

Biological Analysis Report

TLH-ROC-2019-09-10-01

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

Event Description: **WBID 758**
Request ID: **RQ-2019-09-02-70**
Customer: **TLH-ROC**
Project ID: **SMP**

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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 15-OCT-2019 21:34



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: 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: $1.3\text{E}+03$, 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: Lexington Creek 100m downstream N Meridian Rd **Collection Date/Time: 09/10/2019 09:15**

Field ID: G1TLHR0109

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117481	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.62	U	ug/L	P370559	
		Phaeophytin-a	0.68	U	ug/L	P370559	
		Chlorophyll-a, Uncorrected	0.45	U	ug/L	P370559	
2117482	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	250.4	A	MPN/100 mL	P370937	
2117486	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P370409	
	SOP-PCR-1.3	GFD-purified-qPCR**	2.26E+03	J	TSC/100 mL	P370173	MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P370409	
	SOP-PCR-1.7	HUMM2-qPCR**	630	U	TSC/100 mL	P370409	LCS, MS
2117487	SOP-PCR-1.1	HF183-PMA treated-qPCR**	24	UJ	GEU/100 mL	P369894	SUR
		HF183-purified-untreated-qPCR**	24	UJ	GEU/100 mL	P369894	LCS, SUR

Ref. Method and Comment:

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.1: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P370559

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.62	U	ug/L
Chlorophyll-a, Uncorrected	0.45	U	ug/L
Phaeophytin-a	0.68	U	ug/L

Reference Method: SM 9223 Quanti-Tray

Batch ID: P370937

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

Reference Method: SOP-PCR-1.1

Batch ID: P369894

Component	Result	Code	Units
HF183-purified-untreated-qPCR	47	U	GEU/100 mL

Reference Method: SOP-PCR-1.2

Batch ID: P370409

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3

Batch ID: P370173

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
 Batch ID: P370409

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

Reference Method: SOP-PCR-1.7
 Batch ID: P370409

Component	Result	Code	Units
HUMM2-qPCR	1.3E+03	U	TSC/100 mL
HUMM2-qPCR	1.3E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P370559

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	90.2		P	84 - 116

Reference Method: SOP-PCR-1.1
 Batch ID: P369894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-untreated-qPCR	110	19.0	P/F	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P370409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	75.7	57.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P370173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	133	78.3	P/P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P370409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	95.9	131	P/P	50 - 175

Reference Method: SOP-PCR-1.7
 Batch ID: P370409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HUMM2-qPCR	180	71.6	F/P	50 - 175
HUMM2-qPCR	176	68.5	F/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.1

Batch ID: P369894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115573	HF183-PMA treated-qPCR	104		P	50 - 175
2115573	HF183-purified-untreated-qPCR	103		P	50 - 175
2115574	HF183-PMA treated-qPCR	94.2	101	P/P	50 - 175
2115574	HF183-purified-untreated-qPCR	101	96.1	P/P	50 - 175
2117396	HF183-PMA treated-qPCR	92.7		P	50 - 175
2117396	HF183-purified-untreated-qPCR	94.6		P	50 - 175
2117397	HF183-PMA treated-qPCR	99.2		P	50 - 175
2117397	HF183-purified-untreated-qPCR	88.6		P	50 - 175
2117398	HF183-PMA treated-qPCR	93.1		P	50 - 175
2117398	HF183-purified-untreated-qPCR	103		P	50 - 175
2117487	HF183-PMA treated-qPCR	100		P	50 - 175
2117487	HF183-purified-untreated-qPCR	96.8		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117394	GULL2-qPCR	77.8	92.7	P/P	50 - 300
2117486	GULL2-qPCR	158		P	50 - 300
2117509	GULL2-qPCR	68.6		P	50 - 300
2117917	GULL2-qPCR	116		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P370173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112055	GFD-purified-qPCR	275		F	50 - 175
2112180	GFD-purified-qPCR	333		F	50 - 175
2116489	GFD-purified-qPCR	383		F	50 - 175
2116490	GFD-purified-qPCR	351	366	F/F	50 - 175
2117393	GFD-purified-qPCR	332		F	50 - 175
2117394	GFD-purified-qPCR	366		F	50 - 175
2117395	GFD-purified-qPCR	324		F	50 - 175
2117486	GFD-purified-qPCR	386		F	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117394	DG3-qPCR	112	106	P/P	50 - 175
2117486	DG3-qPCR	101		P	50 - 175
2117509	DG3-qPCR	109		P	50 - 175
2117914	DG3-qPCR	111		P	50 - 175
2117915	DG3-qPCR	107		P	50 - 175
2117916	DG3-qPCR	93.7		P	50 - 175
2117917	DG3-qPCR	91.0		P	50 - 175
2117972	DG3-qPCR	85.5		P	50 - 175
2117974	DG3-qPCR	128		P	50 - 175
2117980	DG3-qPCR	86.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.7
Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117394	HUMM2-qPCR	55.5	49.8	P/F	50 - 175
2117486	HUMM2-qPCR	55.4		P	50 - 175
2117972	HUMM2-qPCR	53.8		P	50 - 175
2117974	HUMM2-qPCR	59.3		P	50 - 175
2117980	HUMM2-qPCR	63.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P370559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117312	Chlorophyll-a, Corrected	5.83	Sample	P	0 - 25
2117312	Chlorophyll-a, Uncorrected	6.08	Sample	P	0 - 25
2117312	Phaeophytin-a	7.65	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray
Batch ID: P370937

