

Biological Analysis Report

NE-DIST-2018-06-07-01

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

Overflow Analyses Performed By:
Advanced Environmental Laboratories - Gainesville
6815 SW Archer Road
Gainesville, Florida 32608
DOH Accreditation E82001

Event Description: **Santa Fe**
Request ID: **RQ-2018-05-14-29**
Customer: **NE-DIST**
Project ID: **SMP**

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Date Certified: 24-JUL-2018 18:23



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 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: GRASSY HOLE SPRING ICHETUCKNEE

Collection Date/Time: 06/06/2018 11:35

Field ID: 21030051FLA

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998437	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P347000	
		Phaeophytin-a	0.40	U	ug/L	P347000	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P347000	
1998442	EPA 1603	Escherichia coli-Membrane Filter	10	U	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: SANTA FE RIVER @ HOLLINGSWORTH BLUFF

Collection Date/Time: 06/06/2018 12:15

Field ID: 21030145

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998438	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.62	I	ug/L	P347000	
		Phaeophytin-a	0.65	I	ug/L	P347000	
		Chlorophyll-a, Uncorrected	1.0	I	ug/L	P347000	
1998443	EPA 1603	Escherichia coli-Membrane Filter	20	B	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: CANNON CR @ CANNON CR RD BUSINESS
PARK POINT W CR 47**

Collection Date/Time: 06/06/2018 09:40

Field ID: 21030138

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998439	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.2	I	ug/L	P347000	
		Phaeophytin-a	0.44	I	ug/L	P347000	
		Chlorophyll-a, Uncorrected	1.5		ug/L	P347000	
1998444	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P347472	
	SOP-PCR-1.4	BacR-qPCR**	4.1E+03	I	TSC/100 mL	P347472	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2004932	EPA 1603	Escherichia coli-Membrane Filter	455	A	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: COW CREEK AT SR 138

Collection Date/Time: 06/06/2018 12:50

Field ID: 21030086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998440	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P347000	
		Phaeophytin-a	0.40	U	ug/L	P347000	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P347000	
1998445	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2004933	EPA 1603	Escherichia coli-Membrane Filter	70	B	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: LITTLE WACASASSA @ CR 339

Collection Date/Time: 06/06/2018 13:45

Field ID: 23020018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998441	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.64	I	ug/L	P347000	
		Phaeophytin-a	0.51	I	ug/L	P347000	
		Chlorophyll-a, Uncorrected	0.98	I	ug/L	P347000	
1998446	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P347472	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P347472	
	SOP-PCR-1.3	GFD-purified-qPCR**	770		TSC/100 mL	P347895	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P347472	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2004934	EPA 1603	Escherichia coli-Membrane Filter	900	B	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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P347000

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P347472

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

Reference Method: SOP-PCR-1.2

Batch ID: P347472

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

Reference Method: SOP-PCR-1.3

Batch ID: P347895

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

Reference Method: SOP-PCR-1.4

Batch ID: P347472

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: P347000

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.4		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P347472

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.4	112	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P347472

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	82.3	120	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P347895

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	89.0	60.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P347472

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	78.9	151	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P347472

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997476	HF183-qPCR	77.9		P	50 - 175
1997477	HF183-qPCR	74.9		P	50 - 175
1997478	HF183-qPCR	76.2		P	50 - 175
1998444	HF183-qPCR	78.6		P	50 - 175
1998446	HF183-qPCR	77.6		P	50 - 175
1998475	HF183-qPCR	80.2		P	50 - 175
1998566	HF183-qPCR	63.7		P	50 - 175
2003562	HF183-qPCR	75.9		P	50 - 175
2003563	HF183-qPCR	83.2		P	50 - 175
2003564	HF183-qPCR	84.0		P	50 - 175
2003565	HF183-qPCR	93.0		P	50 - 175
2003566	HF183-qPCR	83.6	81.8	P/P	50 - 175
2003567	HF183-qPCR	73.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P347472

