

Biological Analysis Report

SW-DIST-2019-10-15-01

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

Overflow Analyses Performed By:
Advanced Environmental Laboratories - Tampa
9610 Princess Palm Avenue
Tampa, Florida 33619
DOH Accreditation E84589

Event Description: **SMP: Cedar, Mocassin**
Request ID: **RQ-2019-10-07-07**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 20-NOV-2019 16:06



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, Molecular and Overflow.

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: Cedar Creek above Patricia Ave

Collection Date/Time: 10/14/2019 12:50

Field ID: G5SW0147

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2127887	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.5	U	ug/L	P372812	
		Phaeophytin-a	1.7	U	ug/L	P372812	
		Chlorophyll-a, Uncorrected	1.1	U	ug/L	P372812	
2127903	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1160		MPN/100 mL		

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: Cedar Creek @ Pinehurst (PC09-02)

Collection Date/Time: 10/14/2019 12:35

Field ID: G5SW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2127905	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1860		MPN/100 mL		

Sample Location: Moccasin Creek Tidal

Collection Date/Time: 10/14/2019 10:30

Field ID: G1SW0051

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2127902	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P372477	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P372477	
	SOP-PCR-1.3	GFD-purified-qPCR**	1.04E+04	J	TSC/100 mL	P373574	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P372477	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P372477	
2127904	Enterolert/QT	Enterococci-Quanti-Tray	52		MPN/100 mL		

Ref. Method and Comment:
SOP-PCR-1.2: Precision data unavailable for Analysis Batch A95683
SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P372812

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: SOP-PCR-1.0

Batch ID: P372477

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

Reference Method: SOP-PCR-1.2

Batch ID: P372477

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.3
Batch ID: P373574

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

Reference Method: SOP-PCR-1.4
Batch ID: P372477

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

Reference Method: SOP-PCR-1.5
Batch ID: P372477

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: P372812

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	93.3		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P372477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	109	144	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P372477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	93.5	144	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P373574

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	109	424	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P372477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	94.7	174	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P372477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P372477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	116	113	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P372477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127749	HF183-qPCR	120	92.2	P	50 - 175
2127888	HF183-qPCR	105		P/P	50 - 175
2127889	HF183-qPCR	111		P	50 - 175
2127890	HF183-qPCR	106		P	50 - 175
2127891	HF183-qPCR	105		P	50 - 175
2127892	HF183-qPCR	103		P	50 - 175
2127894	HF183-qPCR	81.4		P	50 - 175
2127902	HF183-qPCR	97.5		P	50 - 175
2128028	HF183-qPCR	103		P	50 - 175
2128134	HF183-qPCR	104		P	50 - 175
2128286	HF183-qPCR	121		P	50 - 175
2128287	HF183-qPCR	110		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P372477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127749	GULL2-qPCR	80.6		P	50 - 300
2127902	GULL2-qPCR	76.7		P	50 - 300
2128287	GULL2-qPCR	93.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P373574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127749	GFD-purified-qPCR	208		F	50 - 175
2127902	GFD-purified-qPCR	281		F	50 - 175
2128287	GFD-purified-qPCR	223		F	50 - 175
2130153	GFD-purified-qPCR	249		F	50 - 175
2130156	GFD-purified-qPCR	293		F	50 - 175
2130581	GFD-purified-qPCR	162		P	50 - 175
2130582	GFD-purified-qPCR	232		F	50 - 175
2132982	GFD-purified-qPCR	258	261	F/F	50 - 175
2133850	GFD-purified-qPCR	262		F	50 - 175
2133851	GFD-purified-qPCR	315		F	50 - 175
2133852	GFD-purified-qPCR	243		F	50 - 175
2135501	GFD-purified-qPCR	260		F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P372477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P372477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127749	BacR-qPCR	113		P	50 - 175
2127888	BacR-qPCR	86.9	75.7	P/P	50 - 175
2127889	BacR-qPCR	90.1		P	50 - 175
2127890	BacR-qPCR	91.1		P	50 - 175
2127891	BacR-qPCR	84.2		P	50 - 175
2127892	BacR-qPCR	67.6		P	50 - 175
2127894	BacR-qPCR	72.1		P	50 - 175
2127902	BacR-qPCR	86.6		P	50 - 175
2128287	BacR-qPCR	99.4		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P372477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127749	DG3-qPCR	92.8		P	50 - 175
2127888	DG3-qPCR	103	109	P/P	50 - 175
2127889	DG3-qPCR	94.3		P	50 - 175
2127890	DG3-qPCR	103		P	50 - 175
2127891	DG3-qPCR	84.9		P	50 - 175
2127892	DG3-qPCR	85.6		P	50 - 175
2127894	DG3-qPCR	87.6		P	50 - 175
2127902	DG3-qPCR	99.6		P	50 - 175
2128287	DG3-qPCR	99.5		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P372812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127824	Chlorophyll-a, Corrected	13.9	Sample	P	0 - 25
2127824	Chlorophyll-a, Uncorrected	13.7	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P372477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127888	HF183-qPCR	13.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P373574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132982	GFD-purified-qPCR	0.932	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P372477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127888	BacR-qPCR	13.9	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P372477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127888	DG3-qPCR	5.99	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2127902
Field Sample ID: G1SW0051

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	114	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	107	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	116	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	96.4	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	93.3						13.9	
	Chlorophyll-a, Uncorrected							13.7	
SOP-PCR-1.0	HF183-qPCR	144	109	105	92.2	111			13.1
				106					
SOP-PCR-1.2	GULL2-qPCR	144	93.5	76.7	80.6	93.6			
SOP-PCR-1.3	GFD-purified-qPCR	424	109	258	261	208			0.932
				281					
SOP-PCR-1.4	BacR-qPCR	174	94.7	86.9	75.7	90.1			13.9
				91.1					
SOP-PCR-1.5	DG3-qPCR	113	116	103	109	94.3			5.99
				103					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E84589	Enterococci by Enterolert/QT by AEL in Tampa	2127904
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2127887
SM 9223 B Quanti-Tray / E84589	E. coli by Colilert-18/QT by AEL in Tampa	2127903, 2127905

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2127902
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2127902
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2127902
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2127902
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2127902

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	10/14/2019	10/14/2019 16:05		10/15/2019 16:05	AEL - Tampa	2127904
SM 10200 H (mod.)	10/15/2019	10/15/2019 14:51	Yuliya Danyuk	10/18/2019 12:34	Yuliya Danyuk	2127887
SM 9223 B Quanti-Tray	10/14/2019	10/14/2019 16:05		10/15/2019 10:11	AEL - Tampa	2127903, 2127905
SOP-PCR-1.0	10/15/2019	10/15/2019 15:25	Angela Smith	11/05/2019 14:28	Lauren Campbell	2127902
SOP-PCR-1.2	10/15/2019	10/15/2019 15:25	Angela Smith	11/13/2019 10:09	Mailin Lopez	2127902
SOP-PCR-1.3	10/15/2019	10/15/2019 15:25	Angela Smith	11/18/2019 08:37	Mailin Lopez	2127902
SOP-PCR-1.4	10/15/2019	10/15/2019 15:25	Angela Smith	11/05/2019 15:59	Lauren Campbell	2127902
SOP-PCR-1.5	10/15/2019	10/15/2019 15:25	Angela Smith	11/01/2019 11:41	Lauren Campbell	2127902