

Biological Analysis Report

SW-DIST-2019-10-18-01

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

Overflow Analyses Performed By:
Benchmark Environmental, Inc.
1711 12th Street East
Palmetto, FL 34221
DOH Accreditation E84167

Event Description: **Run 10: Longboat and such**
Request ID: **RQ-2019-10-07-09**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 15-NOV-2019 15:27



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: Wares Crk @ 36th Ave

Collection Date/Time: 10/17/2019 12:10

Field ID: G2SW0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129388	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.1	I	ug/L	P373409	
		Phaeophytin-a	1.7	I	ug/L	P373409	
		Chlorophyll-a, Uncorrected	3.2		ug/L	P373409	
2129395	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	410		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: Wares Creek Fresh @ 30th Ave West

Collection Date/Time: 10/17/2019 11:10

Field ID: G2SW0109

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129389	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.0	I	ug/L	P373409	
		Phaeophytin-a	0.90	U	ug/L	P373409	
		Chlorophyll-a, Uncorrected	1.5	I	ug/L	P373409	
2129396	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	52		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: Longboat Key @ Bishops Bayou

Collection Date/Time: 10/17/2019 12:55

Field ID: G3SW0052

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129390	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.6		ug/L	P373409	
		Phaeophytin-a	2.2	I	ug/L	P373409	
		Chlorophyll-a, Uncorrected	10		ug/L	P373409	
2129397	Enterolert/QT	Enterococci-Quanti-Tray	52		MPN/100 mL		
2129400	SM 9222 D	Fecal Coliforms-Membrane Filter	8		cfu/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: Field_Blank

Collection Date/Time: 10/17/2019 10:15

Field ID: FB 10172019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129402	SM 9222 D	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL		

Sample Location: Wares Creek Tidal by Watertower

Collection Date/Time: 10/17/2019 11:50

Field ID: G2SW0108

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129391	SM 10200 H (mod.)	Chlorophyll-a, Corrected	15		ug/L	P373409	
		Phaeophytin-a	0.90	U	ug/L	P373409	
		Chlorophyll-a, Uncorrected	16		ug/L	P373409	
2129393	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P372664	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P372664	LCS

Field ID: G2SW0108

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129393	SOP-PCR-1.5	DG3-qPCR**	2.0E+03	I	TSC/100 mL	P372664	LCS
2129403	Enterolert/QT	Enterococci-Quanti-Tray	5298		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.

SOP-PCR-1.0: Precision data unavailable for Analysis Batch A95544.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A95590.

Sample Location: Wares Crk @ 9th Ave

Collection Date/Time: 10/17/2019 10:40

Field ID: G2SW0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129392	SM 10200 H (mod.)	Chlorophyll-a, Corrected	10		ug/L	P373409	
		Phaeophytin-a	1.3	I	ug/L	P373409	
		Chlorophyll-a, Uncorrected	11		ug/L	P373409	
2129394	SOP-PCR-1.0	HF183-qPCR**	440	I	GEU/100 mL	P372664	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P372664	LCS
	SOP-PCR-1.5	DG3-qPCR**	8.2E+03		TSC/100 mL	P372664	LCS
2129404	Enterolert/QT	Enterococci-Quanti-Tray	4907		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.

SOP-PCR-1.0: Precision data unavailable for Analysis Batch A95544.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A95590.

Sample Location: Braden River Below Ward Lake @ ramp

Collection Date/Time: 10/17/2019 10:10

Field ID: G2SW0111

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129405	Enterolert/QT	Enterococci-Quanti-Tray	201		MPN/100 mL		

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P373409

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: P372664

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

Reference Method: SOP-PCR-1.4

Batch ID: P372664

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P372664

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: P373409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	107		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P372664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	95.7	182	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P372664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	66.5	323	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P372664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	136	226	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P372664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2129393	HF183-qPCR	142		P	50 - 175
2129394	HF183-qPCR	121		P	50 - 175
2129592	HF183-qPCR	133		P	50 - 175
2129593	HF183-qPCR	121		P	50 - 175
2129747	HF183-qPCR	123		P	50 - 175
2130153	HF183-qPCR	123		P	50 - 175
2130154	HF183-qPCR	153		P	50 - 175
2130155	HF183-qPCR	125		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P372664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2129393	BacR-qPCR	97.0		P	50 - 175
2129394	BacR-qPCR	83.1		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P372664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2129592	BacR-qPCR	69.2		P	50 - 175
2129593	BacR-qPCR	63.8		P	50 - 175
2130153	BacR-qPCR	66.9		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P372664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2129293	DG3-qPCR	125		P	50 - 175
2129294	DG3-qPCR	127		P	50 - 175
2129295	DG3-qPCR	128	118	P/P	50 - 175
2129393	DG3-qPCR	111		P	50 - 175
2129394	DG3-qPCR	108		P	50 - 175
2129915	DG3-qPCR	127		P	50 - 175
2129917	DG3-qPCR	130		P	50 - 175
2130153	DG3-qPCR	134		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P373409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129278	Chlorophyll-a, Corrected	6.73	Sample	P	0 - 25
2129278	Chlorophyll-a, Uncorrected	5.61	Sample	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P372664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129295	DG3-qPCR	8.21	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2129393
Field Sample ID: G2SW0108

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	120	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	99.1	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2129394
Field Sample ID: G2SW0029

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	101	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	107						6.73	
	Chlorophyll-a, Uncorrected							5.61	
SOP-PCR-1.0	HF183-qPCR	182	95.7	142	121	133			
				121					
SOP-PCR-1.4	BacR-qPCR	323	66.5	97.0	83.1	69.2			
				63.8					
SOP-PCR-1.5	DG3-qPCR	226	136	125	127	128			8.21
				118					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E84167	Enterococci by Enterolert/QT by BEA in Palmetto	2129397, 2129403, 2129404, 2129405
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2129388, 2129389, 2129390, 2129391, 2129392
SM 9222 D / E84167	Fecal coliforms by MF by BEA in Palmetto	2129400, 2129402
SM 9223 B Quanti-Tray / E84167	E. coli by Colilert/QT by BEA in Palmetto	2129395, 2129396
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2129393, 2129394
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2129393, 2129394
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2129393, 2129394

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	10/17/2019	10/17/2019 15:00	Yuliya Danyuk	10/18/2019 15:41	Benchmark EnviroAnalytical - Palmetto	2129397, 2129403, 2129404, 2129405
SM 10200 H (mod.)	10/18/2019	10/18/2019 14:41		10/28/2019 16:02	Carina A. Tull	2129388, 2129389, 2129390, 2129391, 2129392
SM 9222 D	10/17/2019	10/17/2019 15:21		10/18/2019 14:56	Benchmark EnviroAnalytical - Palmetto	2129400, 2129402
SM 9223 B Quanti-Tray	10/17/2019	10/17/2019 15:10		10/18/2019 15:44	Benchmark EnviroAnalytical - Palmetto	2129395, 2129396
SOP-PCR-1.0	10/18/2019	10/18/2019 14:00	Angela Smith	11/06/2019 15:24	Lauren Campbell	2129393, 2129394
SOP-PCR-1.4	10/18/2019	10/18/2019 14:00	Angela Smith	11/07/2019 15:52	Lauren Campbell	2129393, 2129394
SOP-PCR-1.5	10/18/2019	10/18/2019 14:00	Angela Smith	11/07/2019 14:23	Lauren Campbell	2129393, 2129394