

Biological Analysis Report

TLH-ROC-2017-11-01-01

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

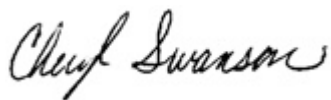
Event Description: **SMP 2017 kit_b/t/m PCR-FILTER / PCR-BACR (728 Sweetwater)**
Request ID: **RQ-2017-10-30-58**
Customer: **TLH-ROC**
Project ID: **SMP**

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

For additional information please contact
Cheryl Swanson - Administrator
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Puja Jasrotia, Ph.D. - Molecular Biology
Jennifer Walters - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 18-DEC-2017 12:39



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 Creek @ CR270

Collection Date/Time: 11/01/2017 11:45

Field ID: G2TLHR0018-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941906	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	686.7		MPN/100 mL	P334789	
1941909	SOP-PCR-1.0	HF183-qPCR**	33	T	GEU/100 mL	P336071	
	SOP-PCR-1.4	BacR-qPCR**	610	T	TSC/100 mL	P334519	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Sweetwater Creek @ CR270 DUP

Collection Date/Time: 11/01/2017 11:45

Field ID: G2TLHR0018-2017-02 DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941907	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	816.4		MPN/100 mL	P334789	
1941910	SOP-PCR-1.0	HF183-qPCR**	36	T	GEU/100 mL	P336071	
	SOP-PCR-1.4	BacR-qPCR**	960	T	TSC/100 mL	P334519	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Field Blank

Collection Date/Time: 11/01/2017 11:40

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941908	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL	P334789	
1941911	SOP-PCR-1.4	BacR-qPCR**	760	U	TSC/100 mL	P334519	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
 SOP-PCR-1.4: No amplification of BACR marker.

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 Quanti-Tray
Batch ID: P334789

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

Reference Method: SOP-PCR-1.0
Batch ID: P336071

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

Reference Method: SOP-PCR-1.4
Batch ID: P334519

Component	Result	Code	Units
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: P336071

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	63.8	105	P/P	50 - 175
HF183-qPCR	111	105	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P334519

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	91.6	103	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P336071

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1940277	HF183-qPCR	57.7		P	50 - 175
1941909	HF183-qPCR	94.3		P	50 - 175
1941910	HF183-qPCR	93.0	102	P/P	50 - 175
1941937	HF183-qPCR	87.4		P	50 - 175
1949075	HF183-qPCR	94.5		P	50 - 175
1950433	HF183-qPCR	90.3		P	50 - 175
1951208	HF183-qPCR	87.9	81.6	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P334519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938442	BacR-qPCR	57.7		P	50 - 175
1939201	BacR-qPCR	62.8		P	50 - 175
1941909	BacR-qPCR	67.1		P	50 - 175
1941910	BacR-qPCR	61.5	67.9	P/P	50 - 175
1941911	BacR-qPCR	62.2		P	50 - 175
1942583	BacR-qPCR	72.9		P	50 - 175
1942883	BacR-qPCR	56.6		P	50 - 175
1942884	BacR-qPCR	72.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P334789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941776	Escherichia Coli-Quanti-Tray	57.2	Sample	P	0 - 80
1941944	Escherichia Coli-Quanti-Tray	55.9	Sample	P	0 - 80

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P336071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941910	HF183-qPCR	9.27	Spike	P	0 - 25
1951208	HF183-qPCR	7.42	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P334519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941910	BacR-qPCR	9.91	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: 1941909
Field Sample ID: G2TLHR0018-2017-02

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	66.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	92.3	P	50 - 300

Lab Sample ID: 1941910
Field Sample ID: G2TLHR0018-2017-02 DUP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	64.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	85.4	P	50 - 300

Lab Sample ID: 1941911
Field Sample ID: Field Blank

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.4	SKETA-qPCR	92.4	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP MS	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray								57.2	55.9
SOP-PCR-1.0	HF183-qPCR	63.8	105	111	94.3	93.0	102			9.27 7.42
		105			94.5					
SOP-PCR-1.4	BacR-qPCR	103	91.6		67.1	61.5	67.9			9.91
					62.2					

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	1941906, 1941907, 1941908
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1941909, 1941910
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1941909, 1941910, 1941911
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1941909, 1941910, 1941911

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	11/01/2017	11/01/2017 16:55	Carina A. Tull	11/02/2017 11:15	Carina A. Tull	1941906, 1941907, 1941908
SOP-PCR-1.0	11/01/2017	11/02/2017 10:30	Avril Wood	12/08/2017	Sarah Menz	1941909, 1941910
SOP-PCR-1.4	11/01/2017	11/02/2017 10:30	Sarah Menz	11/20/2017	Sarah Menz	1941909, 1941910, 1941911
SOP-PCR-4.0	11/01/2017	11/02/2017 10:30	Avril Wood	12/04/2017	Puja Jasrotia	1941909, 1941910, 1941911