

Biological Analysis Report

SO-DIST-2018-05-11-04

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

Event Description: **Collier County Markers & Tracers (GORDONRIV)**
Request ID: **RQ-2018-02-19-44**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 20-JUN-2018 14:56

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

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: GORDONRIV

Collection Date/Time: 05/10/2018 10:27

Field ID: AF48267

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992498	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P346170	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P346170	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P346466	LCS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	UJ	TSC/100 mL	P346170	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.4: Quality control failure(s) observed. See QA report for details.

SOP-PCR-4.0: Bacterial results for threshold obtained from county lab.

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P346170

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

Reference Method: SOP-PCR-1.2

Batch ID: P346170

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

Reference Method: SOP-PCR-1.3

Batch ID: P346466

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

Reference Method: SOP-PCR-1.4

Batch ID: P346170

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

Reference Method: SOP-PCR-1.0

Batch ID: P346170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	115	90.3	P/P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P346170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	84.2	9.89	P/F	50 - 300

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P346466

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	95.5	28.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P346170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	63.9	82.5	P/P	50 - 175
BacR-qPCR	136	92.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P346170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990878	HF183-qPCR	98.1		P	50 - 175
1990879	HF183-qPCR	96.8		P	50 - 175
1991821	HF183-qPCR	103		P	50 - 175
1992313	HF183-qPCR	97.4		P	50 - 175
1992498	HF183-qPCR	94.8	82.7	P/P	50 - 175
1993394	HF183-qPCR	81.9		P	50 - 175
1993395	HF183-qPCR	68.2		P	50 - 175
1993398	HF183-qPCR	72.0		P	50 - 175
1993440	HF183-qPCR	93.2		P	50 - 175
1993454	HF183-qPCR	89.8		P	50 - 175
1993537	HF183-qPCR	89.3		P	50 - 175
1993794	HF183-qPCR	85.4		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P346170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990878	GULL2-qPCR	78.6		P	50 - 300
1990879	GULL2-qPCR	75.8		P	50 - 300
1992313	GULL2-qPCR	68.7		P	50 - 300
1992498	GULL2-qPCR	77.0	70.3	P/P	50 - 300
1993440	GULL2-qPCR	83.5		P	50 - 300
1993454	GULL2-qPCR	82.3		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P346466

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989729	GFD-purified-qPCR	93.1		P	50 - 175
1989783	GFD-purified-qPCR	93.1		P	50 - 175
1989842	GFD-purified-qPCR	69.1		P	50 - 175
1989843	GFD-purified-qPCR	87.0		P	50 - 175
1990326	GFD-purified-qPCR	75.3		P	50 - 175
1990878	GFD-purified-qPCR	90.5		P	50 - 175
1990879	GFD-purified-qPCR	90.9		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P346466

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992313	GFD-purified-qPCR	86.6		P	50 - 175
1992498	GFD-purified-qPCR	53.0	147	P/P	50 - 175
1992743	GFD-purified-qPCR	58.9		P	50 - 175
1993440	GFD-purified-qPCR	81.5		P	50 - 175
1993454	GFD-purified-qPCR	55.9		P	50 - 175
1993794	GFD-purified-qPCR	67.9		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P346170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990878	BacR-qPCR	68.6		P	50 - 175
1990879	BacR-qPCR	63.2		P	50 - 175
1992313	BacR-qPCR	78.9		P	50 - 175
1992498	BacR-qPCR	92.6	71.1	P/P	50 - 175
1993398	BacR-qPCR	68.4		P	50 - 175
1993440	BacR-qPCR	80.4		P	50 - 175
1993454	BacR-qPCR	64.5		P	50 - 175
1993537	BacR-qPCR	60.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P346170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992498	HF183-qPCR	13.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P346170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992498	GULL2-qPCR	9.07	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P346466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992498	GFD-purified-qPCR	94.0	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P346170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992498	BacR-qPCR	26.3	Spike	F	0 - 25

Quality Assurance Report Precision

* 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: 1992498
Field Sample ID: AF48267

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	99.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision	
									SMP	MS
SOP-PCR-1.0	HF183-qPCR	90.3	115		98.1	96.8	103			13.7
					97.4					
SOP-PCR-1.2	GULL2-qPCR	9.89	84.2		77.0	70.3	83.5			9.07
					82.3					
SOP-PCR-1.3	GFD-purified-qPCR	28.2	95.5		93.1	93.1	69.1			94.0
					87.0					
SOP-PCR-1.4	BacR-qPCR	63.9	92.9	136	68.4	60.2	68.6			26.3
		82.5			63.2					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1992498
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1992498
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1992498
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1992498
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1992498

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	05/11/2018	05/11/2018 14:25	Puja Jasrotia	06/05/2018 16:20	Mailin Lopez	1992498
SOP-PCR-1.2	05/11/2018	05/11/2018 14:25	Puja Jasrotia	06/07/2018 15:42	Sarah Menz	1992498
SOP-PCR-1.3	05/11/2018	05/11/2018 14:25	Sarah Menz	06/11/2018 15:16	Sarah Menz	1992498
SOP-PCR-1.4	05/11/2018	05/11/2018 14:25	Puja Jasrotia	06/06/2018 15:29	Mailin Lopez	1992498
SOP-PCR-4.0	05/11/2018	05/11/2018 14:25	Angela Smith	05/31/2018 09:11	Puja Jasrotia	1992498