

Biological Analysis Report

WQAP-2017-08-16-03

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
Tampa, Florida 33619
DOH Accreditation E84589

Event Description: **RUN 11**
Request ID: **RQ-2017-08-14-26**
Customer: **WQAP**
Project ID: **SMP**

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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: Bishop Tidal

Collection Date/Time: 08/15/2017 10:55

Field ID: G1SW0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921776	SM 10200 H (mod.)	Chlorophyll-a, Corrected	22		ug/L	P330632	
		Phaeophytin-a	1.4		ug/L	P330632	
		Chlorophyll-a, Uncorrected	24		ug/L	P330632	

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: Bishop Tidal

Collection Date/Time: 08/15/2017 10:55

Field ID: G1SW0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921800	SM 9230 C	Enterococci-Membrane Filter	440		cfu/100 mL		

Sample Location: Bishop Tidal

Collection Date/Time: 08/15/2017 10:55

Field ID: G1SW0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921798	SOP-PCR-1.0	HF183-qPCR**	40	T	GEU/100 mL	P330300	
	SOP-PCR-1.2	GULL2-qPCR**	3.8E+03	T	TSC/100 mL	P330300	LCS, MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Cedar Tidal

Collection Date/Time: 08/15/2017 11:40

Field ID: G5SW0128

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921777	SM 10200 H (mod.)	Chlorophyll-a, Corrected	30		ug/L	P330634	
		Phaeophytin-a	4.6		ug/L	P330634	
		Chlorophyll-a, Uncorrected	34		ug/L	P330634	

Sample Location: Cedar Tidal

Collection Date/Time: 08/15/2017 11:40

Field ID: G5SW0128

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921801	SM 9230 C	Enterococci-Membrane Filter	400		cfu/100 mL		

Sample Location: Cedar Tidal

Collection Date/Time: 08/15/2017 11:40

Field ID: G5SW0128

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921797	SOP-PCR-1.0	HF183-qPCR**	63	T	GEU/100 mL	P330300	
	SOP-PCR-1.3	GFD-purified-qPCR**	190	IJ	TSC/100 mL	P330301	LCS, MS, RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

Sample Location: Klosterman TP 222

Collection Date/Time: 08/15/2017 12:35

Field ID: G5SW0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921778	SM 10200 H (mod.)	Chlorophyll-a, Corrected	56	A	ug/L	P330634	
		Phaeophytin-a	18	A	ug/L	P330634	
		Chlorophyll-a, Uncorrected	69	A	ug/L	P330634	

Sample Location: Klosterman TP 222

Collection Date/Time: 08/15/2017 12:35

Field ID: G5SW0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921802	SM 9230 C	Enterococci-Membrane Filter	280		cfu/100 mL		

Sample Location: Klosterman TP 222

Collection Date/Time: 08/15/2017 12:35

Field ID: G5SW0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921799	SOP-PCR-1.0	HF183-qPCR**	45	T	GEU/100 mL	P331321	
	SOP-PCR-1.3	GFD-purified-qPCR**	210	IJ	TSC/100 mL	P330301	LCS, MS, RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P330632

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: SM 10200 H (mod.)

Batch ID: P330634

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: P330300

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

Reference Method: SOP-PCR-1.0

Batch ID: P331321

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P330300

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

Reference Method: SOP-PCR-1.3
Batch ID: P330301

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P330632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	105		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P330634

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	104		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P330300

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	80.0	55.5	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P331321

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	93.0	54.7	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P330300

