

Biological Analysis Report

SO-DIST-2017-05-03-02

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

Event Description: **Lee County Tracers & Markers**
Request ID: **RQ-2017-04-17-08**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Corey Anderson

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

Certified by: Daisys Matthews,

Date Certified: 26-JUN-2017 14:42

A handwritten signature in black ink, appearing to read "D Matthews". The signature is stylized with a large, sweeping initial "D" and a cursive "Matthews".

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 group are included in this report: 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: Cypress Creek @ SR78, Upstream Side

Collection Date/Time: 05/01/2017 09:55

Field ID: CYPRESSGR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1895759	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold	Q			

Sample Location: Telegraph Creek @ SR78, Upstream Side

Collection Date/Time: 05/01/2017 10:20

Field ID: 29-8GR

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1895760	SOP-PCR-1.0	HF183-qPCR**	71	UQ	GEU/100 mL	P326834	
	SOP-PCR-1.4	BacR-qPCR**	9.6E+03	Q	TSC/100 mL	P326834	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold	Q			

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

Sample Location: Trout Creek @ SR78; Upstream Side

Collection Date/Time: 05/01/2017 10:56

Field ID: 27-6GR

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1895761	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold	Q			

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
 Batch ID: P326834

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

Reference Method: SOP-PCR-1.4
 Batch ID: P326834

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: P326834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	79.4	67.8	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P326834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	56.2	55.6	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P326834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1886719	HF183-qPCR	114		P	50 - 175
1893375	HF183-qPCR	83.0		P	50 - 175
1895760	HF183-qPCR	82.6		P	50 - 175
1896808	HF183-qPCR	91.1		P	50 - 175
1906648	HF183-qPCR	80.5	83.3	P/P	50 - 175
1906649	HF183-qPCR	84.4		P	50 - 175
1906650	HF183-qPCR	80.0		P	50 - 175
1906651	HF183-qPCR	77.5		P	50 - 175
1907080	HF183-qPCR	85.0		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P326834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1893375	BacR-qPCR	61.9		P	50 - 175
1895760	BacR-qPCR	62.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P326834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1906648	HF183-qPCR	3.52	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P326834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1907188	BacR-qPCR	6.64	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: 1895760
Field Sample ID: 29-8GR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	67.8	79.4	114	83.0	82.6		3.52
				91.1				
SOP-PCR-1.4	BacR-qPCR	55.6	56.2	62.1	61.9			6.64

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	1895760
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes genetic marker with quantitative polymerase chain reaction	1895760
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1895759, 1895760, 1895761

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	05/03/2017	05/03/2017 13:31	Puja Jasrotia	06/19/2017	Puja Jasrotia	1895760
SOP-PCR-1.4	05/03/2017	05/03/2017 13:31	Puja Jasrotia	06/21/2017	Sarah Menz	1895760
SOP-PCR-4.0	05/03/2017	05/03/2017 13:31	Avril Wood	06/14/2017	Puja Jasrotia	1895759, 1895760, 1895761