

Biological Analysis Report

WQAP-2017-08-21-02

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**
Request ID: **RQ-2017-08-14-47**
Customer: **WQAP**
Project ID: **SMP**

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Date Certified: 20-SEP-2017 10:11



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: BEAR CREEK @ SR 267

Collection Date/Time: 08/21/2017 11:30

Field ID: G1TLHR0052-2017-06

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922807	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	6488.0		MPN/100 mL	P330839	
1922809	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P330613	LCS
	SOP-PCR-1.4	BacR-qPCR**	5.02E+05		TSC/100 mL	P330613	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

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

Sample Location: BIG CREEK @ CR 2224

Collection Date/Time: 08/21/2017 12:05

Field ID: G1TLHR0057-2017-03

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922808	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	J	MPN/100 mL	P330839	
1922810	SOP-PCR-1.0	HF183-purified-qPCR**	48	IJ	GEU/100 mL	P330552	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
 SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result may be higher than reported.
 SOP-PCR-1.0: Quality control failure(s) observed. See QA report for details. Precision data unavailable.

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 Quanti-Tray
Batch ID: P330839

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

Reference Method: SOP-PCR-1.0
Batch ID: P330552

Component	Result	Code	Units
HF183-purified-qPCR	47	U	GEU/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P330613

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

Reference Method: SOP-PCR-1.4
Batch ID: P330613

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

Quality Assurance Report Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P330552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	105	0.237	P/F	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P330613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	3.57	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P330613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	604	96.6	F/P	50 - 175
BacR-qPCR	241	72.4	F/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P330552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921238	HF183-purified-qPCR	95.9		P	50 - 175
1922810	HF183-purified-qPCR	100		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P330613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913976	HF183-qPCR	102		P	50 - 175
1915406	HF183-qPCR	93.5		P	50 - 175
1915693	HF183-qPCR	95.2		P	50 - 175
1922795	HF183-qPCR	75.9		P	50 - 175
1922796	HF183-qPCR	92.0		P	50 - 175
1922809	HF183-qPCR	58.9		P	50 - 175
1923589	HF183-qPCR	108		P	50 - 175
1923590	HF183-qPCR	74.6		P	50 - 175
1923820	HF183-qPCR	83.5		P	50 - 175
1923821	HF183-qPCR	90.4		P	50 - 175
1923822	HF183-qPCR	73.8	68.0	P/P	50 - 175
1924464	HF183-qPCR	115		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P330613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915406	BacR-qPCR	61.3		P	50 - 175
1915693	BacR-qPCR	82.9		P	50 - 175
1922809	BacR-qPCR	50.9		P	50 - 175
1923821	BacR-qPCR	68.9		P	50 - 175
1923822	BacR-qPCR	61.4	52.1	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
 Batch ID: P330839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922803	Escherichia Coli-Quanti-Tray	0.0	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
 Batch ID: P330613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923822	HF183-qPCR	8.22	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P330613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923822	BacR-qPCR	16.8	Spike	P	0 - 25
1928532	BacR-qPCR	8.98	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: 1922809
 Field Sample ID: G1TLHR0052-2017-06

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	92.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	61.3	P	50 - 300

Lab Sample ID: 1922810
 Field Sample ID: G1TLHR0057-2017-03

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	8.15	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							0.0	
SOP-PCR-1.0	HF183-purified-qPCR	0.237	105	95.9	100				
	HF183-qPCR	3.57	117	75.9	92.0	58.9			8.22
				108					
SOP-PCR-1.4	BacR-qPCR	604	72.4	241	68.9	61.4	52.1		16.8
		96.6			61.3				8.98

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1922807, 1922808
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1922809
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1922810
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1922809
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1922809, 1922810

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	08/21/2017	08/21/2017 16:00	Carina A. Tull	08/22/2017 10:15	Carina A. Tull	1922807, 1922808
SOP-PCR-1.0	08/21/2017	08/22/2017 13:45	Avril Wood	09/18/2017	Sarah Menz	1922810
	08/21/2017	08/22/2017 13:45	Puja Jasrotia	08/28/2017	Puja Jasrotia	1922809
SOP-PCR-1.4	08/21/2017	08/22/2017 13:45	Puja Jasrotia	09/19/2017	Sarah Menz	1922809
SOP-PCR-4.0	08/21/2017	08/22/2017 13:45	Puja Jasrotia	09/19/2017	Puja Jasrotia	1922809, 1922810