Biological Analysis Report

SE-DIST-2022-04-07-01

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

Event Description: **Basinger 4/5**
Request ID: **RQ-2022-04-04-61**
Customer: **SE-DIST**
Project ID: **SMP**

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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 19-MAY-2022 10:43

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: Chandler Slough @ Southern US98 Culvert **Collection Date/Time: 04/06/2022 09:10**

Field ID: G4SE0142 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2317350	SM 10200 H (mod.)	Chlorophyll-a, Corrected	9.6		ug/L	P412192	
		Phaeophytin-a	5.8		ug/L	P412192	
		Chlorophyll-a, Uncorrected	13		ug/L	P412192	
2317354	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	43.5	Q	MPN/100 mL	P412195	

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: Chandler Slough @ NW 160th Dr **Collection Date/Time: 04/06/2022 09:40**

Field ID: G4SE0143 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2317351	SM 10200 H (mod.)	Chlorophyll-a, Corrected	19		ug/L	P412192	
		Phaeophytin-a	2.1	I	ug/L	P412192	
		Chlorophyll-a, Uncorrected	20		ug/L	P412192	
2317355	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	30.5	Q	MPN/100 mL	P412195	

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: Oak Creek @ 68 **Collection Date/Time: 04/06/2022 10:10**

Field ID: G4SE0080 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2317353	SM 10200 H (mod.)	Chlorophyll-a, Corrected	20		ug/L	P412192	
		Phaeophytin-a	8.3		ug/L	P412192	
		Chlorophyll-a, Uncorrected	25		ug/L	P412192	
2317357	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	69.1	Q	MPN/100 mL	P412195	

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: Gore Branch/Chandler Slough @ NW 240th St **Collection Date/Time: 04/06/2022 11:20**

Field ID: G4SE0145 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2317352	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.4		ug/L	P412192	
		Phaeophytin-a	1.5	I	ug/L	P412192	
		Chlorophyll-a, Uncorrected	5.5		ug/L	P412192	
2317356	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	74.5	AQ	MPN/100 mL	P412195	

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: Gore Branch @ 724 **Collection Date/Time: 04/06/2022 10:50**

Field ID: G4SE0130 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2317358	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	172.2	Q	MPN/100 mL	P412195	

Field ID: G4SE0130 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2317359	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P412018	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P412018	

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P412192

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P412195

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

Reference Method: SOP-PCR-1.0
Batch ID: P412018

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

Reference Method: SOP-PCR-1.2
Batch ID: P412018

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

Reference Method: SOP-PCR-1.3
Batch ID: P412018

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

Reference Method: SOP-PCR-1.4
Batch ID: P412018

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

Reference Method: SOP-PCR-1.5
Batch ID: P412018

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: P412192

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	94.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P412018

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	96.6	122	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P412018

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	98.7	117	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P412018

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	98.7	115	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P412018

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	104	102	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P412018

