

Biological Analysis Report

SE-DIST-2022-04-19-01

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

Event Description: **FDC (BIO)**
Request ID: **RQ-2022-04-18-44**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

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

Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 27-MAY-2022 13:39

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line extending to the right.

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: Fort Drum Creek @ N Parrot Ave

Collection Date/Time: 04/18/2022 08:55

Field ID: G3SE0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319989	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	71.7	Q	MPN/100 mL	P412690	

Sample Location: Fort Drum Creek @ 304th Street

Collection Date/Time: 04/18/2022 09:10

Field ID: G3SE0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319986	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.4		ug/L	P412701	
		Phaeophytin-a	4.6		ug/L	P412701	
		Chlorophyll-a, Uncorrected	8.4		ug/L	P412701	
2319987	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	307.6	Q	MPN/100 mL	P412690	

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: Fort Drum Creek @ 441

Collection Date/Time: 04/18/2022 09:25

Field ID: G3SE0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319991	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	259.0	Q	MPN/100 mL	P412690	
2319992	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P412383	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P412383	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P412383	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P412383	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	UJ	TSC/100 mL	P412383	SUR

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Gull2-qPCR component.

SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component.

SOP-PCR-1.5: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Sweetwater Branch @ NE 342nd Trail

Collection Date/Time: 04/18/2022 09:40

Field ID: G3SE0063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319988	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	579.4	Q	MPN/100 mL	P412690	

Sample Location: Sweetwater Branch @ 441

Collection Date/Time: 04/18/2022 10:00

Field ID: G3SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319990	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	2613.0	Q	MPN/100 mL	P412690	

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P412701

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P412701

Component	Result	Code	Units
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P412690

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

Reference Method: SOP-PCR-1.0
Batch ID: P412383

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

Reference Method: SOP-PCR-1.2
Batch ID: P412383

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

Reference Method: SOP-PCR-1.3
Batch ID: P412383

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

Reference Method: SOP-PCR-1.4
Batch ID: P412383

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

Reference Method: SOP-PCR-1.5
Batch ID: P412383

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: P412701

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P412383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	74.2	84.6	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P412383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	103	96.7	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P412383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	89.4	87.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P412383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	91.2	79.0	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P412383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	69.8	81.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P412383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319313	HF183-qPCR	81.6	73.2	P	50 - 175
2319610	HF183-qPCR	72.5		P/P	50 - 175
2319611	HF183-qPCR	78.5		P	50 - 175
2319612	HF183-qPCR	77.3		P	50 - 175
2319753	HF183-qPCR	78.9		P	50 - 175
2319875	HF183-qPCR	73.0		P	50 - 175
2319876	HF183-qPCR	69.2		P	50 - 175
2319992	HF183-qPCR	62.7		P	50 - 175
2320027	HF183-qPCR	74.5		P	50 - 175
2320080	HF183-qPCR	79.8		P	50 - 175
2320081	HF183-qPCR	71.7		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P412383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319313	GULL2-qPCR	86.8		P	50 - 300
2319611	GULL2-qPCR	57.4		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P412383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319612	GULL2-qPCR	62.4		P	50 - 300
2319753	GULL2-qPCR	76.2		P	50 - 300
2319992	GULL2-qPCR	52.3		P	50 - 300
2320027	GULL2-qPCR	82.4		P	50 - 300
2320080	GULL2-qPCR	56.3		P	50 - 300
2320081	GULL2-qPCR	64.0		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P412383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319313	GFD-qPCR	94.1		P	50 - 175
2319611	GFD-qPCR	88.5		P	50 - 175
2319612	GFD-qPCR	84.9		P	50 - 175
2319753	GFD-qPCR	74.4		P	50 - 175
2319992	GFD-qPCR	87.3		P	50 - 175
2320027	GFD-qPCR	86.0		P	50 - 175
2320080	GFD-qPCR	58.5		P	50 - 175
2320081	GFD-qPCR	51.2		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P412383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319313	BacR-qPCR	67.9		P	50 - 175
2319610	BacR-qPCR	74.4	69.0	P/P	50 - 175
2319611	BacR-qPCR	65.2		P	50 - 175
2319612	BacR-qPCR	58.2		P	50 - 175
2319753	BacR-qPCR	61.0		P	50 - 175
2319875	BacR-qPCR	60.4		P	50 - 175
2319876	BacR-qPCR	57.0		P	50 - 175
2319992	BacR-qPCR	55.2		P	50 - 175
2320027	BacR-qPCR	65.7		P	50 - 175
2320080	BacR-qPCR	58.5		P	50 - 175
2320081	BacR-qPCR	84.7		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P412383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319313	DG3-qPCR	77.7		P	50 - 175
2319610	DG3-qPCR	75.8	79.0	P/P	50 - 175
2319611	DG3-qPCR	80.8		P	50 - 175
2319612	DG3-qPCR	84.1		P	50 - 175
2319753	DG3-qPCR	78.2		P	50 - 175
2319875	DG3-qPCR	79.0		P	50 - 175
2319876	DG3-qPCR	74.8		P	50 - 175
2319992	DG3-qPCR	75.1		P	50 - 175
2320027	DG3-qPCR	82.0		P	50 - 175
2320080	DG3-qPCR	74.5		P	50 - 175
2320081	DG3-qPCR	79.5		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P412701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319872	Chlorophyll-a, Uncorrected	0.184	Sample	P	0 - 25

