

Biological Analysis Report

SE-DIST-2021-07-08-01

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

Event Description: **SMP - Stuart Truck**
Request ID: **RQ-2021-07-05-62**
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: Drew Liddick

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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 04-AUG-2021 13:45

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: South Fork SLR @ Hosford Park

Collection Date/Time: 07/07/2021 13:40

Field ID: G2SE0043

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2260656	SM 10200 H (mod.)	Chlorophyll-a, Corrected	25	A	ug/L	P401279	
		Phaeophytin-a	7.1	A	ug/L	P401279	
		Chlorophyll-a, Uncorrected	30	A	ug/L	P401279	
2260658	Enterolert/QT	Enterococci-Quanti-Tray	31.0	Q	MPN/100 mL	P401202	
2260662	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P400387	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	UJ	TSC/100 mL	P400387	MS
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P400387	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P400387	LCS
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P400387	

Ref. Method and Comment:
 SOP-PCR-1.2: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Danforth Creek @ Martin Downs

Collection Date/Time: 07/07/2021 14:10

Field ID: G2SE0059

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2260660	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1732.9	Q	MPN/100 mL	P401202	

Sample Location: Roebuck Creek @ Locks

Collection Date/Time: 07/07/2021 13:00

Field ID: G2SE0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2260657	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.8		ug/L	P401279	
		Phaeophytin-a	0.90	U	ug/L	P401279	
		Chlorophyll-a, Uncorrected	7.3		ug/L	P401279	
2260659	Enterolert/QT	Enterococci-Quanti-Tray	246.5	AQ	MPN/100 mL	P401202	
2260663	SOP-PCR-1.0	HF183-qPCR**	1.6E+03	I	TSC/100 mL	P400387	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P400387	LCS
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P400387	

Sample Location: Danforth Creek @ SW Citrus Blvd.

Collection Date/Time: 07/07/2021 14:35

Field ID: G2SE0058

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2260661	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1274.0	Q	MPN/100 mL	P401202	

Quality Assurance Report Method Blank Results

Reference Method: Enterolert/QT
 Batch ID: P401202

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

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P401279

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: P401202

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

Reference Method: SOP-PCR-1.0
Batch ID: P400387

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

Reference Method: SOP-PCR-1.2
Batch ID: P400387

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

Reference Method: SOP-PCR-1.3
Batch ID: P400387

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

Reference Method: SOP-PCR-1.4
Batch ID: P400387

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

Reference Method: SOP-PCR-1.5
Batch ID: P400387

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: P401279

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P400387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	60.0	270	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P400387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	59.0	166	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P400387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	118	174	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P400387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	87.4	48.6	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P400387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	92.1	67.3	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P400387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258015	HF183-qPCR	58.4		P	50 - 175
2259626	HF183-qPCR	60.6	61.3	P/P	50 - 175
2259687	HF183-qPCR	47.6		F	50 - 175
2260662	HF183-qPCR	50.9		P	50 - 175
2260663	HF183-qPCR	64.4		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P400387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258015	GULL2-qPCR	25.7		F	50 - 300
2259626	GULL2-qPCR	39.1	38.3	F/F	50 - 300
2259687	GULL2-qPCR	54.4		P	50 - 300
2260662	GULL2-qPCR	29.5		F	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P400387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258015	GFD-qPCR	85.4		P	50 - 175
2259626	GFD-qPCR	102	87.0	P/P	50 - 175
2259687	GFD-qPCR	85.9		P	50 - 175
2260662	GFD-qPCR	82.8		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P400387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258015	BacR-qPCR	62.0		P	50 - 175
2259626	BacR-qPCR	61.1	61.9	P/P	50 - 175
2259687	BacR-qPCR	69.6		P	50 - 175
2260662	BacR-qPCR	59.6		P	50 - 175
2260663	BacR-qPCR	64.9		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P400387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258015	DG3-qPCR	84.0		P	50 - 175
2259626	DG3-qPCR	83.9	90.1	P/P	50 - 175
2259687	DG3-qPCR	86.5		P	50 - 175
2260662	DG3-qPCR	83.2		P	50 - 175
2260663	DG3-qPCR	84.9		P	50 - 175

Quality Assurance Report Precision

Reference Method: Enterolert/QT

Batch ID: P401202

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260659	Enterococci-Quanti-Tray	15.0	Sample	P	0 - 80

Reference Method: SM 10200 H (mod.)

