

Biological Analysis Report

TLH-ROC-2017-11-13-02

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/GRD/BACR/183 (Polk)**
Request ID: **RQ-2017-10-30-57**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

For additional information please contact
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Certified by: Puja Jasrotia,

Date Certified: 18-JAN-2018 12:08

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line underneath.

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: Polk Creek @ End of Merry Robin Rd

Collection Date/Time: 11/13/2017 12:25

Field ID: G1TLHR0055-2017-06

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945750	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	547.5		MPN/100 mL	P335508	
1945751	SOP-PCR-1.0	HF183-qPCR**	96	T	GEU/100 mL	P337556	
	SOP-PCR-1.3	GFD-purified-qPCR**	680	I	TSC/100 mL	P334951	LCS, MS
	SOP-PCR-1.4	BacR-purified-qPCR**	250	UJ	TSC/100 mL	P334951	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.4: No amplification of PURBR marker. 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: P335508

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

Reference Method: SOP-PCR-1.0

Batch ID: P337556

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

Reference Method: SOP-PCR-1.3

Batch ID: P334951

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

Reference Method: SOP-PCR-1.4

Batch ID: P334951

Component	Result	Code	Units
BacR-purified-qPCR	510	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P337556

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	91.2	123	P/P	50 - 175
HF183-qPCR	116	104	P/P	50 - 175
HF183-qPCR	73.9	104	P/P	50 - 175
HF183-qPCR	115	123	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P334951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	149	26.7	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P334951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	91.1	17.3	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P337556

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945751	HF183-qPCR	77.3		P	50 - 175
1949228	HF183-qPCR	75.3		P	50 - 175
1949274	HF183-qPCR	82.8		P	50 - 175
1950149	HF183-qPCR	92.3		P	50 - 175
1950854	HF183-qPCR	84.6		P	50 - 175
1950855	HF183-qPCR	84.7		P	50 - 175
1950863	HF183-qPCR	91.7		P	50 - 175
1956286	HF183-qPCR	88.6		P	50 - 175
1956287	HF183-qPCR	74.7	68.7	P/P	50 - 175
1957454	HF183-qPCR	90.9		P	50 - 175
1957455	HF183-qPCR	82.8		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P334951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938091	GFD-purified-qPCR	82.1		P	50 - 175
1938841	GFD-purified-qPCR	66.4		P	50 - 175
1938972	GFD-purified-qPCR	46.4		F	50 - 175
1939201	GFD-purified-qPCR	48.6		F	50 - 175
1944329	GFD-purified-qPCR	21.6		F	50 - 175
1944330	GFD-purified-qPCR	18.3		F	50 - 175
1944815	GFD-purified-qPCR	53.7		P	50 - 175
1945751	GFD-purified-qPCR	57.8		P	50 - 175
1946394	GFD-purified-qPCR	122	27.6	P/F	50 - 175
1946395	GFD-purified-qPCR	9.14		F	50 - 175
1946396	GFD-purified-qPCR	57.8		P	50 - 175
1946397	GFD-purified-qPCR	21.8		F	50 - 175
1946398	GFD-purified-qPCR	15.2		F	50 - 175
1946905	GFD-purified-qPCR	58.0		P	50 - 175
1946907	GFD-purified-qPCR	30.1		F	50 - 175
1946908	GFD-purified-qPCR	27.0		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P334951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1944815	BacR-purified-qPCR	52.1		P	50 - 175
1945751	BacR-purified-qPCR	67.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P335508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945746	Escherichia Coli-Quanti-Tray	13.7	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P337556

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1956287	HF183-qPCR	8.36	Spike	P	0 - 25
1956287	HF183-qPCR	8.36	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P334951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946394	GFD-purified-qPCR	13.5	Sample	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: 1945751
Field Sample ID: G1TLHR0055-2017-06

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	59.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	3.14	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								13.7	
SOP-PCR-1.0	HF183-qPCR	91.2	123	116	82.8	91.7	77.3			8.36 8.36
			123				88.6			
SOP-PCR-1.3	GFD-purified-qPCR	26.7	149		21.6	18.3	53.7		13.5	
							57.8			

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		Precision		
						LCS	SMP	MS
SOP-PCR-1.4	BacR-purified-qPCR	17.3	91.1	52.1	67.6			

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	1945750
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1945751
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1945751
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1945751
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1945751

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	11/13/2017	11/13/2017 15:50	Carina A. Tull	11/14/2017 10:15	Carina A. Tull	1945750
SOP-PCR-1.0	11/13/2017	11/14/2017 13:30	Puja Jasrotia	01/09/2018	Sarah Menz	1945751
SOP-PCR-1.3	11/13/2017	11/14/2017 13:30	Sarah Menz	11/22/2017	Sarah Menz	1945751
SOP-PCR-1.4	11/13/2017	11/14/2017 13:30	Sarah Menz	12/01/2017	Sarah Menz	1945751
SOP-PCR-4.0	11/13/2017	11/14/2017 13:30	Avril Wood	12/13/2017	Puja Jasrotia	1945751