

Biological Analysis Report

WQAP-2017-04-12-04

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 - Tampa
9610 Princess Palm Avenue
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DOH Accreditation E84589

Event Description: **RUN 10**
Request ID: **RQ-2017-04-10-21**
Customer: **WQAP**
Project ID: **SMP**

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Date Certified: 31-MAY-2017 15:18



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: CLAM BAYOU

Collection Date/Time: 04/11/2017 09:45

Field ID: G5SW0135

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888117	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.8		ug/L	P323588	
		Phaeophytin-a	0.74	I	ug/L	P323588	
		Chlorophyll/Phaeophytin Ratio	1.6			P323588	
		Chlorophyll-a, Uncorrected	3.4		ug/L	P323588	

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: PP DITCHER# 1

Collection Date/Time: 04/11/2017 10:35

Field ID: G5SW0134

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888118	SM 10200 H (mod.)	Chlorophyll-a, Corrected	18		ug/L	P323588	
		Phaeophytin-a	3.3		ug/L	P323588	
		Chlorophyll/Phaeophytin Ratio	1.6			P323588	
		Chlorophyll-a, Uncorrected	20		ug/L	P323588	

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: MULLET TIDAL

Collection Date/Time: 04/11/2017 13:30

Field ID: G5SW0055

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888119	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.5		ug/L	P323588	
		Phaeophytin-a	2.0		ug/L	P323588	
		Chlorophyll/Phaeophytin Ratio	1.5			P323588	
		Chlorophyll-a, Uncorrected	8.0		ug/L	P323588	

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: CLAM BAYOU

Collection Date/Time: 04/11/2017 09:45

Field ID: G5SW0135

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888120	SOP-PCR-1.0	HF183-qPCR**	36	T	GEU/100 mL	P324401	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1888135	SM 9230 C	Enterococci-Membrane Filter	783	B	cfu/100 mL		

Sample Location: PP DITCHER# 1

Collection Date/Time: 04/11/2017 10:35

Field ID: G5SW0134

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888121	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P324401	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P324401	
	SOP-PCR-1.3	GFD-purified-qPCR**	28	T	TSC/100 mL	P324456	LCS, MS, RPD

Field ID: G5SW0134

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888121	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P324401	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1888136	SM 9230 C	Enterococci-Membrane Filter	150	B	cfu/100 mL		

Ref. Method and Comment:
 SOP-PCR-1.0: No amplification of HF183 marker.
 SOP-PCR-1.2: No amplification of GULL2 marker.
 SOP-PCR-1.3: Analyte detected at a level below the current nominal MDL.
 SOP-PCR-1.4: No amplification of BACR marker.

Sample Location: McKAY TIDAL

Collection Date/Time: 04/11/2017 11:25

Field ID: G5SW0130

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888122	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P324401	
	SOP-PCR-1.2	GULL2-qPCR**	420	T	TSC/100 mL	P324401	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P324401	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1888137	SM 9230 C	Enterococci-Membrane Filter	198	B	cfu/100 mL		

Ref. Method and Comment:
 SOP-PCR-1.0: No amplification of HF183 marker.
 SOP-PCR-1.4: No amplification of BACR marker.

Sample Location: MULLET TIDAL

Collection Date/Time: 04/11/2017 13:30

Field ID: G1SW0055

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888123	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P324401	
	SOP-PCR-1.2	GULL2-qPCR**	6.0E+03	I	TSC/100 mL	P324401	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P324401	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1888138	SM 9230 C	Enterococci-Membrane Filter	520		cfu/100 mL		

Ref. Method and Comment:
 SOP-PCR-1.0: No amplification of HF183 marker.
 SOP-PCR-1.4: No amplification of BACR marker.

Sample Location: ALLIGATOR CRK @ OLD COACHMAN

Collection Date/Time: 04/11/2017 14:05

Field ID: G1SW0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888124	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1888139	EPA 1603	Escherichia coli-Membrane Filter**	70	B	cfu/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P323588

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

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P323588

Component	Result	Code	Units
Phaeophytin-a	0.40	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P324401

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

Reference Method: SOP-PCR-1.2
Batch ID: P324401

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

Reference Method: SOP-PCR-1.3
Batch ID: P324456

Component	Result	Code	Units
GFD-purified-qPCR	4.0E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P324401

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: P323588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P324401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	80.7	92.7	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P324401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.0	142	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P324456

