

Biological Analysis Report

TLH-ROC-2019-07-16-01

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-2019-07-08-52**
Customer: **TLH-ROC**
Project ID: **SMP**

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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 16-AUG-2019 13:52

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line underneath it.

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: LEXINGTON CREEK @ TIMBERLANE RD

Collection Date/Time: 07/16/2019 09:35

Field ID: G1TLHR0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2103300	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.83	I	ug/L	P368070	
		Phaeophytin-a	0.90	U	ug/L	P368070	
		Chlorophyll-a, Uncorrected	0.68	I	ug/L	P368070	
2103302	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	J	MPN/100 mL	P367638	
2103315	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P367129	
	SOP-PCR-1.3	GFD-purified-qPCR**	470	IJ	TSC/100 mL	P367347	LCS, MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P367129	
	SOP-PCR-1.7	HUMM2-qPCR**	5.80E+04		TSC/100 mL	P367129	
2103316	SOP-PCR-1.1	HF183-PMA treated-qPCR**	1.47E+04	J	GEU/100 mL	P367059	LCS, SUR
		HF183-purified-untreated-qPCR**	5.63E+04	J	GEU/100 mL	P367059	LCS, SUR

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.

SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result may be higher than reported.

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A93006

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.

**Sample Location: LEXINGTON CREEK 100M DOWNSTREAM N
 MERIDIAN RD**

Collection Date/Time: 07/16/2019 10:00

Field ID: G1TLHR0109

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2103301	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.82	U	ug/L	P368065	
		Phaeophytin-a	0.90	U	ug/L	P368065	
		Chlorophyll-a, Uncorrected	0.60	U	ug/L	P368065	
2103303	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	137.6		MPN/100 mL	P367638	
2103317	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P367129	
	SOP-PCR-1.3	GFD-purified-qPCR**	230	I	TSC/100 mL	P367347	LCS, MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P367129	
	SOP-PCR-1.7	HUMM2-qPCR**	630	U	TSC/100 mL	P367129	
2103318	SOP-PCR-1.1	HF183-PMA treated-qPCR**	100	IJ	GEU/100 mL	P367059	LCS, SUR
		HF183-purified-untreated-qPCR**	440	J	GEU/100 mL	P367059	LCS, SUR

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-1.2: Precision data unavailable for Analysis Batch A93006

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: P368065

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

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P368070

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 Quanti-Tray
Batch ID: P367638

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

Reference Method: SOP-PCR-1.1
Batch ID: P367059

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

Reference Method: SOP-PCR-1.2
Batch ID: P367129

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

Reference Method: SOP-PCR-1.3
Batch ID: P367347

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

Reference Method: SOP-PCR-1.5
Batch ID: P367129

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

Reference Method: SOP-PCR-1.7
Batch ID: P367129

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P368065

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	88.2		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P368070

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	89.9		P	84 - 116

Reference Method: SOP-PCR-1.1
 Batch ID: P367059

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-PMA treated-qPCR	153	25.4	P/F	50 - 175
HF183-purified-untreated-qPCR	153	25.4	P/F	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P367129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	119	243	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P367347

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	54.0	94.3	P/P	50 - 175
GFD-purified-qPCR	21.1	106	F/P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P367129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	87.2	82.7	P/P	50 - 175

Reference Method: SOP-PCR-1.7
 Batch ID: P367129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HUMM2-qPCR	68.9	84.1	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.1
 Batch ID: P367059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2102217	HF183-PMA treated-qPCR	151	146	P/P	50 - 175
2102217	HF183-purified-untreated-qPCR	158	144	P/P	50 - 175
2102218	HF183-PMA treated-qPCR	137		P	50 - 175
2102218	HF183-purified-untreated-qPCR	141		P	50 - 175
2102219	HF183-PMA treated-qPCR	133		P	50 - 175
2102219	HF183-purified-untreated-qPCR	127		P	50 - 175
2102679	HF183-PMA treated-qPCR	127		P	50 - 175
2102679	HF183-purified-untreated-qPCR	132		P	50 - 175
2103316	HF183-PMA treated-qPCR	126		P	50 - 175
2103316	HF183-purified-untreated-qPCR	118		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.1

Batch ID: P367059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2103318	HF183-PMA treated-qPCR	128		P	50 - 175
2103318	HF183-purified-untreated-qPCR	126		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P367129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099579	GULL2-qPCR	106		P	50 - 300
2103315	GULL2-qPCR	120		P	50 - 300
2103317	GULL2-qPCR	132		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P367347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2098288	GFD-purified-qPCR	204		F	50 - 175
2098810	GFD-purified-qPCR	170		P	50 - 175
2098811	GFD-purified-qPCR	217		F	50 - 175
2098812	GFD-purified-qPCR	204		F	50 - 175
2099579	GFD-purified-qPCR	195		F	50 - 175
2100818	GFD-purified-qPCR	221		F	50 - 175
2103315	GFD-purified-qPCR	247	230	F/F	50 - 175
2103317	GFD-purified-qPCR	158		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P367129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2102672	DG3-qPCR	91.0	82.4	P/P	50 - 175
2102673	DG3-qPCR	89.2		P	50 - 175
2102674	DG3-qPCR	78.2		P	50 - 175
2103315	DG3-qPCR	95.5		P	50 - 175
2103317	DG3-qPCR	84.1		P	50 - 175

