Biological Analysis Report

SO-DIST-2022-05-25-02

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

Event Description: **2022 SMP: Lee County Sampling - Chapel Creek**
Request ID: **RQ-2022-04-18-38**
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
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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 05-JUL-2022 09:15

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: 22-7GR **Collection Date/Time: 05/24/2022 08:22**

Field ID: AF24785 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2329745	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P413929	
	SOP-PCR-1.2	GULL2-qPCR**	6.0E+05	U	TSC/100 mL	P413929	
	SOP-PCR-1.3	GFD-qPCR**	4.2E+05	I	TSC/100 mL	P413929	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P413929	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P413929	

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P413929

Component	Result	Code	Units
HF183-qPCR	3.3E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P413929

Component	Result	Code	Units
GULL2-qPCR	3.6E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P413929

Component	Result	Code	Units
GFD-qPCR	720	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P413929

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

Reference Method: SOP-PCR-1.5
Batch ID: P413929

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P413929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	87.9	78.4	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P413929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P413929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	105	88.3	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P413929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	100	70.2	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	108	103	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	74.9	83.2	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P413929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327264	HF183-qPCR	82.0		P	50 - 175
2327265	HF183-qPCR	76.0		P	50 - 175
2327266	HF183-qPCR	87.0	81.1	P/P	50 - 175
2327563	HF183-qPCR	80.2		P	50 - 175
2328463	HF183-qPCR	77.8		P	50 - 175
2328754	HF183-qPCR	75.0		P	50 - 175
2328851	HF183-qPCR	81.5		P	50 - 175
2328852	HF183-qPCR	71.8		P	50 - 175
2328854	HF183-qPCR	77.1		P	50 - 175
2329745	HF183-qPCR	81.3		P	50 - 175
2330026	HF183-qPCR	77.0		P	50 - 175
2330027	HF183-qPCR	86.7		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P413929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327265	GULL2-qPCR	95.8		P	50 - 300
2327266	GULL2-qPCR	75.9	93.3	P/P	50 - 300
2328463	GULL2-qPCR	91.7		P	50 - 300
2328754	GULL2-qPCR	74.6		P	50 - 300
2328851	GULL2-qPCR	88.2		P	50 - 300
2328852	GULL2-qPCR	92.2		P	50 - 300
2328854	GULL2-qPCR	79.9		P	50 - 300

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P413929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329745	GULL2-qPCR	82.9		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P413929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327265	GFD-qPCR	94.7		P	50 - 175
2327266	GFD-qPCR	88.1	94.1	P/P	50 - 175
2327563	GFD-qPCR	98.9		P	50 - 175
2328463	GFD-qPCR	91.3		P	50 - 175
2328754	GFD-qPCR	83.0		P	50 - 175
2328851	GFD-qPCR	93.5		P	50 - 175
2328852	GFD-qPCR	87.1		P	50 - 175
2328854	GFD-qPCR	90.8		P	50 - 175
2329745	GFD-qPCR	84.6		P	50 - 175
2330026	GFD-qPCR	90.2		P	50 - 175
2330027	GFD-qPCR	92.4		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327264	BacR-qPCR	55.2		P	50 - 175
2327265	BacR-qPCR	49.4		F	50 - 175
2327266	BacR-qPCR	75.9	65.3	P/P	50 - 175
2327563	BacR-qPCR	62.1		P	50 - 175
2328463	BacR-qPCR	60.6		P	50 - 175
2328754	BacR-qPCR	88.0		P	50 - 175
2328851	BacR-qPCR	71.2		P	50 - 175
2328852	BacR-qPCR	88.4		P	50 - 175
2328854	BacR-qPCR	70.0		P	50 - 175
2329745	BacR-qPCR	105		P	50 - 175
2330026	BacR-qPCR	91.6		P	50 - 175
2330027	BacR-qPCR	95.3		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327264	DG3-qPCR	82.2		P	50 - 175
2327265	DG3-qPCR	85.5		P	50 - 175
2327266	DG3-qPCR	83.7	79.0	P/P	50 - 175
2328463	DG3-qPCR	88.4		P	50 - 175
2328754	DG3-qPCR	78.3		P	50 - 175
2328851	DG3-qPCR	81.1		P	50 - 175
2328852	DG3-qPCR	81.8		P	50 - 175
2328854	DG3-qPCR	76.0		P	50 - 175
2329745	DG3-qPCR	78.6		P	50 - 175

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.0
Batch ID: P413929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327266	HF183-qPCR	7.05	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P413929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327266	GULL2-qPCR	20.5	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P413929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327266	GFD-qPCR	6.60	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P413929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327266	BacR-qPCR	15.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P413929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327266	DG3-qPCR	5.77	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Surrogates

Lab Sample ID: 2329745
Field Sample ID: AF24785

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	95.2	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	117	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	81.0	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	73.7	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SOP-PCR-1.0	HF183-qPCR	78.4 87.9	82.0 76.0 87.0 81.1			7.05
SOP-PCR-1.2	GULL2-qPCR	88.3 105	95.8 75.9 93.3 91.7			20.5
SOP-PCR-1.3	GFD-qPCR	70.2 100	94.7 88.1 94.1 98.9			6.60
SOP-PCR-1.4	BacR-qPCR	103 108	55.2 49.4 75.9 65.3			15.1
SOP-PCR-1.5	DG3-qPCR	83.2 74.9	82.2 85.5 83.7 79.0			5.77

Reference Method Descriptions

Method	Description	Associated Samples
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2329745
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2329745
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2329745
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2329745
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2329745

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	05/25/2022	05/25/2022 13:40	Claudia Castro	06/15/2022 17:03	Jennifer Mihalic	2329745
SOP-PCR-1.2	05/25/2022	05/25/2022 13:40	Claudia Castro	06/22/2022 14:54	Jennifer Mihalic	2329745
SOP-PCR-1.3	05/25/2022	05/25/2022 13:40	Claudia Castro	06/22/2022 12:09	Jennifer Mihalic	2329745
SOP-PCR-1.4	05/25/2022	05/25/2022 13:40	Claudia Castro	06/20/2022 14:54	Jennifer Mihalic	2329745
SOP-PCR-1.5	05/25/2022	05/25/2022 13:40	Claudia Castro	06/17/2022 16:01	Jennifer Mihalic	2329745