Biological Analysis Report

CEN-DIST-2019-12-06-01

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, Inc.
380 North Lake Blvd, Ste 1048
Altamonte Springs, FL 32701
DOH Accreditation E53076

Event Description: **Hatch Drain / Cypress**
Request ID: **RQ-2019-12-02-53**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 06-JAN-2020 11:50

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: Lake Hatchineha Drain downstream of drainage field **Collection Date/Time: 12/05/2019 10:57**

Field ID: G4CE0168 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2141518	EPA 1603	Escherichia coli Membrane Filter	20	B	cfu/100 mL		
2141519	SM 10200 H (mod.)	Chlorophyll-a, Corrected	19		ug/L	P376121	
		Phaeophytin-a	4.3	I	ug/L	P376121	
		Chlorophyll-a, Uncorrected	22		ug/L	P376121	
2141521	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P375217	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P375217	

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 Cypress @ Center **Collection Date/Time: 12/05/2019 11:23**

Field ID: G4CE0166 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2141520	SM 10200 H (mod.)	Chlorophyll-a, Corrected	43		ug/L	P376121	
		Phaeophytin-a	4.5	U	ug/L	P376121	
		Chlorophyll-a, Uncorrected	46		ug/L	P376121	

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: P376121

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: P375217

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

Reference Method: SOP-PCR-1.4
Batch ID: P375217

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: P376121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.3		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P375217

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	112	91.1	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P375217

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	102	90.9	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P375217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140492	HF183-qPCR	103	102	P/P	50 - 175
2141077	HF183-qPCR	98.8		P	50 - 175
2141145	HF183-qPCR	98.9		P	50 - 175
2141146	HF183-qPCR	99.8		P	50 - 175
2141486	HF183-qPCR	140		P	50 - 175
2141489	HF183-qPCR	96.7		P	50 - 175
2141490	HF183-qPCR	103		P	50 - 175
2141521	HF183-qPCR	88.0		P	50 - 175
2141595	HF183-qPCR	99.8		P	50 - 175
2141874	HF183-qPCR	96.5		P	50 - 175
2141875	HF183-qPCR	95.8		P	50 - 175
2141876	HF183-qPCR	117		P	50 - 175
2141877	HF183-qPCR	105		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P375217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140492	BacR-qPCR	90.0	91.8	P/P	50 - 175
2141077	BacR-qPCR	69.5		P	50 - 175
2141489	BacR-qPCR	88.9		P	50 - 175
2141490	BacR-qPCR	86.5		P	50 - 175
2141521	BacR-qPCR	76.2		P	50 - 175
2141595	BacR-qPCR	79.7		P	50 - 175

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P376121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141643	Chlorophyll-a, Corrected	9.18	Sample	P	0 - 25
2141643	Chlorophyll-a, Uncorrected	8.09	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P375217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140492	HF183-qPCR	0.435	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P375217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140492	BacR-qPCR	2.03	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2141521
Field Sample ID: G4CE0168

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	94.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	73.3	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	95.3			9.18	
	Chlorophyll-a, Uncorrected				8.09	
SOP-PCR-1.0	HF183-qPCR	91.1 112	103 102 98.8 98.9			0.435
SOP-PCR-1.4	BacR-qPCR	90.9 102	90.0 91.8 69.5 88.9			2.03

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E53076	E. coli by MF by AEL in Altamonte Springs	2141518
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2141519, 2141520
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2141521

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2141521

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	12/05/2019	12/05/2019 15:06		12/06/2019 16:17	Advanced Environmental Laboratory	2141518
SM 10200 H (mod.)	12/06/2019	12/06/2019 12:50	Kara Sprague	12/17/2019 13:18	Yuliya Danyuk	2141519, 2141520
SOP-PCR-1.0	12/06/2019	12/06/2019 14:30	Angela Smith	12/27/2019 10:13	Lauren Campbell	2141521
SOP-PCR-1.4	12/06/2019	12/06/2019 14:30	Angela Smith	12/27/2019 11:25	Lauren Campbell	2141521