256760	BacR-qPCR	54.6	46.8	P/F	50 - 175
2256949	BacR-qPCR	68.4		P	50 - 175
2256950	BacR-qPCR	61.3		P	50 - 175
2257598	BacR-qPCR	58.6		P	50 - 175
2257599	BacR-qPCR	60.4		P	50 - 175
2257600	BacR-qPCR	63.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4

Batch ID: P400109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257601	BacR-qPCR	58.7		P	50 - 175
2257805	BacR-qPCR	56.5		P	50 - 175
2257983	BacR-qPCR	53.8		P	50 - 175
2257984	BacR-qPCR	63.8		P	50 - 175
2257985	BacR-qPCR	73.1		P	50 - 175
2257986	BacR-qPCR	65.4		P	50 - 175
2257987	BacR-qPCR	73.7		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P400109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256760	DG3-qPCR	152	153	P/P	50 - 175
2256949	DG3-qPCR	149		P	50 - 175
2256950	DG3-qPCR	161		P	50 - 175
2257598	DG3-qPCR	139		P	50 - 175
2257599	DG3-qPCR	164		P	50 - 175
2257600	DG3-qPCR	155		P	50 - 175
2257601	DG3-qPCR	152		P	50 - 175
2257805	DG3-qPCR	140		P	50 - 175
2257983	DG3-qPCR	145		P	50 - 175
2257984	DG3-qPCR	136		P	50 - 175
2257985	DG3-qPCR	151		P	50 - 175
2257986	DG3-qPCR	137		P	50 - 175
2257987	DG3-qPCR	137		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P400561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256894	Chlorophyll-a, Corrected	4.27	Sample	P	0 - 25
2256894	Chlorophyll-a, Uncorrected	4.94	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray

Batch ID: P400266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256480	Escherichia Coli-Quanti-Tray	0.0	Sample	P	0 - 80
2256769	Escherichia Coli-Quanti-Tray	45.3	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0

Batch ID: P400109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256760	HF183-qPCR	6.32	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P400109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256760	BacR-qPCR	15.4	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P400109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256760	DG3-qPCR	0.821	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2256760
Field Sample ID: G2TLHR0015

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.4	P	50 - 300
SOP-PCR-1.0	SKETA-qPCR	89.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	94.0	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	102	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	100						4.27		
	Chlorophyll-a, Uncorrected							4.94		
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							0.0	45.3	
SOP-PCR-1.0	HF183-qPCR	126	76.8	76.1	81.1	77.4				6.32
SOP-PCR-1.4	BacR-qPCR	59.9	85.5	54.6	46.8	68.4				15.4
								61.3		
SOP-PCR-1.5	DG3-qPCR	130	132	152	153	149				0.821
								161		

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2256758
SM 9223 Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2256759
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2256760

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2256760
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2256760

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	06/23/2021	06/23/2021 15:16	Joel Wharton	07/02/2021 08:50	Jessica Fetgatter	2256758
SM 9223 Quanti-Tray	06/23/2021	06/23/2021 15:22	Mia Jane Harrell	06/24/2021 11:32	Mia Jane Harrell	2256759
SOP-PCR-1.0	06/23/2021	06/23/2021 14:59	Amy M Gordon	07/06/2021 10:39	DeAsia Armster	2256760
SOP-PCR-1.4	06/23/2021	06/23/2021 14:59	Amy M Gordon	07/07/2021 12:00	DeAsia Armster	2256760
SOP-PCR-1.5	06/23/2021	06/23/2021 14:59	Amy M Gordon	07/07/2021 14:50	DeAsia Armster	2256760