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-1.2

Batch ID: P347472

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997476	GULL2-qPCR	74.7		P	50 - 300
1998446	GULL2-qPCR	71.1		P	50 - 300
2003562	GULL2-qPCR	63.6		P	50 - 300
2003563	GULL2-qPCR	77.4		P	50 - 300
2003564	GULL2-qPCR	75.5		P	50 - 300
2003565	GULL2-qPCR	87.7		P	50 - 300
2003566	GULL2-qPCR	74.0	81.1	P/P	50 - 300
2003567	GULL2-qPCR	61.6		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P347895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996396	GFD-purified-qPCR	73.4		P	50 - 175
1997476	GFD-purified-qPCR	107		P	50 - 175
1998446	GFD-purified-qPCR	119		P	50 - 175
1999617	GFD-purified-qPCR	128		P	50 - 175
2000025	GFD-purified-qPCR	57.1		P	50 - 175
2000026	GFD-purified-qPCR	76.6		P	50 - 175
2000535	GFD-purified-qPCR	56.8		P	50 - 175
2000997	GFD-purified-qPCR	93.5		P	50 - 175
2001000	GFD-purified-qPCR	66.7		P	50 - 175
2001245	GFD-purified-qPCR	68.2		P	50 - 175
2006009	GFD-purified-qPCR	166		P	50 - 175
2006010	GFD-purified-qPCR	147		P	50 - 175
2006011	GFD-purified-qPCR	158		P	50 - 175
2006012	GFD-purified-qPCR	94.5	111	P/P	50 - 175
2006013	GFD-purified-qPCR	84.9		P	50 - 175
2006014	GFD-purified-qPCR	110		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P347472

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997476	BacR-qPCR	68.9		P	50 - 175
1997477	BacR-qPCR	58.4		P	50 - 175
1997478	BacR-qPCR	52.2		P	50 - 175
1998444	BacR-qPCR	58.4		P	50 - 175
1998446	BacR-qPCR	56.8		P	50 - 175
2003562	BacR-qPCR	50.3		P	50 - 175
2003563	BacR-qPCR	57.8		P	50 - 175
2003564	BacR-qPCR	66.0		P	50 - 175
2003565	BacR-qPCR	53.4		P	50 - 175
2003566	BacR-qPCR	50.1	70.3	P/P	50 - 175
2003567	BacR-qPCR	56.8		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P347000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998538	Chlorophyll-a, Uncorrected	3.12	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P347472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003566	HF183-qPCR	2.18	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P347472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003566	GULL2-qPCR	9.07	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P347895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2006012	GFD-purified-qPCR	15.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P347472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003566	BacR-qPCR	33.6	Spike	F	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: 1998444
 Field Sample ID: 21030138

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	114	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	117	P	50 - 300

Lab Sample ID: 1998446
 Field Sample ID: 23020018

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	98.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	105	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	95.4							
	Chlorophyll-a, Uncorrected							3.12	
SOP-PCR-1.0	HF183-qPCR	112	94.4	77.9	74.9	76.2			2.18
				80.2					
SOP-PCR-1.2	GULL2-qPCR	120	82.3	74.7	63.6	77.4			9.07
				75.5					
SOP-PCR-1.3	GFD-purified-qPCR	60.0	89.0	107	119	166			15.7
				147					
SOP-PCR-1.4	BacR-qPCR	151	78.9	68.9	58.4	52.2			33.6
				50.3					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E82001	Escherichia coli by membrane filter method using modified mTEC by Advanced Environmental Laboratory-Gainesville	1998442, 1998443, 2004932, 2004933, 2004934
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1998437, 1998438, 1998439, 1998440, 1998441
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1998444, 1998446
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1998446
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1998446
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1998444, 1998446
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1998444, 1998445, 1998446

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	06/06/2018	06/06/2018 17:05		06/07/2018 18:30	AEL - Gainesville	1998442, 1998443, 2004932, 2004933, 2004934
SM 10200 H (mod.)	06/07/2018	06/07/2018 11:05	Mariam Hanna	06/15/2018 08:25	Carina A. Tull	1998437, 1998438, 1998439, 1998440, 1998441
SOP-PCR-1.0	06/07/2018	06/07/2018 11:55	Puja Jasrotia	07/02/2018 14:24	Mailin Lopez	1998444, 1998446
SOP-PCR-1.2	06/07/2018	06/07/2018 11:55	Puja Jasrotia	07/05/2018 10:25	Sarah Menz	1998446
SOP-PCR-1.3	06/07/2018	06/07/2018 11:55	Mailin Lopez	07/12/2018 09:59	Sarah Menz	1998446
SOP-PCR-1.4	06/07/2018	06/07/2018 11:55	Puja Jasrotia	07/03/2018 10:29	Mailin Lopez	1998444, 1998446
SOP-PCR-4.0	06/07/2018	06/07/2018 11:55	Angela Smith	06/29/2018 10:46	Puja Jasrotia	1998444, 1998445, 1998446