

Biological Analysis Report

WQAP-2017-07-26-06

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **SMP 2017 Freshwater Kit A with B/T/M**
Request ID: **RQ-2017-06-26-36**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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Certified by: Cheryl A. Swanson, Environmental Manager

Date Certified: 01-SEP-2017 10:45



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, Microbiology and Molecular.

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: LAKE OVERSTREET DRAIN @ N MERIDIAN RD. Collection Date/Time: 07/26/2017 09:15

Field ID: G1TLHR0069-2017-03

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1916671	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P329477	
		Phaeophytin-a	0.40	U	ug/L	P329477	
		Chlorophyll/Phaeophytin Ratio	1.6			P329477	
		Chlorophyll-a, Uncorrected	0.60	I	ug/L	P329477	
1916672	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	J	MPN/100 mL	P329689	
1916673	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P330498	LCS
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	UJ	TSC/100 mL	P330498	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P330552	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P330498	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

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.

SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result may be higher than reported.

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

SOP-PCR-1.2: No amplification of GULL2 marker. Quality control failure(s) observed. See QA report for details. Precision data unavailable due to inhibition in QC sample.

SOP-PCR-1.3: No amplification of GFD marker.

SOP-PCR-1.4: No amplification of BACR marker. Precision data unavailable.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P329477

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 9223 Quanti-Tray

Batch ID: P329689

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0

Batch ID: P330498

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

Reference Method: SOP-PCR-1.2

Batch ID: P330498

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

Reference Method: SOP-PCR-1.3

Batch ID: P330552

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.3
 Batch ID: P330552

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

Reference Method: SOP-PCR-1.4
 Batch ID: P330498

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: P329477

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

Reference Method: SOP-PCR-1.0
 Batch ID: P330498

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	93.0	2.05	P/F	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P330498

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	82.2	163	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P330552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	120	12.9	P/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P330498

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	134	31.1	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P330498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914272	HF183-qPCR	79.4		P	50 - 175
1914985	HF183-qPCR	78.6		P	50 - 175
1915515	HF183-qPCR	70.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P330498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915994	HF183-qPCR	71.6		P	50 - 175
1915995	HF183-qPCR	69.3		P	50 - 175
1915996	HF183-qPCR	82.1		P	50 - 175
1916673	HF183-qPCR	88.5		P	50 - 175
1917382	HF183-qPCR	84.6		P	50 - 175
1922728	HF183-qPCR	81.7		P	50 - 175
1922729	HF183-qPCR	62.3		P	50 - 175
1922730	HF183-qPCR	90.6		P	50 - 175
1922731	HF183-qPCR	71.8		P	50 - 175
1922804	HF183-qPCR	73.0	67.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P330498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915515	GULL2-qPCR	35.9		F	50 - 300
1916673	GULL2-qPCR	45.5		F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P330552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914093	GFD-purified-qPCR	112		P	50 - 175
1915515	GFD-purified-qPCR	62.4		P	50 - 175
1916673	GFD-purified-qPCR	135		P	50 - 175
1922635	GFD-purified-qPCR	0.0		F	50 - 175
1923592	GFD-purified-qPCR	221		F	50 - 175
1923820	GFD-purified-qPCR	25.5		F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P330498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915515	BacR-qPCR	132		P	50 - 175
1916673	BacR-qPCR	116		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P329477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916784	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1916784	Chlorophyll-a, Corrected	1.12	Sample	P	0 - 25
1916784	Chlorophyll-a, Uncorrected	0.0303	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P329689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916297	Escherichia Coli-Quanti-Tray	25.1	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P330498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922804	HF183-qPCR	7.29	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P330552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922635	GFD-purified-qPCR	10000	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: 1916673
Field Sample ID: G1TLHR0069-2017-03

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	74.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	104	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio							0.0	
	Chlorophyll-a, Corrected	105						1.12	
	Chlorophyll-a, Uncorrected							0.0303	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							25.1	
SOP-PCR-1.0	HF183-qPCR	2.05	93.0	84.6	81.7	62.3			7.29
				90.6					
SOP-PCR-1.2	GULL2-qPCR	163	82.2	35.9	45.5				
SOP-PCR-1.3	GFD-purified-qPCR	12.9	120	0.0	221	25.5			10000
				112					
SOP-PCR-1.4	BacR-qPCR	31.1	134	132	116				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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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	1916671
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1916672
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1916673
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1916673
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1916673
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1916673
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1916673

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	07/26/2017	07/26/2017 15:20	Morgan Lane	08/01/2017	Kim M. Spencer	1916671
SM 9223 Quanti-Tray	07/26/2017	07/26/2017 15:35	Carina A. Tull	07/27/2017 09:55	Carina A. Tull	1916672
SOP-PCR-1.0	07/26/2017	07/26/2017 14:00	Puja Jasrotia	08/24/2017	Puja Jasrotia	1916673
SOP-PCR-1.2	07/26/2017	07/26/2017 14:00	Puja Jasrotia	08/28/2017	Sarah Menz	1916673
SOP-PCR-1.3	07/26/2017	07/26/2017 14:00	Avril Wood	08/29/2017	Sarah Menz	1916673
SOP-PCR-1.4	07/26/2017	07/26/2017 14:00	Puja Jasrotia	08/25/2017	Sarah Menz	1916673
SOP-PCR-4.0	07/26/2017	07/26/2017 14:00	Avril Wood	08/21/2017	Puja Jasrotia	1916673