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P412690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319963	Escherichia Coli-Quanti-Tray	68.1	Sample	P	0 - 80
2320379	Escherichia Coli-Quanti-Tray	38.5	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P412383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319610	HF183-qPCR	0.944	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P412383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319610	BacR-qPCR	7.44	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P412383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319610	DG3-qPCR	4.08	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2319992
Field Sample ID: G3SE0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	52.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	66.2	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	50.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	55.2	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	48.5	F	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	89.9							
	Chlorophyll-a, Uncorrected							0.184	
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray							68.1 38.5	
SOP-PCR-1.0	HF183-qPCR	84.6	74.2	81.6	72.5	73.2			0.944
				78.5					
SOP-PCR-1.2	GULL2-qPCR	96.7	103	86.8	57.4	62.4			
				76.2					
SOP-PCR-1.3	GFD-qPCR	87.0	89.4	94.1	88.5	84.9			
				74.4					
SOP-PCR-1.4	BacR-qPCR	79.0	91.2	65.7	58.5	84.7			7.44
				67.9					
SOP-PCR-1.5	DG3-qPCR	81.2	69.8	75.1	82.0	74.5			4.08
				79.5					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2319986
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2319987, 2319988, 2319989, 2319990, 2319991
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2319992
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2319992
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2319992
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2319992
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2319992

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	04/19/2022	04/19/2022 14:42	Joel Wharton	04/20/2022 09:43	Ethan Wickline	2319986
SM 9223 B Quanti-Tray	04/19/2022	04/19/2022 15:12	Caitlyn Owens	04/20/2022 11:12	Caitlyn Owens	2319987, 2319988, 2319989, 2319990, 2319991
SOP-PCR-1.0	04/19/2022	04/19/2022 14:00	Jennifer Mihalic	05/19/2022 14:00	DeAsia Armster	2319992
SOP-PCR-1.2	04/19/2022	04/19/2022 14:00	Jennifer Mihalic	05/24/2022 11:34	DeAsia Armster	2319992
SOP-PCR-1.3	04/19/2022	04/19/2022 14:00	Jennifer Mihalic	05/24/2022 14:16	Jennifer Mihalic	2319992
SOP-PCR-1.4	04/19/2022	04/19/2022 14:00	Jennifer Mihalic	05/25/2022 12:33	DeAsia Armster	2319992
SOP-PCR-1.5	04/19/2022	04/19/2022 14:00	Jennifer Mihalic	05/24/2022 10:11	DeAsia Armster	2319992