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	82.2	33.6	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P330301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	103	15.1	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P330300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921797	HF183-qPCR	57.8		P	50 - 175
1921798	HF183-qPCR	73.0	68.4	P/P	50 - 175
1922305	HF183-qPCR	55.0		P	50 - 175
1922308	HF183-qPCR	74.3		P	50 - 175
1922309	HF183-qPCR	63.1		P	50 - 175
1922310	HF183-qPCR	67.7		P	50 - 175
1922311	HF183-qPCR	60.6		P	50 - 175
1922345	HF183-qPCR	63.7		P	50 - 175
1922346	HF183-qPCR	70.6		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P331321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919607	HF183-qPCR	53.3		P	50 - 175
1921799	HF183-qPCR	58.4		P	50 - 175
1927980	HF183-qPCR	86.5		P	50 - 175
1927981	HF183-qPCR	89.6		P	50 - 175
1927982	HF183-qPCR	80.6	85.5	P/P	50 - 175
1928302	HF183-qPCR	89.6		P	50 - 175
1928303	HF183-qPCR	77.9		P	50 - 175
1928363	HF183-qPCR	76.9		P	50 - 175
1928530	HF183-qPCR	82.2		P	50 - 175
1928747	HF183-qPCR	87.4		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P330300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921798	GULL2-qPCR	71.1	60.0	P/P	50 - 300
1922345	GULL2-qPCR	31.6		F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P330301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911744	GFD-purified-qPCR	97.0		P	50 - 175
1919955	GFD-purified-qPCR	64.0		P	50 - 175
1921668	GFD-purified-qPCR	36.2		F	50 - 175
1921797	GFD-purified-qPCR	21.2		F	50 - 175
1921799	GFD-purified-qPCR	27.1	35.0	F/F	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P330632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921721	Chlorophyll-a, Corrected	5.15	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P330632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921721	Chlorophyll-a, Uncorrected	5.85	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
 Batch ID: P330634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921778	Chlorophyll-a, Corrected	4.57	Sample	P	0 - 25
1921778	Chlorophyll-a, Uncorrected	4.90	Sample	P	0 - 25
1921778	Phaeophytin-a	6.32	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P330300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921798	HF183-qPCR	6.56	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P331321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927982	HF183-qPCR	5.85	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P330300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921798	GULL2-qPCR	16.9	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P330301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921799	GFD-purified-qPCR	25.3	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: 1921797
 Field Sample ID: G5SW0128

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.4	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 1921798
Field Sample ID: G1SW0054

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	88.1	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	74.6	P	50 - 300

Lab Sample ID: 1921799
Field Sample ID: G5SW0035

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	60.8	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	105						5.15	
	Chlorophyll-a, Corrected	104						4.57	
	Chlorophyll-a, Uncorrected							5.85	
	Chlorophyll-a, Uncorrected							4.90	
	Phaeophytin-a							6.32	
SOP-PCR-1.0	HF183-qPCR	55.5	80.0	68.4	55.0	74.3			6.56
				63.1					
	HF183-qPCR	54.7	93.0	86.5	89.6	80.6			5.85
				85.5					
SOP-PCR-1.2	GULL2-qPCR	33.6	82.2	71.1	60.0	31.6			16.9
SOP-PCR-1.3	GFD-purified-qPCR	15.1	103	36.2	21.2	27.1			25.3
				35.0					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1921776, 1921777, 1921778
SM 9230 C / E84589	Enterococci by membrane filter method by Advanced Environmental Overflow Laboratories for SWD	1921800, 1921801, 1921802
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1921797, 1921798, 1921799
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1921798
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1921797, 1921799
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1921797, 1921798, 1921799

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	08/16/2017	08/16/2017 12:35	Elizabeth Lovern	08/22/2017	Kim M. Spencer	1921776, 1921777, 1921778
SM 9230 C	08/15/2017	08/15/2017 15:23		08/16/2017	AEL - Tampa	1921800, 1921801, 1921802
SOP-PCR-1.0	08/16/2017	08/16/2017 11:30	Avril Wood	08/22/2017	Puja Jasrotia	1921797, 1921798
	08/16/2017	08/16/2017 11:30	Avril Wood	09/15/2017	Puja Jasrotia	1921799
SOP-PCR-1.2	08/16/2017	08/16/2017 11:30	Avril Wood	08/28/2017	Sarah Menz	1921798
SOP-PCR-1.3	08/16/2017	08/16/2017 11:30	Avril Wood	08/18/2017	Sarah Menz	1921797, 1921799
SOP-PCR-4.0	08/16/2017	08/16/2017 11:30	Avril Wood	09/14/2017	Puja Jasrotia	1921797, 1921798, 1921799