Reference Method: SOP-PCR-1.7

Batch ID: P367129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2102672	HUMM2-qPCR	64.0	70.6	P/P	50 - 175
2102673	HUMM2-qPCR	77.8		P	50 - 175
2102674	HUMM2-qPCR	73.4		P	50 - 175
2103315	HUMM2-qPCR	73.2		P	50 - 175
2103317	HUMM2-qPCR	71.3		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P368065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2103328	Chlorophyll-a, Corrected	3.72	Sample	P	0 - 25
2103328	Chlorophyll-a, Uncorrected	3.47	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P368070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2103109	Chlorophyll-a, Corrected	11.6	Sample	P	0 - 25
2103109	Chlorophyll-a, Uncorrected	10.6	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray
Batch ID: P367638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2102947	Escherichia Coli-Quanti-Tray	7.24	Sample	P	0 - 80
2103514	Escherichia Coli-Quanti-Tray	43.5	Sample	P	0 - 80
2103589	Escherichia Coli-Quanti-Tray	37.4	Sample	P	0 - 80

Reference Method: SOP-PCR-1.1
Batch ID: P367059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2102217	HF183-PMA treated-qPCR	3.16	Spike	P	0 - 25
2102217	HF183-purified-untreated-qPCR	9.01	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P367347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2103315	GFD-purified-qPCR	7.21	Spike	P	0 - 25
2105440	GFD-purified-qPCR	17.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P367129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2102672	DG3-qPCR	9.86	Spike	P	0 - 25

Reference Method: SOP-PCR-1.7
Batch ID: P367129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2102672	HUMM2-qPCR	9.87	Spike	P	0 - 25

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2103315
Field Sample ID: G1TLHR0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	130	P	50 - 300
SOP-PCR-1.7	SKETA-qPCR	113	P	50 - 300

Lab Sample ID: 2103316
Field Sample ID: G1TLHR0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.1	SKETA-qPCR	10.8	F	50 - 300
SOP-PCR-1.1	SKETA-qPCR	10.3	F	30 - 300

Lab Sample ID: 2103317
Field Sample ID: G1TLHR0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	123	P	50 - 300
SOP-PCR-1.7	SKETA-qPCR	105	P	50 - 300

Lab Sample ID: 2103318
Field Sample ID: G1TLHR0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.1	SKETA-qPCR	11.5	F	50 - 300
SOP-PCR-1.1	SKETA-qPCR	11.1	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision	
									SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	88.2							3.72	
	Chlorophyll-a, Corrected	89.9							11.6	
	Chlorophyll-a, Uncorrected								3.47	
	Chlorophyll-a, Uncorrected								10.6	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray								7.24	43.5
									37.4	
SOP-PCR-1.1	HF183-PMA treated-qPCR	25.4	153		151	146	137			3.16
	HF183-purified-untreated-qPCR	25.4	153		158	144	141			9.01
SOP-PCR-1.2	GULL2-qPCR	243	119		106	120	132			
SOP-PCR-1.3	GFD-purified-qPCR	54.0	106	21.1	247	230	204			7.21
		94.3			170					17.7
SOP-PCR-1.5	DG3-qPCR	82.7	87.2		91.0	82.4	89.2			9.86
					78.2					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.7	HUMM2-qPCR	84.1	68.9	64.0	70.6	77.8			9.87
				73.4					

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	2103300, 2103301
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2103302, 2103303
SOP-PCR-1.1 / E31780	Quantitative Differentiation of live human-specific Bacteroides cells with Propidium Monazide and quantitative polymerase chain reaction	2103316, 2103318
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2103315, 2103317
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2103315, 2103317
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2103315, 2103317
SOP-PCR-1.7 / E31780	Detection and quantification of human-specific HUMM2 genetic marker with quantitative polymerase chain reaction	2103315, 2103317

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	07/16/2019	07/16/2019 14:02	Edwin Gonzalez-Soto	07/25/2019 08:56	Yuliya Danyuk	2103300
	07/16/2019	07/16/2019 14:02	Edwin Gonzalez-Soto	07/25/2019 12:26	Yuliya Danyuk	2103301
SM 9223 Quanti-Tray	07/16/2019	07/16/2019 16:38	Jessica Fetgatter	07/17/2019 11:30	Jessica Fetgatter	2103302, 2103303
SOP-PCR-1.1	07/16/2019	07/16/2019 15:15	Sarah Menz	07/31/2019 09:13	Mailin Lopez	2103316, 2103318
SOP-PCR-1.2	07/16/2019	07/16/2019 12:34	Angela Smith	07/24/2019 08:07	Mailin Lopez	2103315
	07/16/2019	07/16/2019 15:30	Angela Smith	07/24/2019 08:07	Mailin Lopez	2103317
SOP-PCR-1.3	07/16/2019	07/16/2019 15:15	Angela Smith	07/25/2019 11:09	Mailin Lopez	2103315
	07/16/2019	07/16/2019 15:15	Angela Smith	08/13/2019 14:57	Mailin Lopez	2103317
SOP-PCR-1.5	07/16/2019	07/16/2019 15:30	Angela Smith	07/31/2019 13:17	Mailin Lopez	2103315, 2103317
SOP-PCR-1.7	07/16/2019	07/16/2019 12:34	Angela Smith	07/25/2019 08:19	Mailin Lopez	2103315
	07/16/2019	07/16/2019 15:30	Angela Smith	07/25/2019 08:19	Mailin Lopez	2103317