

Biological Analysis Report

SW-DIST-2018-03-20-01

Florida Department of Environmental Protection
Central Laboratory
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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: **WOLF SIMS Mckay Rice**
Request ID: **RQ-2018-03-19-07**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 11-MAY-2018 15:19



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: RICE @ BALM RVRVIEW

Collection Date/Time: 03/19/2018 11:15

Field ID: G2SW0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975974	EPA 1603	Escherichia coli-Membrane Filter**	920	B	cfu/100 mL		

Sample Location: RICE @ BALM RVRVIEW

Collection Date/Time: 03/19/2018 11:15

Field ID: G2SW0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975971	SOP-PCR-1.0	HF183-qPCR**	36	T	GEU/100 mL	P342991	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: SIMS BRANCH @ PORT REDWING

Collection Date/Time: 03/19/2018 10:05

Field ID: G1SW0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975968	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.4		ug/L	P342145	RPD
		Phaeophytin-a	0.45	I	ug/L	P342145	
		Chlorophyll-a, Uncorrected	5.9		ug/L	P342145	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. Quality control failure(s) observed. See QA report for details.

Sample Location: SIMS BRANCH @ PORT REDWING

Collection Date/Time: 03/19/2018 10:05

Field ID: G1SW0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975975	SM 9230 C	Enterococci-Membrane Filter	12	B	cfu/100 mL		

Sample Location: BIGGEST FLOWING DITCH @ 45TH

Collection Date/Time: 03/19/2018 09:20

Field ID: G1SW0093

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975969	SM 10200 H (mod.)	Chlorophyll-a, Corrected	260		ug/L	P342145	RPD
		Phaeophytin-a	20		ug/L	P342145	
		Chlorophyll-a, Uncorrected	280		ug/L	P342145	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. Quality control failure(s) observed. See QA report for details.

Sample Location: BIGGEST FLOWING DITCH @ 45TH

Collection Date/Time: 03/19/2018 09:20

Field ID: G1SW0093

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975976	SM 9230 C	Enterococci-Membrane Filter	9400	B	cfu/100 mL		

Sample Location: BIGGEST FLOWING DITCH @ 45TH

Collection Date/Time: 03/19/2018 09:20

Field ID: G1SW0093

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975972	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P343695	

Field ID: G1SW0093

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975972	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P343695	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	95	T	TSC/100 mL	P343720	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P343695	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of HF183 marker.

SOP-PCR-1.2: No amplification of GULL2 marker. Precision data unavailable for Analysis Batch A83398.

SOP-PCR-1.4: No amplification of BACR marker. Precision data unavailable for Analysis Batch A83390.

Sample Location: WOLF BRANCH CANAL @ MANNS HARBOR **Collection Date/Time: 03/19/2018 10:40**
DR BOATLIFT

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975970	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.6	AJ	ug/L	P342145	RPD
		Phaeophytin-a	1.2		ug/L	P342145	
		Chlorophyll-a, Uncorrected	4.3	AJ	ug/L	P342145	RPD

Ref. Method and Comment:

SM 10200 H (mod.): Laboratory duplicate result is 0.88 I for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample. Chl-a Corrected & Chl-a Uncorrected results are J-qualified due to a lab duplicate RPD failure

Sample Location: WOLF BRANCH CANAL @ MANNS HARBOR **Collection Date/Time: 03/19/2018 10:40**
DR BOATLIFT

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975977	SM 9230 C	Enterococci-Membrane Filter	4	U	cfu/100 mL		

Sample Location: WOLF BRANCH CANAL @ MANNS HARBOR **Collection Date/Time: 03/19/2018 10:40**
DR BOATLIFT

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975973	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P342145

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: P342991

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
 Batch ID: P343695

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

Reference Method: SOP-PCR-1.2
 Batch ID: P343695

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

Reference Method: SOP-PCR-1.3
 Batch ID: P343720

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

Reference Method: SOP-PCR-1.4
 Batch ID: P343695

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: P342145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	86.4		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P342991

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	89.3	104	P/P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P343695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	121	79.5	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P343695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	97.1	48.3	P/F	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P343720

