

Biological Analysis Report

WAS-SECT-2019-12-11-03

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

Event Description: **Group 2**
Request ID: **RQ-2019-11-04-27**
Customer: **WAS-SECT**
Project ID: **SMP**

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

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Andrew Tintle - Aquatic Toxicology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 10-JAN-2020 09:50

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: Double Branch at CR159

Collection Date/Time: 12/11/2019 12:03

Field ID: G1WA0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2143069	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.7	I	ug/L	P376145	
		Phaeophytin-a	1.5	U	ug/L	P376145	
		Chlorophyll-a, Uncorrected	2.9	I	ug/L	P376145	
2143072	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	178.6	A	MPN/100 mL	P375950	

Ref. Method and Comment:

SM 10200 H (mod.): Lab dup result is 2.6 I for Chl-a Corrected, 2.9 I for Chl-a Uncorrected, and 1.5 U for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.

Sample Location: Lewis Creek Upstream of 157

Collection Date/Time: 12/11/2019 12:36

Field ID: G1WA0075

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2143070	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.2	I	ug/L	P376145	
		Phaeophytin-a	1.4	I	ug/L	P376145	
		Chlorophyll-a, Uncorrected	2.1		ug/L	P376145	
2143073	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	50.4		MPN/100 mL	P375950	

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: Richlander Creek at CR 65B

Collection Date/Time: 12/11/2019 11:29

Field ID: G1WA0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2143071	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.5	U	ug/L	P376145	
		Phaeophytin-a	1.6	U	ug/L	P376145	
		Chlorophyll-a, Uncorrected	1.1	U	ug/L	P376145	
2143074	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	387.3		MPN/100 mL	P375950	
2143076	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P375600	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P375600	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P376578	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P375600	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P375600	

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

Sample Location: Coon Creek 100 meters upstream of CR 69

Collection Date/Time: 12/11/2019 10:29

Field ID: G2WA0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2143075	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	504.0		MPN/100 mL	P375950	

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P376145

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.76	U	ug/L
Chlorophyll-a, Uncorrected	0.55	U	ug/L
Phaeophytin-a	0.82	U	ug/L

Reference Method: SM 9223 Quanti-Tray
Batch ID: P375950

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

Reference Method: SOP-PCR-1.0
Batch ID: P375600

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P375600

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

Reference Method: SOP-PCR-1.3
Batch ID: P376578

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

Reference Method: SOP-PCR-1.4
Batch ID: P375600

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

Reference Method: SOP-PCR-1.5
Batch ID: P375600

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: P376145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	96.0		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P375600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	121	113	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P375600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	89.3	128	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P376578

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	148	20.4	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P375600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	107	82.7	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P375600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	92.6	114	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P375600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2142386	HF183-qPCR	98.5		P	50 - 175
2142578	HF183-qPCR	121		P	50 - 175
2142579	HF183-qPCR	101		P	50 - 175
2142633	HF183-qPCR	98.4		P	50 - 175
2142634	HF183-qPCR	98.4		P	50 - 175
2142645	HF183-qPCR	113		P	50 - 175
2142646	HF183-qPCR	109		P	50 - 175
2142647	HF183-qPCR	91.8	91.1	P/P	50 - 175
2143076	HF183-qPCR	103		P	50 - 175
2143091	HF183-qPCR	109		P	50 - 175
2143092	HF183-qPCR	116		P	50 - 175
2143093	HF183-qPCR	112		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P375600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2142579	GULL2-qPCR	70.6		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P375600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143076	GULL2-qPCR	68.7		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P376578

