

Biological Analysis Report

SO-DIST-2022-05-17-01

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: **2022 SMP: Hendry Cricks**
Request ID: **RQ-2022-05-16-33**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 24-JUN-2022 10:22

A handwritten signature in dark ink, appearing to be 'Sarah Menz', with a long, sweeping horizontal stroke extending to the right.

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: BEE BRANCH @ LOBLOLLY BAY RD

Collection Date/Time: 05/16/2022 08:40

Field ID: G3SD0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327329	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.6	I	ug/L	P414181	
		Phaeophytin-a	4.2	I	ug/L	P414181	
		Chlorophyll-a, Uncorrected	7.4		ug/L	P414181	
2327336	SOP-PCR-1.0	HF183-qPCR**	2.2E+03	U	TSC/100 mL	P413726	
	SOP-PCR-1.2	GULL2-qPCR**	2.4E+03	U	TSC/100 mL	P413726	
	SOP-PCR-1.3	GFD-qPCR**	480	U	TSC/100 mL	P413726	
	SOP-PCR-1.4	BacR-qPCR**	2.0E+03	U	TSC/100 mL	P413726	
	SOP-PCR-1.5	DG3-qPCR**	1.7E+03	U	TSC/100 mL	P413726	
2327341	Colilert-18	Escherichia Coli-Quanti-Tray	31.6		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.

Sample Location: Bee Branch At CR78

Collection Date/Time: 05/16/2022 09:20

Field ID: G3SD0226

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327337	SOP-PCR-1.0	HF183-qPCR**	830	U	TSC/100 mL	P413726	
	SOP-PCR-1.2	GULL2-qPCR**	900	U	TSC/100 mL	P413726	
	SOP-PCR-1.3	GFD-qPCR**	180	U	TSC/100 mL	P413726	
	SOP-PCR-1.4	BacR-qPCR**	760	U	TSC/100 mL	P413726	
	SOP-PCR-1.5	DG3-qPCR**	640	U	TSC/100 mL	P413726	
2327342	Colilert-18	Escherichia Coli-Quanti-Tray	45.0		MPN/100 mL		

Sample Location: Jacks Branch At CR78

Collection Date/Time: 05/16/2022 09:45

Field ID: G3SD0227

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327326	SM 10200 H (mod.)	Chlorophyll-a, Corrected	17		ug/L	P414181	
		Phaeophytin-a	6.3		ug/L	P414181	
		Chlorophyll-a, Uncorrected	21		ug/L	P414181	
2327338	Colilert-18	Escherichia Coli-Quanti-Tray	12.1		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.

Sample Location: Fort Simmons Branch

Collection Date/Time: 05/16/2022 10:30

Field ID: G3SD0177

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327327	SM 10200 H (mod.)	Chlorophyll-a, Corrected	17		ug/L	P414181	
		Phaeophytin-a	18		ug/L	P414181	
		Chlorophyll-a, Uncorrected	29		ug/L	P414181	
2327339	Colilert-18	Escherichia Coli-Quanti-Tray	52.9		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.

Sample Location: Jacks Branch

Collection Date/Time: 05/16/2022 10:05

Field ID: G3SD0176

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327343	Colilert-18	Escherichia Coli-Quanti-Tray	77.1		MPN/100 mL		

Sample Location: FortSimmonsBranchAtSR80

Collection Date/Time: 05/16/2022 10:55

Field ID: G3SD0230

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327328	SM 10200 H (mod.)	Chlorophyll-a, Corrected	59		ug/L	P414181	
		Phaeophytin-a	26		ug/L	P414181	
		Chlorophyll-a, Uncorrected	77		ug/L	P414181	
2327340	Colilert-18	Escherichia Coli-Quanti-Tray	95.4		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: P414181