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	71.4	91.6	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P412018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316989	HF183-qPCR	80.0		P	50 - 175
2317080	HF183-qPCR	83.5	83.7	P/P	50 - 175
2317081	HF183-qPCR	86.8		P	50 - 175
2317082	HF183-qPCR	74.4		P	50 - 175
2317359	HF183-qPCR	91.6		P	50 - 175
2317867	HF183-qPCR	86.2		P	50 - 175
2317868	HF183-qPCR	82.3		P	50 - 175
2318085	HF183-qPCR	79.7		P	50 - 175
2318086	HF183-qPCR	77.3		P	50 - 175
2318253	HF183-qPCR	89.0		P	50 - 175
2318254	HF183-qPCR	96.4		P	50 - 175
2318255	HF183-qPCR	91.3		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P412018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316989	GULL2-qPCR	77.1		P	50 - 300
2317080	GULL2-qPCR	74.0	85.4	P/P	50 - 300
2317359	GULL2-qPCR	73.7		P	50 - 300
2317867	GULL2-qPCR	67.7		P	50 - 300
2317868	GULL2-qPCR	89.7		P	50 - 300
2318253	GULL2-qPCR	79.5		P	50 - 300
2318255	GULL2-qPCR	60.2		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P412018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316989	GFD-qPCR	110		P	50 - 175
2317080	GFD-qPCR	100	109	P/P	50 - 175
2317359	GFD-qPCR	96.0		P	50 - 175
2317867	GFD-qPCR	105		P	50 - 175
2317868	GFD-qPCR	105		P	50 - 175
2318253	GFD-qPCR	112		P	50 - 175
2318255	GFD-qPCR	111		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P412018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316989	BacR-qPCR	66.0		P	50 - 175
2317080	BacR-qPCR	86.0	89.0	P/P	50 - 175
2317081	BacR-qPCR	71.3		P	50 - 175
2317082	BacR-qPCR	61.6		P	50 - 175
2317359	BacR-qPCR	74.1		P	50 - 175
2317867	BacR-qPCR	85.2		P	50 - 175
2317868	BacR-qPCR	96.6		P	50 - 175
2318085	BacR-qPCR	96.6		P	50 - 175
2318086	BacR-qPCR	82.5		P	50 - 175
2318253	BacR-qPCR	84.6		P	50 - 175
2318254	BacR-qPCR	66.7		P	50 - 175
2318255	BacR-qPCR	75.2		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P412018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316989	DG3-qPCR	83.2		P	50 - 175
2317080	DG3-qPCR	89.2	89.3	P/P	50 - 175
2317081	DG3-qPCR	88.9		P	50 - 175
2317082	DG3-qPCR	82.4		P	50 - 175
2317359	DG3-qPCR	93.3		P	50 - 175
2317867	DG3-qPCR	92.1		P	50 - 175
2317868	DG3-qPCR	93.7		P	50 - 175
2318085	DG3-qPCR	89.6		P	50 - 175
2318086	DG3-qPCR	92.3		P	50 - 175
2318253	DG3-qPCR	93.9		P	50 - 175
2318254	DG3-qPCR	88.8		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P412018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318255	DG3-qPCR	96.1		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P412192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2317112	Chlorophyll-a, Uncorrected	5.16	Sample	P	0 - 25

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P412195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2317273	Escherichia Coli-Quanti-Tray	10.6	Sample	P	0 - 80
2317356	Escherichia Coli-Quanti-Tray	30.9	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P412018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2317080	HF183-qPCR	0.338	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P412018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2317080	GULL2-qPCR	14.3	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P412018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2317080	GFD-qPCR	8.16	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P412018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2317080	BacR-qPCR	3.48	Spike	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.5
Batch ID: P412018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2317080	DG3-qPCR	0.0853	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2317359
Field Sample ID: G4SE0130

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	71.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	94.0	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	93.5	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	89.9	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	94.1				
	Chlorophyll-a, Uncorrected				5.16	
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray				10.6 30.9	
SOP-PCR-1.0	HF183-qPCR	122 96.6	80.0 83.5 83.7 86.8			0.338
SOP-PCR-1.2	GULL2-qPCR	117 98.7	74.0 85.4 73.7 67.7			14.3
SOP-PCR-1.3	GFD-qPCR	115 98.7	100 109 96.0 105			8.16
SOP-PCR-1.4	BacR-qPCR	102 104	86.0 89.0 71.3 61.6			3.48
SOP-PCR-1.5	DG3-qPCR	91.6 71.4	83.2 89.2 89.3 88.9			0.0853

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2317350, 2317351, 2317352, 2317353
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2317354, 2317355, 2317356, 2317357, 2317358
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2317359
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2317359
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2317359

Reference Method Descriptions

Method	Description	Associated Samples
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2317359
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2317359

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	04/07/2022	04/07/2022 14:22	Joel Wharton	04/08/2022 10:02	Ethan Wickline	2317350, 2317351, 2317352, 2317353
SM 9223 B Quanti-Tray	04/07/2022	04/07/2022 13:39	Caitlyn Owens	04/08/2022 09:24	Caitlyn Owens	2317354, 2317355, 2317356, 2317357, 2317358
SOP-PCR-1.0	04/07/2022	04/07/2022 15:00	Jennifer Mihalic	05/03/2022 09:45	DeAsia Armster	2317359
SOP-PCR-1.2	04/07/2022	04/07/2022 15:00	Jennifer Mihalic	05/09/2022 15:43	Roberta Tatti	2317359
SOP-PCR-1.3	04/07/2022	04/07/2022 15:00	Jennifer Mihalic	05/10/2022 11:06	Roberta Tatti	2317359
SOP-PCR-1.4	04/07/2022	04/07/2022 15:00	Jennifer Mihalic	05/03/2022 02:24	Roberta Tatti	2317359
SOP-PCR-1.5	04/07/2022	04/07/2022 15:00	Jennifer Mihalic	05/06/2022 09:56	Roberta Tatti	2317359