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

Reference Method: SOP-PCR-1.3
 Batch ID: P343720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	20.1	34.1	F/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P343695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	117	35.2	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P342991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974132	HF183-qPCR	83.5		P	50 - 175
1974133	HF183-qPCR	82.2		P	50 - 175
1975971	HF183-qPCR	61.3		P	50 - 175
1983204	HF183-qPCR	80.9		P	50 - 175
1983223	HF183-qPCR	66.4	58.9	P/P	50 - 175
1983445	HF183-qPCR	72.4		P	50 - 175
1984969	HF183-qPCR	74.7		P	50 - 175
1984970	HF183-qPCR	72.3		P	50 - 175
1984971	HF183-qPCR	73.6		P	50 - 175
1984972	HF183-qPCR	74.2		P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P343695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975972	HF183-qPCR	117		P	50 - 175
1976130	HF183-qPCR	98.8	94.3	P/P	50 - 175
1976661	HF183-qPCR	87.9		P	50 - 175
1976662	HF183-qPCR	96.7		P	50 - 175
1976663	HF183-qPCR	94.3		P	50 - 175
1976664	HF183-qPCR	96.7		P	50 - 175
1976665	HF183-qPCR	80.7		P	50 - 175
1976666	HF183-qPCR	95.4		P	50 - 175
1977094	HF183-qPCR	101		P	50 - 175
1977095	HF183-qPCR	102		P	50 - 175
1977096	HF183-qPCR	99.4		P	50 - 175
1977097	HF183-qPCR	80.2		P	50 - 175
1978233	HF183-qPCR	81.0		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P343695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975972	GULL2-qPCR	53.7		P	50 - 300
1976662	GULL2-qPCR	74.5		P	50 - 300
1976664	GULL2-qPCR	72.2		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P343695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977096	GULL2-qPCR	86.2		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P343720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974755	GFD-purified-qPCR	119		P	50 - 175
1975972	GFD-purified-qPCR	95.5		P	50 - 175
1976664	GFD-purified-qPCR	156		P	50 - 175
1977096	GFD-purified-qPCR	83.4		P	50 - 175
1977097	GFD-purified-qPCR	119	153	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P343695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975972	BacR-qPCR	77.8		P	50 - 175
1976662	BacR-qPCR	66.4		P	50 - 175
1976664	BacR-qPCR	94.7		P	50 - 175
1977094	BacR-qPCR	82.8		P	50 - 175
1977095	BacR-qPCR	70.2		P	50 - 175
1977096	BacR-qPCR	68.6		P	50 - 175
1977097	BacR-qPCR	57.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P342145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975970	Chlorophyll-a, Corrected	28.4	Sample	F	0 - 25
1975970	Chlorophyll-a, Uncorrected	29.2	Sample	F	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P342991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983223	HF183-qPCR	12.0	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P343695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976130	HF183-qPCR	4.65	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P343720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977097	GFD-purified-qPCR	24.8	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: 1975971
Field Sample ID: G2SW0032

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.4	P	50 - 300

Lab Sample ID: 1975972
Field Sample ID: G1SW0093

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.6	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	93.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	85.2	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	86.4						28.4	
	Chlorophyll-a, Uncorrected							29.2	
SOP-PCR-1.0	HF183-qPCR	104	89.3	73.6	74.2	61.3			12.0
				82.2					
	HF183-qPCR	79.5	121	117	87.9	96.7			4.65
				94.3					
SOP-PCR-1.2	GULL2-qPCR	48.3	97.1	53.7	74.5	72.2			
				86.2					
SOP-PCR-1.3	GFD-purified-qPCR	34.1	20.1	119	95.5	156			24.8
				83.4					
SOP-PCR-1.4	BacR-qPCR	35.2	117	77.8	66.4	94.7			
				82.8					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter method using modified mTEC by Advanced Environmental Tampa Lab for SWD	1975974
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1975968, 1975969, 1975970
SM 9230 C / E84589	Enterococci by membrane filter method by Advanced Environmental Overflow Laboratories for SWD	1975975, 1975976, 1975977
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1975971, 1975972

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific <i>Catelliboccus marimammalium</i> Gull2 genetic marker with quantitative polymerase chain reaction	1975972
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific <i>Helicobacter</i> GFD genetic marker with quantitative polymerase chain reaction	1975972
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific <i>Bacteroidetes</i> BacR genetic marker with quantitative polymerase chain reaction	1975972
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1975971, 1975972, 1975973

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	03/19/2018	03/19/2018 14:45		03/20/2018 14:15	AEL - Tampa	1975974
SM 10200 H (mod.)	03/20/2018	03/20/2018 12:50	Cathy Sherrer	03/22/2018 13:15	Kim M. Spencer	1975968, 1975969, 1975970
SM 9230 C	03/19/2018	03/19/2018 15:00		03/20/2018 14:00	AEL - Tampa	1975975, 1975976, 1975977
SOP-PCR-1.0	03/20/2018	03/20/2018 12:55	Puja Jasrotia	04/20/2018 11:41	Mailin Lopez	1975972
	03/20/2018	03/20/2018 12:55	Sarah Menz	04/19/2018 13:30	Mailin Lopez	1975971
SOP-PCR-1.2	03/20/2018	03/20/2018 12:55	Puja Jasrotia	04/23/2018 12:32	Sarah Menz	1975972
SOP-PCR-1.3	03/20/2018	03/20/2018 12:55	Sarah Menz	04/24/2018 10:24	Sarah Menz	1975972
SOP-PCR-1.4	03/20/2018	03/20/2018 12:55	Puja Jasrotia	04/20/2018 14:47	Sarah Menz	1975972
SOP-PCR-4.0	03/20/2018	03/20/2018 12:55	Angela Smith	04/18/2018 15:52	Puja Jasrotia	1975971, 1975972, 1975973