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2142579	GFD-purified-qPCR	182		F	50 - 175
2143076	GFD-purified-qPCR	198		F	50 - 175
2146412	GFD-purified-qPCR	204	183	F/F	50 - 175
2146413	GFD-purified-qPCR	157		P	50 - 175
2146414	GFD-purified-qPCR	199		F	50 - 175
2146415	GFD-purified-qPCR	182		F	50 - 175
2146689	GFD-purified-qPCR	189		F	50 - 175
2146690	GFD-purified-qPCR	175		F	50 - 175
2146699	GFD-purified-qPCR	197		F	50 - 175
2146700	GFD-purified-qPCR	178		F	50 - 175
2146713	GFD-purified-qPCR	174		P	50 - 175
2146714	GFD-purified-qPCR	194		F	50 - 175
2146859	GFD-purified-qPCR	199		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P375600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2142386	BacR-qPCR	70.4		P	50 - 175
2142579	BacR-qPCR	113		P	50 - 175
2142633	BacR-qPCR	74.6		P	50 - 175
2142634	BacR-qPCR	76.0		P	50 - 175
2142645	BacR-qPCR	93.8		P	50 - 175
2142646	BacR-qPCR	83.5		P	50 - 175
2142647	BacR-qPCR	79.3	80.2	P/P	50 - 175
2143076	BacR-qPCR	92.9		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P375600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2142579	DG3-qPCR	101		P	50 - 175
2142633	DG3-qPCR	64.5		P	50 - 175
2142634	DG3-qPCR	82.0		P	50 - 175
2143076	DG3-qPCR	79.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray

Batch ID: P375950

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2142329	Escherichia Coli-Quanti-Tray	7.83	Sample	P	0 - 80

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
 Batch ID: P375950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143072	Escherichia Coli-Quanti-Tray	7.17	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
 Batch ID: P375600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2142647	HF183-qPCR	0.727	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P375600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140492	GULL2-qPCR	7.20	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P376578

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2146412	GFD-purified-qPCR	10.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P375600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2142647	BacR-qPCR	1.05	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
 Batch ID: P375600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2139105	DG3-qPCR	1.56	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2143076
 Field Sample ID: G1WA0093

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	89.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	93.8	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2143076
 Field Sample ID: G1WA0093

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.5	SKETA-qPCR	92.2	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	96.0								
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							7.83	7.17	
SOP-PCR-1.0	HF183-qPCR	113	121	98.5	121	101				0.727
				98.4						
SOP-PCR-1.2	GULL2-qPCR	128	89.3	70.6	68.7					7.20
SOP-PCR-1.3	GFD-purified-qPCR	20.4	148	204	183	157				10.8
				199						
SOP-PCR-1.4	BacR-qPCR	82.7	107	70.4	113	74.6				1.05
				76.0						
SOP-PCR-1.5	DG3-qPCR	114	92.6	101	64.5	82.0				1.56
				79.6						

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2143069, 2143070, 2143071
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2143072, 2143073, 2143074, 2143075
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2143076
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2143076
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2143076
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2143076
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2143076

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	12/11/2019	12/11/2019 15:41	Peterson Janvier	12/18/2019 14:24	Yuliya Danyuk	2143069, 2143070, 2143071
SM 9223 Quanti-Tray	12/11/2019	12/11/2019 16:27	Anthony Mirabito	12/12/2019 10:27	Anthony Mirabito	2143072, 2143073, 2143074, 2143075
SOP-PCR-1.0	12/11/2019	12/11/2019 15:30	Angela Smith	12/12/2019 09:58	Lauren Campbell	2143076
SOP-PCR-1.2	12/11/2019	12/11/2019 15:30	Angela Smith	01/02/2020 14:41	Mailin Lopez	2143076
SOP-PCR-1.3	12/11/2019	12/11/2019 15:30	Lauren Campbell	01/08/2020 14:02	Mailin Lopez	2143076
SOP-PCR-1.4	12/11/2019	12/11/2019 15:30	Angela Smith	01/03/2020 09:42	Lauren Campbell	2143076
SOP-PCR-1.5	12/11/2019	12/11/2019 15:30	Angela Smith	12/16/2019 10:21	Lauren Campbell	2143076