

Biological Analysis Report

WQAP-2017-03-28-04

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-2017-03-20-34**
Customer: **WQAP**
Project ID: **SMP**

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Date Certified: 12-MAY-2017 15:54



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: Bear Creek @ SR 257

Collection Date/Time: 03/28/2017 10:35

Field ID: G1TLHR0052-2017-01

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883810	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	I	ug/L	P322588	
		Phaeophytin-a	1.4		ug/L	P322588	
		Chlorophyll/Phaeophytin Ratio	1.4			P322588	
		Chlorophyll-a, Uncorrected	2.5		ug/L	P322588	
1883815	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1119.9		MPN/100 mL	P322601	
1883844	SOP-PCR-1.0	HF183-qPCR**	200	I	GEU/100 mL	P323581	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Ocklawaha Creek @ SR 267

Collection Date/Time: 03/28/2017 11:00

Field ID: G1TLHR0053-2017-01

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883811	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.75	I	ug/L	P322588	
		Phaeophytin-a	0.70	I	ug/L	P322588	
		Chlorophyll/Phaeophytin Ratio	1.4			P322588	
		Chlorophyll-a, Uncorrected	1.2		ug/L	P322588	
1883816	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	488.4		MPN/100 mL	P322601	
1883845	SOP-PCR-1.0	HF183-qPCR**	64	T	GEU/100 mL	P323751	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Big Creek @ CR 2224

Collection Date/Time: 03/28/2017 11:35

Field ID: G1TLHR0057-2017-01

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883812	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.56	I	ug/L	P322588	
		Phaeophytin-a	0.40	U	ug/L	P322588	
		Chlorophyll/Phaeophytin Ratio	1.4			P322588	
		Chlorophyll-a, Uncorrected	0.81	I	ug/L	P322588	
1883817	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	49.6		MPN/100 mL	P322601	
1883846	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Harvey Creek @ HWY 20

Collection Date/Time: 03/28/2017 12:10

Field ID: G1TLHR0058-2017-01

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883813	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.1	I	ug/L	P322588	
		Phaeophytin-a	0.40	U	ug/L	P322588	
		Chlorophyll/Phaeophytin Ratio	1.6			P322588	
		Chlorophyll-a, Uncorrected	1.2		ug/L	P322588	
1883818	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	115.3		MPN/100 mL	P322601	
1883847	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Harvey Creek @ HWY 20

Collection Date/Time: 03/28/2017 12:15

Field ID: G1TLHR0058-2017-01_dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883814	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.84	I	ug/L	P322588	
		Phaeophytin-a	0.40	U	ug/L	P322588	
		Chlorophyll/Phaeophytin Ratio	1.7			P322588	
		Chlorophyll-a, Uncorrected	0.90	I	ug/L	P322588	
1883819	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	88.2		MPN/100 mL	P322601	
1883848	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P322588

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: P322601

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

Reference Method: SOP-PCR-1.0
 Batch ID: P323581

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

Reference Method: SOP-PCR-1.0
 Batch ID: P323751

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P322588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	88.0		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P323581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	80.5	63.9	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P323751

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	81.5	88.5	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P323581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883005	HF183-qPCR	78.7		P	50 - 175
1883844	HF183-qPCR	87.8		P	50 - 175
1889883	HF183-qPCR	70.9	64.5	P/P	50 - 175
1890153	HF183-qPCR	62.3		P	50 - 175
1890156	HF183-qPCR	60.4		P	50 - 175
1890157	HF183-qPCR	85.9		P	50 - 175
1890158	HF183-qPCR	78.6		P	50 - 175
1890159	HF183-qPCR	70.4		P	50 - 175
1890160	HF183-qPCR	94.7		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P323751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882563	HF183-qPCR	103		P	50 - 175
1883845	HF183-qPCR	121		P	50 - 175
1884032	HF183-qPCR	130		P	50 - 175
1884561	HF183-qPCR	83.6		P	50 - 175
1884897	HF183-qPCR	93.6		P	50 - 175
1891013	HF183-qPCR	92.3		P	50 - 175
1891014	HF183-qPCR	91.7	82.6	P/P	50 - 175
1891015	HF183-qPCR	93.5		P	50 - 175
1891016	HF183-qPCR	77.2		P	50 - 175
1891018	HF183-qPCR	84.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P322588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883763	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1883763	Chlorophyll-a, Corrected	1.72	Sample	P	0 - 25
1883763	Chlorophyll-a, Uncorrected	6.98	Sample	P	0 - 25
1883763	Phaeophytin-a	13.1	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
 Batch ID: P322601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883765	Escherichia Coli-Quanti-Tray	33.1	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
 Batch ID: P323581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889883	HF183-qPCR	9.51	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P323751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891014	HF183-qPCR	10.4	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: 1883844
 Field Sample ID: G1TLHR0052-2017-01

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	64.7	P	50 - 300

Lab Sample ID: 1883845
 Field Sample ID: G1TLHR0053-2017-01

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	80.1	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	88.0						1.72	
	Chlorophyll-a, Uncorrected							6.98	
	Phaeophytin-a							13.1	
SM 9223 Quanti-Tray SOP-PCR-1.0	Escherichia Coli-Quanti-Tray							33.1	
	HF183-qPCR	63.9	80.5	70.9	64.5	62.3			9.51
	HF183-qPCR	88.5	81.5	60.4	92.3	91.7	82.6		10.4
				93.5					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1883810, 1883811, 1883812, 1883813, 1883814
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1883815, 1883816, 1883817, 1883818, 1883819
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1883844, 1883845
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1883844, 1883845, 1883846, 1883847, 1883848

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	03/28/2017	03/28/2017 13:50	Carina A. Tull	03/31/2017	Brian Cumbie	1883810, 1883811, 1883812, 1883813, 1883814
SM 9223 Quanti-Tray	03/28/2017	03/28/2017 15:35	Morgan Lane	03/29/2017 10:40	Morgan Lane	1883815, 1883816, 1883817, 1883818, 1883819
SOP-PCR-1.0	03/28/2017	03/28/2017 14:18	Avril Wood	04/21/2017	Puja Jasrotia	1883844
	03/28/2017	03/28/2017 14:18	Sarah Menz	04/24/2017	Puja Jasrotia	1883845
SOP-PCR-4.0	03/28/2017	03/28/2017 14:18	Sarah Menz	04/20/2017	Puja Jasrotia	1883844, 1883845, 1883846, 1883847, 1883848