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: P324456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	118	18.6	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P324401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	79.1	69.0	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P324401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887856	HF183-qPCR	67.0		P	50 - 175
1888120	HF183-qPCR	88.4		P	50 - 175
1888121	HF183-qPCR	86.8		P	50 - 175
1888122	HF183-qPCR	83.5		P	50 - 175
1888123	HF183-qPCR	168		P	50 - 175
1888671	HF183-qPCR	89.3		P	50 - 175
1888808	HF183-qPCR	78.4		P	50 - 175
1888810	HF183-qPCR	87.5		P	50 - 175
1888886	HF183-qPCR	95.0		P	50 - 175
1895469	HF183-qPCR	107		P	50 - 175
1895470	HF183-qPCR	70.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P324401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888121	GULL2-qPCR	63.6		P	50 - 300
1888122	GULL2-qPCR	60.5		P	50 - 300
1888123	GULL2-qPCR	78.0		P	50 - 300
1888671	GULL2-qPCR	146		P	50 - 300
1888808	GULL2-qPCR	56.1		P	50 - 300
1888810	GULL2-qPCR	79.4	105	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P324456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888121	GFD-purified-qPCR	73.8	118	P/P	50 - 175
1888671	GFD-purified-qPCR	85.6		P	50 - 175
1888810	GFD-purified-qPCR	46.9		F	50 - 175
1889571	GFD-purified-qPCR	141		P	50 - 175
1892528	GFD-purified-qPCR	41.0		F	50 - 175
1892629	GFD-purified-qPCR	13.7		F	50 - 175
1892632	GFD-purified-qPCR	87.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
 Batch ID: P324401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888121	BacR-qPCR	71.5		P	50 - 175
1888122	BacR-qPCR	73.7		P	50 - 175
1888123	BacR-qPCR	71.8		P	50 - 175
1888671	BacR-qPCR	72.9		P	50 - 175
1888808	BacR-qPCR	72.3		P	50 - 175
1888810	BacR-qPCR	61.3	67.9	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P324401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895471	HF183-qPCR	21.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P324401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888810	GULL2-qPCR	15.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P324456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888121	GFD-purified-qPCR	46.3	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P324401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888810	BacR-qPCR	10.3	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: 1888120
 Field Sample ID: G5SW0135

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	88.2	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 1888121
Field Sample ID: G5SW0134

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	82.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	99.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300

Lab Sample ID: 1888122
Field Sample ID: G5SW0130

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	96.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	92.2	P	50 - 300

Lab Sample ID: 1888123
Field Sample ID: G1SW0055

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	94.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	128	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	117	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	102							
SOP-PCR-1.0	HF183-qPCR	92.7	80.7	86.8	83.5	168			21.8
				89.3					
SOP-PCR-1.2	GULL2-qPCR	142	90.0	79.4	105	146			15.7
				63.6					
SOP-PCR-1.3	GFD-purified-qPCR	18.6	118	141	73.8	118			46.3
				46.9					
SOP-PCR-1.4	BacR-qPCR	69.0	79.1	71.5	73.7	71.8			10.3
				72.3					

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	1888139
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1888117, 1888118, 1888119
SM 9230 C / E31780	Enterococci by membrane filter method by Advanced Environmental Overflow Laboratories for SWD	1888135, 1888136, 1888137, 1888138
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1888120, 1888121, 1888122, 1888123
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium genetic marker with quantitative polymerase chain reaction	1888121, 1888122, 1888123
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter genetic marker with quantitative polymerase chain reaction	1888121
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes genetic marker with quantitative polymerase chain reaction	1888121, 1888122, 1888123

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1888120, 1888121, 1888122, 1888123, 1888124

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	04/11/2017			04/11/2017 17:30	AEL - Tampa	1888139
SM 10200 H (mod.)	04/12/2017	04/12/2017 13:48	Elizabeth Lovern	04/18/2017	Kim M. Spencer	1888117, 1888118, 1888119
SM 9230 C	04/11/2017			04/11/2017	AEL - Tampa	1888135, 1888136, 1888137, 1888138
SOP-PCR-1.0	04/12/2017	04/12/2017 13:49	Avril Wood	05/08/2017	Puja Jasrotia	1888120, 1888121, 1888122, 1888123
SOP-PCR-1.2	04/12/2017	04/12/2017 13:49	Avril Wood	05/09/2017	Sarah Menz	1888122, 1888123
	04/12/2017	04/12/2017 13:49	Sarah Menz	05/09/2017	Sarah Menz	1888121
SOP-PCR-1.3	04/12/2017	04/12/2017 13:49	Puja Jasrotia	05/23/2017	Sarah Menz	1888121
SOP-PCR-1.4	04/12/2017	04/12/2017 13:49	Avril Wood	05/09/2017	Sarah Menz	1888121, 1888122, 1888123
SOP-PCR-4.0	04/12/2017	04/12/2017 13:49	Avril Wood	05/03/2017	Puja Jasrotia	1888120, 1888121, 1888122, 1888123, 1888124