

Biological Analysis Report

SO-DIST-2021-09-02-02

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

Overflow Analyses Performed By:
Sanders Laboratories
10090 Bavaria Road
Ft. Myers, FL 33913
DOH Accreditation E85457

Event Description: **SMP: Bee Branch & Palm Creek (Kickapoo)**
Request ID: **RQ-2021-09-06-68**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 27-SEP-2021 08:56



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: Chlorophyll/Grain Size/BOD, Molecular and Overflow.

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: Palm Creek @ Lee Civic Ctr.

Collection Date/Time: 09/01/2021 08:20

Field ID: G3SD0190

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273246	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P403068	
	SOP-PCR-1.2	GULL2-qPCR**	2.4E+03	U	TSC/100 mL	P403068	
	SOP-PCR-1.3	GFD-qPCR**	480	U	TSC/100 mL	P403068	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P403068	
	SOP-PCR-1.5	DG3-qPCR**	1.7E+03	U	TSC/100 mL	P403068	
2273249	Colilert-18	Escherichia Coli-Quanti-Tray	79.4		MPN/100 mL		

Sample Location: Bee Branch @ Loblolly Bay Rd.

Collection Date/Time: 09/01/2021 09:05

Field ID: G3SD0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273245	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3	I	ug/L	P403793	
		Phaeophytin-a	0.90	U	ug/L	P403793	
		Chlorophyll-a, Uncorrected	2.8		ug/L	P403793	
2273248	Colilert-18	Escherichia Coli-Quanti-Tray	1	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P403793

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.96	U	ug/L
Chlorophyll-a, Uncorrected	0.70	U	ug/L
Phaeophytin-a	1.0	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P403068

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

Reference Method: SOP-PCR-1.2

Batch ID: P403068

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

Reference Method: SOP-PCR-1.3

Batch ID: P403068

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P403068

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

Reference Method: SOP-PCR-1.5
Batch ID: P403068

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P403793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.2		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P403068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	66.6	109	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P403068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	114	123	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P403068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	95.6	104	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P403068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	103	90.3	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P403068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	103	95.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P403068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272402	HF183-qPCR	95.9	91.8	P/P	50 - 175
2272458	HF183-qPCR	85.2		P	50 - 175
2272868	HF183-qPCR	93.4		P	50 - 175
2273246	HF183-qPCR	81.4		P	50 - 175
2274854	HF183-qPCR	80.6		P	50 - 175
2275528	HF183-qPCR	74.9		P	50 - 175
2275529	HF183-qPCR	76.6		P	50 - 175
2275747	HF183-qPCR	79.1		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P403068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272402	GULL2-qPCR	58.2	69.1	P/P	50 - 300
2272458	GULL2-qPCR	68.3		P	50 - 300
2272868	GULL2-qPCR	68.0		P	50 - 300
2273246	GULL2-qPCR	65.8		P	50 - 300
2274854	GULL2-qPCR	67.4		P	50 - 300
2275747	GULL2-qPCR	75.8		P	50 - 300
2275783	GULL2-qPCR	68.1		P	50 - 300
2275784	GULL2-qPCR	72.0		P	50 - 300
2275785	GULL2-qPCR	78.3		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P403068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272402	GFD-qPCR	111	117	P/P	50 - 175
2272458	GFD-qPCR	103		P	50 - 175
2272868	GFD-qPCR	108		P	50 - 175
2273246	GFD-qPCR	96.0		P	50 - 175
2274854	GFD-qPCR	100		P	50 - 175
2275747	GFD-qPCR	106		P	50 - 175
2275783	GFD-qPCR	93.0		P	50 - 175
2275784	GFD-qPCR	96.6		P	50 - 175
2275785	GFD-qPCR	96.7		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P403068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272402	BacR-qPCR	95.9	91.4	P/P	50 - 175
2272458	BacR-qPCR	75.1		P	50 - 175
2272868	BacR-qPCR	77.7		P	50 - 175
2273246	BacR-qPCR	73.3		P	50 - 175
2274854	BacR-qPCR	78.0		P	50 - 175
2275528	BacR-qPCR	75.3		P	50 - 175
2275529	BacR-qPCR	82.2		P	50 - 175
2275747	BacR-qPCR	79.9		P	50 - 175
2275783	BacR-qPCR	74.3		P	50 - 175
2275784	BacR-qPCR	84.8		P	50 - 175
2275785	BacR-qPCR	86.9		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5

Batch ID: P403068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272402	DG3-qPCR	83.0	88.1	P/P	50 - 175
2272458	DG3-qPCR	85.0		P	50 - 175
2272868	DG3-qPCR	89.2		P	50 - 175
2273246	DG3-qPCR	86.8		P	50 - 175
2274854	DG3-qPCR	63.9		P	50 - 175
2275528	DG3-qPCR	86.6		P	50 - 175
2275529	DG3-qPCR	80.5		P	50 - 175
2275747	DG3-qPCR	88.5		P	50 - 175
2275783	DG3-qPCR	81.9		P	50 - 175
2275784	DG3-qPCR	88.7		P	50 - 175
2275785	DG3-qPCR	87.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P403793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273035	Chlorophyll-a, Corrected	0.422	Sample	P	0 - 25
2273035	Chlorophyll-a, Uncorrected	0.0848	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P403068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272402	HF183-qPCR	4.39	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2

Batch ID: P403068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272402	GULL2-qPCR	17.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3

Batch ID: P403068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272402	GFD-qPCR	5.32	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4

Batch ID: P403068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272402	BacR-qPCR	4.86	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.5
 Batch ID: P403068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272402	DG3-qPCR	5.92	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2273246
 Field Sample ID: G3SD0190

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	61.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	80.5	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	71.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	70.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	62.5	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	95.2						0.422	
	Chlorophyll-a, Uncorrected							0.0848	
SOP-PCR-1.0	HF183-qPCR	109	66.6	95.9	91.8	85.2			4.39
				93.4					
SOP-PCR-1.2	GULL2-qPCR	123	114	58.2	69.1	68.3			17.2
				68.0					
SOP-PCR-1.3	GFD-qPCR	104	95.6	111	117	103			5.32
				108					
SOP-PCR-1.4	BacR-qPCR	90.3	103	95.9	91.4	75.1			4.86
				77.7					
SOP-PCR-1.5	DG3-qPCR	95.2	103	83.0	88.1	85.0			5.92
				89.2					

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2273248, 2273249
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2273245
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2273246
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2273246
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2273246
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2273246

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2273246

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	09/01/2021	09/01/2021 14:35		09/02/2021 11:50	Sanders-Fort Myers	2273248, 2273249
SM 10200 H (mod.)	09/02/2021	09/02/2021 14:48	Jillian G Hanley	09/14/2021 10:50	Carina A. Tull	2273245
SOP-PCR-1.0	09/02/2021	09/02/2021 14:30	Mailin Lopez	09/16/2021 11:02	DeAsia Armster	2273246
SOP-PCR-1.2	09/02/2021	09/02/2021 14:30	Mailin Lopez	09/21/2021 09:38	DeAsia Armster	2273246
SOP-PCR-1.3	09/02/2021	09/02/2021 14:30	Mailin Lopez	09/22/2021 08:48	Mailin Lopez	2273246
SOP-PCR-1.4	09/02/2021	09/02/2021 14:30	Mailin Lopez	09/17/2021 12:13	DeAsia Armster	2273246
SOP-PCR-1.5	09/02/2021	09/02/2021 14:30	Mailin Lopez	09/20/2021 10:39	DeAsia Armster	2273246