

Biological Analysis Report

CEN-DIST-2022-04-12-01

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

Event Description: **Run 18**
Request ID: **RQ-2022-04-11-27**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 25-MAY-2022 13:08



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: Turnbull Bay 1.2 km S of Turnbull Bay Rd

Collection Date/Time: 04/11/2022 11:30

Field ID: G5CE0130

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318249	Enterolert/QT	Enterococci-Quanti-Tray	257.0	AQ	MPN/100 mL	P412350	
2318254	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.4	BacR-qPCR**	3.3E+03	I	TSC/100 mL	P412018	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P412018	

Sample Location: Turnbull Bay @ 350M NW of Turnbull Bay Road

Collection Date/Time: 04/11/2022 11:55

Field ID: G5CE0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318245	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16	A	ug/L	P412466	
		Phaeophytin-a	3.5	U	ug/L	P412466	
		Chlorophyll-a, Uncorrected	18	A	ug/L	P412466	
2318247	Enterolert/QT	Enterococci-Quanti-Tray	10.0	Q	MPN/100 mL	P412350	

Ref. Method and Comment:

SM 10200 H (mod.): Lab dup result is 3.5 U for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.

Sample Location: Turnbull Bay @ 640m S of Divito Park

Collection Date/Time: 04/11/2022 12:22

Field ID: G5CE0100

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318246	SM 10200 H (mod.)	Chlorophyll-a, Corrected	20		ug/L	P412466	
		Phaeophytin-a	2.0	I	ug/L	P412466	
		Chlorophyll-a, Uncorrected	22		ug/L	P412466	
2318248	Enterolert/QT	Enterococci-Quanti-Tray	10.0	UQ	MPN/100 mL	P412350	
2318253	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.3	GFD-qPCR**	1.3E+03	I	TSC/100 mL	P412018	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P412018	

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: Spruce Creek @ 0.68 miles upstream of RR bridge

Collection Date/Time: 04/11/2022 13:01

Field ID: G5CE0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318252	Enterolert/QT	Enterococci-Quanti-Tray	114.5	Q	MPN/100 mL	P412350	

Sample Location: Spruce Creek @ 500m Upstream of RR Bridge

Collection Date/Time: 04/11/2022 16:00

Field ID: G5CE0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318250	Enterolert/QT	Enterococci-Quanti-Tray	63.0	Q	MPN/100 mL	P412350	
2318255	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	UJ	TSC/100 mL	P412018	SUR
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P412018	

Field ID: G5CE0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318255	SOP-PCR-1.3	GFD-qPCR**	960	I	TSC/100 mL	P412018	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P412018	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P412018	

Ref. Method and Comment:
SOP-PCR-1.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report Method Blank Results

Reference Method: Enterolert/QT
Batch ID: P412350

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

Reference Method: SM 10200 H (mod.)
Batch ID: P412466

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: 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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P412466

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.4		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	85.4	P	50 - 300
2317080	GULL2-qPCR	74.0		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	109	P	50 - 175
2317080	GFD-qPCR	100		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
2318523	GFD-qPCR	61.6		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	89.0	P	50 - 175
2317080	BacR-qPCR	86.0		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	89.3	P	50 - 175
2317080	DG3-qPCR	89.2		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

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
2318254	DG3-qPCR	88.8		P	50 - 175
2318255	DG3-qPCR	96.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: Enterolert/QT
Batch ID: P412350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318249	Enterococci-Quanti-Tray	43.6	Sample	P	0 - 80

Reference Method: SM 10200 H (mod.)
Batch ID: P412466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318245	Chlorophyll-a, Corrected	0.279	Sample	P	0 - 25
2318245	Chlorophyll-a, Uncorrected	1.26	Sample	P	0 - 25

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: 2318253
 Field Sample ID: G5CE0100

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	83.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	191	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	97.4	P	50 - 300

Lab Sample ID: 2318254
 Field Sample ID: G5CE0130

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	53.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	98.5	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	88.6	P	50 - 300

Lab Sample ID: 2318255
 Field Sample ID: G5CE0091

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	42.5	F	50 - 300
SOP-PCR-1.2	SKETA-qPCR	89.7	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	98.6	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	68.1	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
Enterolert/QT SM 10200 H (mod.)	Enterococci-Quanti-Tray						43.6	
	Chlorophyll-a, Corrected	95.4					0.279	
	Chlorophyll-a, Uncorrected						1.26	
SOP-PCR-1.0	HF183-qPCR	122	96.6	80.0	83.5	83.7		0.338
SOP-PCR-1.2	GULL2-qPCR	117	98.7	74.0	85.4	73.7		14.3
SOP-PCR-1.3	GFD-qPCR	115	98.7	100	109	96.0		8.16
				105				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.4	BacR-qPCR	102	104	86.0	89.0	71.3		3.48
SOP-PCR-1.5	DG3-qPCR	91.6	71.4	83.2	89.2	89.3		0.0853
				61.6				
				88.9				

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert Quanti-Tray method - non-chlorinated water systems	2318247, 2318248, 2318249, 2318250, 2318252
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2318245, 2318246
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2318253, 2318254, 2318255
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2318253, 2318255
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2318253, 2318255
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2318253, 2318254, 2318255
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2318253, 2318254, 2318255

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	04/12/2022	04/12/2022 14:28	Caitlyn Owens	04/13/2022 14:49	Caitlyn Owens	2318247, 2318248, 2318249, 2318250, 2318252
SM 10200 H (mod.)	04/12/2022	04/12/2022 14:45	Joel Wharton	04/13/2022 12:19	Ethan Wickline	2318245, 2318246
SOP-PCR-1.0	04/12/2022	04/12/2022 14:10	Jennifer Mihalic	05/03/2022 09:45	DeAsia Armster	2318253, 2318254, 2318255
SOP-PCR-1.2	04/12/2022	04/12/2022 14:10	Jennifer Mihalic	05/09/2022 15:43	Roberta Tatti	2318253, 2318255
SOP-PCR-1.3	04/12/2022	04/12/2022 14:10	Jennifer Mihalic	05/10/2022 11:06	Roberta Tatti	2318253, 2318255
SOP-PCR-1.4	04/12/2022	04/12/2022 14:10	Jennifer Mihalic	05/03/2022 02:24	Roberta Tatti	2318253, 2318254, 2318255
SOP-PCR-1.5	04/12/2022	04/12/2022 14:10	Jennifer Mihalic	05/06/2022 09:56	Roberta Tatti	2318253, 2318254, 2318255