

Biological Analysis Report

WQAP-2017-10-02-01

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

Event Description: **SMP 2017 kit_b/t/m PCR-FILTER / PCR-HF183 / (811
Ocklawaha Creek)**
Request ID: **RQ-2017-09-25-27**
Customer: **WQAP**
Project ID: **SMP**

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Date Certified: 09-NOV-2017 14:39



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: 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: Sweetwater Branch @ Cody Church Rd

Collection Date/Time: 10/02/2017 10:45

Field ID: G1TLHR0040-2017-07

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1933149	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	435.0		MPN/100 mL	P333138	
1933151	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P332549	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P332549	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	41	T	TSC/100 mL	P333940	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P332549	
	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.

SOP-PCR-1.4: No amplification of BACR marker.

Sample Location: Lake Overstreet Drain @ N Meridian Rd

Collection Date/Time: 10/02/2017 12:10

Field ID: G1TLHR0069-2017-06

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1933150	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	211.0		MPN/100 mL	P333138	
1933152	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P332549	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P332549	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:

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

SOP-PCR-1.4: No amplification of BACR marker.

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 Quanti-Tray

Batch ID: P333138

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

Reference Method: SOP-PCR-1.0

Batch ID: P332549

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

Reference Method: SOP-PCR-1.2

Batch ID: P332549

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

Reference Method: SOP-PCR-1.3

Batch ID: P333940

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P332549

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P332549

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.4	104	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P332549

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	123	87.8	P/P	50 - 300
GULL2-qPCR	157	62.6	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P333940

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	117	27.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P332549

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	99.4	128	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P332549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1928362	HF183-qPCR	74.9		P	50 - 175
1929672	HF183-qPCR	76.7		P	50 - 175
1931498	HF183-qPCR	74.7		P	50 - 175
1933151	HF183-qPCR	76.4	74.5	P/P	50 - 175
1933152	HF183-qPCR	76.0		P	50 - 175
1933658	HF183-qPCR	73.2		P	50 - 175
1934434	HF183-qPCR	83.4		P	50 - 175
1934435	HF183-qPCR	78.2		P	50 - 175
1934479	HF183-qPCR	83.9		P	50 - 175
1934480	HF183-qPCR	85.0		P	50 - 175
1934546	HF183-qPCR	69.3		P	50 - 175
1934548	HF183-qPCR	82.6		P	50 - 175
1934549	HF183-qPCR	56.4		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P332549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1928362	GULL2-qPCR	77.6		P	50 - 300
1929672	GULL2-qPCR	67.8		P	50 - 300
1933151	GULL2-qPCR	59.7	46.7	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P333940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932386	GFD-purified-qPCR	54.7		P	50 - 175
1933151	GFD-purified-qPCR	140		P	50 - 175
1935452	GFD-purified-qPCR	137		P	50 - 175
1939413	GFD-purified-qPCR	204		F	50 - 175
1939415	GFD-purified-qPCR	122	126	P/P	50 - 175
1939416	GFD-purified-qPCR	87.0		P	50 - 175
1939983	GFD-purified-qPCR	55.0		P	50 - 175
1940025	GFD-purified-qPCR	120		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P332549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1928362	BacR-qPCR	79.8		P	50 - 175
1929672	BacR-qPCR	81.4		P	50 - 175
1933151	BacR-qPCR	78.9	81.7	P/P	50 - 175
1933152	BacR-qPCR	82.5		P	50 - 175
1934225	BacR-qPCR	75.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P333138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933161	Escherichia Coli-Quanti-Tray	16.9	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P332549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933151	HF183-qPCR	2.51	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P332549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933151	GULL2-qPCR	24.3	Spike	P	0 - 25
1933846	GULL2-qPCR	24.1	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P333940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939415	GFD-purified-qPCR	3.28	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P332549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933151	BacR-qPCR	3.46	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: 1933151
Field Sample ID: G1TLHR0040-2017-07

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	74.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	84.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	88.2	P	50 - 300

Lab Sample ID: 1933152
Field Sample ID: G1TLHR0069-2017-06

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	79.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	87.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SM 9223 Quanti-Tray SOP-PCR-1.0	Escherichia Coli-Quanti-Tray HF183-qPCR	104	94.4		74.9	76.7	74.7		16.9	2.51
					76.4					
SOP-PCR-1.2	GULL2-qPCR	123	62.6	157	77.6	67.8	59.7			24.1 24.3
		87.8			46.7					
SOP-PCR-1.3	GFD-purified-qPCR	27.2	117		54.7	140	137			3.28
					204					
SOP-PCR-1.4	BacR-qPCR	128	99.4		79.8	81.4	78.9			3.46
					81.7					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1933149, 1933150

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1933151, 1933152
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1933151
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1933151
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1933151, 1933152
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1933151, 1933152

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	10/02/2017	10/02/2017 15:05	Carina A. Tull	10/03/2017 10:40	Carina A. Tull	1933149, 1933150
SOP-PCR-1.0	10/02/2017	10/02/2017 14:00	Puja Jasrotia	10/12/2017	Sarah Menz	1933151, 1933152
SOP-PCR-1.2	10/02/2017	10/02/2017 14:00	Puja Jasrotia	10/25/2017	Sarah Menz	1933151
SOP-PCR-1.3	10/02/2017	10/02/2017 14:00	Puja Jasrotia	11/03/2017	Sarah Menz	1933151
SOP-PCR-1.4	10/02/2017	10/02/2017 14:00	Puja Jasrotia	10/16/2017	Sarah Menz	1933151, 1933152
SOP-PCR-4.0	10/02/2017	10/02/2017 14:00	Avril Wood	10/24/2017	Puja Jasrotia	1933151, 1933152