

Biological Analysis Report

SW-DIST-2018-07-19-01

Florida Department of Environmental Protection
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DOH Accreditation E31780

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

Event Description: **English, Turkey, Poley, Mustang**
Request ID: **RQ-2018-07-16-05**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 22-AUG-2018 10:23



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: Turkey Creek @ Sydney Rd.

Collection Date/Time: 07/18/2018 08:50

Field ID: G2SW0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009128	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2009136	EPA 1603	Escherichia coli-Membrane Filter**	104		cfu/100 mL		

Sample Location: Turkey Creek @ SR 60

Collection Date/Time: 07/18/2018 09:15

Field ID: G2SW0051

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009129	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2009137	EPA 1603	Escherichia coli-Membrane Filter**	244		cfu/100 mL		

Sample Location: Mustang Ranch Creek @ Hopewell

Collection Date/Time: 07/18/2018 09:40

Field ID: G2SW0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009127	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.6	A	ug/L	P349193	
		Phaeophytin-a	3.3	A	ug/L	P349193	
		Chlorophyll-a, Uncorrected	4.7	A	ug/L	P349193	

Sample Location: Mustang Ranch Creek @ Hopewell

Collection Date/Time: 07/18/2018 09:40

Field ID: G2SW0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009130	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P349706	
	SOP-PCR-1.4	BacR-qPCR**	1.16E+06		TSC/100 mL	P349706	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2009138	EPA 1603	Escherichia coli-Membrane Filter**	690		cfu/100 mL		

Sample Location: Mustang Ranch @ SR39

Collection Date/Time: 07/18/2018 09:30

Field ID: G2SW0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009131	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2009139	EPA 1603	Escherichia coli-Membrane Filter**	350		cfu/100 mL		

Sample Location: English Creek above SR 60

Collection Date/Time: 07/18/2018 10:10

Field ID: G2SW0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009132	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2009140	EPA 1603	Escherichia coli-Membrane Filter**	88		cfu/100 mL		

Sample Location: English Creek @ Old Mulberry Rd.

Collection Date/Time: 07/18/2018 10:50

Field ID: G2SW0048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009133	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Field ID: G2SW0048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009141	EPA 1603	Escherichia coli-Membrane Filter**	120		cfu/100 mL		

Sample Location: Poley Creek @ SR60

Collection Date/Time: 07/18/2018 11:00

Field ID: G2SW0049

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009134	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2009142	EPA 1603	Escherichia coli-Membrane Filter**	136		cfu/100 mL		

Sample Location: Poley Creek @ Shepard Rd.

Collection Date/Time: 07/18/2018 11:30

Field ID: G2SW0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009135	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2009143	EPA 1603	Escherichia coli-Membrane Filter**	240		cfu/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P349193

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.62	U	ug/L
Chlorophyll-a, Uncorrected	0.45	U	ug/L
Phaeophytin-a	0.45	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P349706

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

Reference Method: SOP-PCR-1.4

Batch ID: P349706

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)

Batch ID: P349193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	96.9		P	84 - 116

Reference Method: SOP-PCR-1.0

Batch ID: P349706

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

Reference Method: SOP-PCR-1.0
 Batch ID: P349706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	99.0	128	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P349706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	121	100	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P349706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007461	HF183-qPCR	73.4		P	50 - 175
2007462	HF183-qPCR	102		P	50 - 175
2007463	HF183-qPCR	93.3		P	50 - 175
2009130	HF183-qPCR	70.4		P	50 - 175
2011562	HF183-qPCR	88.1		P	50 - 175
2014451	HF183-qPCR	96.1	93.2	P/P	50 - 175
2014452	HF183-qPCR	91.4		P	50 - 175
2014453	HF183-qPCR	96.0		P	50 - 175
2014546	HF183-qPCR	91.8		P	50 - 175
2014547	HF183-qPCR	94.2		P	50 - 175
2014548	HF183-qPCR	68.5		P	50 - 175
2014549	HF183-qPCR	97.7		P	50 - 175
2015040	HF183-qPCR	82.7		P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P349706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007461	BacR-qPCR	64.5		P	50 - 175
2007462	BacR-qPCR	92.4		P	50 - 175
2007463	BacR-qPCR	87.3		P	50 - 175
2009130	BacR-qPCR	64.1		P	50 - 175
2014451	BacR-qPCR	100	112	P/P	50 - 175
2014452	BacR-qPCR	85.7		P	50 - 175
2014453	BacR-qPCR	117		P	50 - 175
2014546	BacR-qPCR	132		P	50 - 175
2014547	BacR-qPCR	87.8		P	50 - 175
2014548	BacR-qPCR	62.4		P	50 - 175
2014549	BacR-qPCR	90.2		P	50 - 175
2015040	BacR-qPCR	74.0		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P349193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009127	Chlorophyll-a, Corrected	5.58	Sample	P	0 - 25
2009127	Chlorophyll-a, Uncorrected	6.64	Sample	P	0 - 25
2009127	Phaeophytin-a	8.00	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P349706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014451	HF183-qPCR	3.11	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P349706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014451	BacR-qPCR	10.9	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: 2009130
Field Sample ID: G2SW0026

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	81.6	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	96.9						5.58	
	Chlorophyll-a, Uncorrected							6.64	
	Phaeophytin-a							8.00	
SOP-PCR-1.0	HF183-qPCR	128	99.0	70.4	88.1	96.1			3.11
				93.2					
SOP-PCR-1.4	BacR-qPCR	100	121	64.1	100	112			10.9
				85.7					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter Advanced Environmental Laboratory in Tampa	2009136, 2009137, 2009138, 2009139, 2009140, 2009141, 2009142, 2009143

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2009127
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2009130
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2009130
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2009128, 2009129, 2009130, 2009131, 2009132, 2009133, 2009134, 2009135

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	07/18/2018	07/18/2018 16:45		07/19/2018 16:00	AEL - Tampa	2009136, 2009137, 2009138, 2009139, 2009140, 2009141, 2009142, 2009143
SM 10200 H (mod.)	07/19/2018	07/19/2018 13:25	Jennifer Mihalic	07/25/2018 16:00	Carina A. Tull	2009127
SOP-PCR-1.0	07/19/2018	07/19/2018 13:30	Sarah Menz	08/13/2018 08:51	Mailin Lopez	2009130
SOP-PCR-1.4	07/19/2018	07/19/2018 13:30	Sarah Menz	08/15/2018 10:24	Mailin Lopez	2009130
SOP-PCR-4.0	07/19/2018	07/19/2018 13:30	Angela Smith	08/07/2018 09:19	Sarah Menz	2009128, 2009129, 2009130, 2009131, 2009132
	07/19/2018	07/19/2018 13:30	Sarah Menz	08/07/2018 09:19	Sarah Menz	2009133, 2009134, 2009135