Batch ID: P401279

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260656	Chlorophyll-a, Corrected	0.353	Sample	P	0 - 25
2260656	Chlorophyll-a, Uncorrected	0.480	Sample	P	0 - 25
2260656	Phaeophytin-a	1.34	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray

Batch ID: P401202

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260622	Escherichia Coli-Quanti-Tray	21.0	Sample	P	0 - 80
2260779	Escherichia Coli-Quanti-Tray	1.25	Sample	P	0 - 80

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P400387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259626	HF183-qPCR	1.02	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P400387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259626	GULL2-qPCR	1.98	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P400387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259626	GFD-qPCR	16.0	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P400387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259626	BacR-qPCR	1.28	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P400387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259626	DG3-qPCR	7.05	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2260662
Field Sample ID: G2SE0043

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	92.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	96.4	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	93.8	P	50 - 300

Lab Sample ID: 2260663
Field Sample ID: G2SE0029

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
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Quality Assurance Report Surrogates

Lab Sample ID: 2260663
Field Sample ID: G2SE0029

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	112	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	99.8	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	110	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
Enterolert/QT	Enterococci-Quanti-Tray							15.0	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	102						0.353	
	Chlorophyll-a, Uncorrected							0.480	
	Phaeophytin-a							1.34	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							21.0	1.25
SOP-PCR-1.0	HF183-qPCR	270	60.0	58.4	60.6	61.3			1.02
				47.6					
SOP-PCR-1.2	GULL2-qPCR	166	59.0	25.7	39.1	38.3			1.98
				54.4					
SOP-PCR-1.3	GFD-qPCR	174	118	85.4	102	87.0			16.0
				85.9					
SOP-PCR-1.4	BacR-qPCR	48.6	87.4	62.0	61.1	61.9			1.28
				69.6					
SOP-PCR-1.5	DG3-qPCR	67.3	92.1	84.0	83.9	90.1			7.05
				86.5					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert Quanti-Tray method - non-chlorinated water systems	2260658, 2260659
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2260656, 2260657
SM 9223 Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2260660, 2260661
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2260662, 2260663
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2260662
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2260662
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2260662, 2260663
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2260662, 2260663

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	07/08/2021	07/08/2021 15:26	Abigail L Baker	07/09/2021 15:38	Mia Jane Harrell	2260658, 2260659
SM 10200 H (mod.)	07/08/2021	07/08/2021 15:43	Carina A. Tull	07/13/2021 09:11	Jessica Fetgatter	2260656, 2260657
SM 9223 Quanti-Tray	07/08/2021	07/08/2021 15:30	Abigail L Baker	07/09/2021 11:30	Mailin Lopez	2260660, 2260661
SOP-PCR-1.0	07/08/2021	07/08/2021 10:30	Amy M Gordon	07/14/2021 12:29	DeAsia Armster	2260662, 2260663
SOP-PCR-1.2	07/08/2021	07/08/2021 10:30	Amy M Gordon	07/16/2021 10:32	DeAsia Armster	2260662
SOP-PCR-1.3	07/08/2021	07/08/2021 10:30	Amy M Gordon	07/15/2021 14:46	Mailin Lopez	2260662
SOP-PCR-1.4	07/08/2021	07/08/2021 10:30	Amy M Gordon	07/09/2021 10:02	DeAsia Armster	2260662, 2260663
SOP-PCR-1.5	07/08/2021	07/08/2021 10:30	Amy M Gordon	07/15/2021 10:20	DeAsia Armster	2260662, 2260663