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117313	Escherichia Coli-Quanti-Tray	12.2	Sample	P	0 - 80
2117482	Escherichia Coli-Quanti-Tray	32.4	Sample	P	0 - 80

Reference Method: SOP-PCR-1.1
Batch ID: P369894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115574	HF183-PMA treated-qPCR	6.69	Spike	P	0 - 25
2115574	HF183-purified-untreated-qPCR	4.80	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P370409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117394	GULL2-qPCR	17.5	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P370173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2116490	GFD-purified-qPCR	4.29	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.5
 Batch ID: P370409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117394	DG3-qPCR	5.18	Spike	P	0 - 25

Reference Method: SOP-PCR-1.7
 Batch ID: P370409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117394	HUMM2-qPCR	11.0	Spike	P	0 - 25
2117978	HUMM2-qPCR	12.0	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2117486
 Field Sample ID: G1TLHR0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	114	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	127	P	50 - 300
SOP-PCR-1.7	SKETA-qPCR	119	P	50 - 300

Lab Sample ID: 2117487
 Field Sample ID: G1TLHR0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.1	SKETA-qPCR	22.1	F	50 - 300
SOP-PCR-1.1	SKETA-qPCR	22.3	F	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision	
				LCS			SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	90.2					5.83	
	Chlorophyll-a, Uncorrected						6.08	
	Phaeophytin-a						7.65	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray						32.4	12.2
SOP-PCR-1.1	HF183-PMA treated-qPCR			104	94.2	101		6.69
				92.7				
	HF183-purified-untreated-qPCR	19.0	110	103	101	96.1		4.80
				94.6				
SOP-PCR-1.2	GULL2-qPCR	57.4	75.7	77.8	92.7	158		17.5
				68.6				
SOP-PCR-1.3	GFD-purified-qPCR	78.3	133	383	351	366		4.29
				332				
SOP-PCR-1.5	DG3-qPCR	131	95.9	112	106	101		5.18
				109				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.7	HUMM2-qPCR	180	68.5	176	55.5	49.8	55.4			11.0 12.0
		71.6			53.8					

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2117481
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2117482
SOP-PCR-1.1 / E31780	Quantitative Differentiation of live human-specific Bacteroides cells with Propidium Monazide and quantitative polymerase chain reaction	2117487
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2117486
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2117486
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2117486
SOP-PCR-1.7 / E31780	Detection and quantification of human-specific HUMM2 genetic marker with quantitative polymerase chain reaction	2117486

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	09/10/2019	09/10/2019 15:22	Yuliya Danyuk	09/11/2019 15:05	Peterson Janvier	2117481
SM 9223 Quanti-Tray	09/10/2019	09/10/2019 15:37	Jessica Sherman	09/11/2019 10:10	Jessica Fetgatter	2117482
SOP-PCR-1.1	09/10/2019	09/10/2019 14:00	Angela Smith	10/03/2019 13:08	Mailin Lopez	2117487
SOP-PCR-1.2	09/10/2019	09/10/2019 14:00	Lauren Campbell	10/10/2019 09:16	Mailin Lopez	2117486
SOP-PCR-1.3	09/10/2019	09/10/2019 14:00	Angela Smith	09/19/2019 14:15	Mailin Lopez	2117486
SOP-PCR-1.5	09/10/2019	09/10/2019 14:00	Lauren Campbell	10/07/2019 14:43	Lauren Campbell	2117486
SOP-PCR-1.7	09/10/2019	09/10/2019 14:00	Lauren Campbell	10/02/2019 10:08	Lauren Campbell	2117486