

Biological Analysis Report

SO-DIST-2019-06-25-01

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

Overflow Analyses Performed By:
Benchmark EnviroAnalytical, Inc. - North Port
1001 Corporate Avenue, Suite 102
North Port, FL 34289
DOH Accreditation E85086

Event Description: **Highlands**
Request ID: **RQ-2019-06-24-13**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Date Certified: 23-JUL-2019 11:01



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: Little Charlie Bowlegs

Collection Date/Time: 06/24/2019 11:35

Field ID: G3SD0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2098197	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.96	U	ug/L	P366842	RPD
		Phaeophytin-a	1.0	U	ug/L	P366842	
		Chlorophyll-a, Uncorrected	0.78	I	ug/L	P366842	RPD
2098198	SOP-PCR-1.0	HF183-qPCR**	150	I	GEU/100 mL	P365930	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P365930	
2098200	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41		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: Lake Damon @ Middle

Collection Date/Time: 06/24/2019 12:30

Field ID: G4SD0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2098193	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.4	I	ug/L	P366848	
		Phaeophytin-a	0.90	U	ug/L	P366848	
		Chlorophyll-a, Uncorrected	2.4		ug/L	P366848	

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: Lake Pythias @ Middle

Collection Date/Time: 06/24/2019 13:25

Field ID: G4SD0138

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2098194	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.7		ug/L	P366848	
		Phaeophytin-a	0.98	U	ug/L	P366848	
		Chlorophyll-a, Uncorrected	3.9		ug/L	P366848	

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: LittleRedWaterLake@Mid

Collection Date/Time: 06/24/2019 14:05

Field ID: G4SD0171

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2098195	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.2		ug/L	P366848	
		Phaeophytin-a	1.1	I	ug/L	P366848	
		Chlorophyll-a, Uncorrected	7.1		ug/L	P366848	

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: Josephine Creek EofCR17

Collection Date/Time: 06/24/2019 14:50

Field ID: G4SD0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2098196	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.2		ug/L	P366842	RPD
		Phaeophytin-a	2.7	I	ug/L	P366842	

Field ID: G4SD0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2098196	SM 10200 H (mod.)	Chlorophyll-a, Uncorrected	7.0		ug/L	P366842	RPD

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: Grassy Creek @CR621E

Collection Date/Time: 06/24/2019 15:20

Field ID: G4SD0165

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2098192	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.9		ug/L	P366848	
		Phaeophytin-a	1.1	I	ug/L	P366848	
		Chlorophyll-a, Uncorrected	4.7		ug/L	P366848	
2098199	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	30		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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P366842

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 10200 H (mod.)

Batch ID: P366848

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: P365930

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

Reference Method: SOP-PCR-1.4

Batch ID: P365930

Component	Result	Code	Units
BacR-qPCR	3.0E+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: P366842

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	90.8		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P366848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	86.5		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P365930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	125	185	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P365930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	90.9	78.8	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P365930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091168	HF183-qPCR	104		P	50 - 175
2092578	HF183-qPCR	98.0		P	50 - 175
2092579	HF183-qPCR	97.2		P	50 - 175
2096760	HF183-qPCR	104		P	50 - 175
2096761	HF183-qPCR	115		P	50 - 175
2096762	HF183-qPCR	126	123	P/P	50 - 175
2097400	HF183-qPCR	93.6		P	50 - 175
2097401	HF183-qPCR	109		P	50 - 175
2097402	HF183-qPCR	90.7		P	50 - 175
2097845	HF183-qPCR	91.5		P	50 - 175
2098198	HF183-qPCR	95.6		P	50 - 175
2098560	HF183-qPCR	88.2		P	50 - 175
2098561	HF183-qPCR	91.5		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P365930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091168	BacR-qPCR	73.0		P	50 - 175
2092578	BacR-qPCR	60.0		P	50 - 175
2092579	BacR-qPCR	66.8		P	50 - 175
2096760	BacR-qPCR	80.7		P	50 - 175
2096761	BacR-qPCR	69.6		P	50 - 175
2096762	BacR-qPCR	83.5	88.5	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P365930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2098198	BacR-qPCR	72.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P366842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2098538	Chlorophyll-a, Corrected	151	Sample	F	0 - 25
2098538	Chlorophyll-a, Uncorrected	147	Sample	F	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P366848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2098013	Chlorophyll-a, Corrected	4.92	Sample	P	0 - 25
2098013	Chlorophyll-a, Uncorrected	4.41	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P365930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2096762	HF183-qPCR	2.64	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P365930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2096762	BacR-qPCR	5.83	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2098198
Field Sample ID: G3SD0093

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	115	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	MS
								SMP	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	90.8						151	
	Chlorophyll-a, Corrected	86.5						4.92	
	Chlorophyll-a, Uncorrected							147	
	Chlorophyll-a, Uncorrected							4.41	
SOP-PCR-1.0	HF183-qPCR	185	125	104	115	126			2.64
SOP-PCR-1.4	BacR-qPCR	78.8 90.9		123					5.83
				80.7	69.6	83.5	88.5		

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2098192, 2098193, 2098194, 2098195, 2098196, 2098197
SM 9223 Quanti-Tray / E85086	E. coli by Colilert/QT by BEA South in North Port	2098199, 2098200
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2098198
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2098198

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	06/25/2019	06/25/2019 13:19	Yuliya Danyuk	07/08/2019 08:50	Yuliya Danyuk	2098192, 2098193, 2098194, 2098195
	06/25/2019	06/25/2019 13:19	Yuliya Danyuk	07/08/2019 11:42	Yuliya Danyuk	2098196, 2098197
SM 9223 Quanti-Tray	06/24/2019	06/24/2019 17:04		06/25/2019 17:13	Benchmark EnviroAnalytical in North Port	2098199, 2098200
SOP-PCR-1.0	06/25/2019	06/25/2019 12:45	Angela Smith	07/01/2019 12:09	Mailin Lopez	2098198
SOP-PCR-1.4	06/25/2019	06/25/2019 12:45	Angela Smith	07/02/2019 08:27	Mailin Lopez	2098198