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P413726

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

Reference Method: SOP-PCR-1.2

Batch ID: P413726

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

Reference Method: SOP-PCR-1.3

Batch ID: P413726

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

Reference Method: SOP-PCR-1.4

Batch ID: P413726

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P413726

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: P414181

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	91.3		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P413726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	97.1	118	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P413726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	105	121	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P413726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	103	119	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	83.8	54.6	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	57.1	53.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P413726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326070	HF183-qPCR	88.7	94.7	P/P	50 - 175
2326885	HF183-qPCR	103		P	50 - 175
2326886	HF183-qPCR	102		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P413726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326887	HF183-qPCR	93.9		P	50 - 175
2326888	HF183-qPCR	89.6		P	50 - 175
2326889	HF183-qPCR	80.2		P	50 - 175
2326891	HF183-qPCR	82.5		P	50 - 175
2326892	HF183-qPCR	82.1		P	50 - 175
2326893	HF183-qPCR	85.2		P	50 - 175
2326894	HF183-qPCR	84.9		P	50 - 175
2327336	HF183-qPCR	86.7		P	50 - 175
2327337	HF183-qPCR	101		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P413726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326070	GULL2-qPCR	88.9	92.1	P/P	50 - 300
2326885	GULL2-qPCR	94.5		P	50 - 300
2326886	GULL2-qPCR	91.6		P	50 - 300
2326887	GULL2-qPCR	81.0		P	50 - 300
2326888	GULL2-qPCR	84.6		P	50 - 300
2326889	GULL2-qPCR	73.9		P	50 - 300
2326891	GULL2-qPCR	93.4		P	50 - 300
2326892	GULL2-qPCR	78.2		P	50 - 300
2326893	GULL2-qPCR	68.3		P	50 - 300
2326894	GULL2-qPCR	84.1		P	50 - 300
2327336	GULL2-qPCR	72.1		P	50 - 300
2327337	GULL2-qPCR	81.1		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P413726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326070	GFD-qPCR	99.4	94.6	P/P	50 - 175
2326885	GFD-qPCR	102		P	50 - 175
2326886	GFD-qPCR	103		P	50 - 175
2326887	GFD-qPCR	95.4		P	50 - 175
2326888	GFD-qPCR	93.4		P	50 - 175
2326889	GFD-qPCR	92.5		P	50 - 175
2326891	GFD-qPCR	95.0		P	50 - 175
2326892	GFD-qPCR	92.7		P	50 - 175
2326893	GFD-qPCR	88.9		P	50 - 175
2326894	GFD-qPCR	92.6		P	50 - 175
2327336	GFD-qPCR	93.4		P	50 - 175
2327337	GFD-qPCR	107		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P413726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326070	BacR-qPCR	74.0	75.1	P/P	50 - 175
2326885	BacR-qPCR	91.1		P	50 - 175
2326886	BacR-qPCR	75.4		P	50 - 175
2326887	BacR-qPCR	68.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4

Batch ID: P413726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326888	BacR-qPCR	71.4		P	50 - 175
2326889	BacR-qPCR	61.9		P	50 - 175
2326891	BacR-qPCR	77.2		P	50 - 175
2326892	BacR-qPCR	72.8		P	50 - 175
2326893	BacR-qPCR	60.1		P	50 - 175
2326894	BacR-qPCR	70.5		P	50 - 175
2327336	BacR-qPCR	66.7		P	50 - 175
2327337	BacR-qPCR	82.6		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P413726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326070	DG3-qPCR	56.2	56.0	P/P	50 - 175
2326885	DG3-qPCR	59.4		P	50 - 175
2326886	DG3-qPCR	65.4		P	50 - 175
2326887	DG3-qPCR	56.1		P	50 - 175
2326888	DG3-qPCR	57.5		P	50 - 175
2326889	DG3-qPCR	53.3		P	50 - 175
2326891	DG3-qPCR	54.1		P	50 - 175
2326892	DG3-qPCR	55.8		P	50 - 175
2326893	DG3-qPCR	51.7		P	50 - 175
2326894	DG3-qPCR	56.1		P	50 - 175
2327336	DG3-qPCR	54.5		P	50 - 175
2327337	DG3-qPCR	64.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P414181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327125	Chlorophyll-a, Corrected	9.97	Sample	P	0 - 25
2327125	Chlorophyll-a, Uncorrected	9.06	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P413726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326070	HF183-qPCR	6.57	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2

Batch ID: P413726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326070	GULL2-qPCR	3.53	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P413726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326070	GFD-qPCR	4.97	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P413726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326070	BacR-qPCR	1.57	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P413726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326070	DG3-qPCR	0.294	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2327336
Field Sample ID: G3SD0085

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	106	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	102	P	50 - 300

Lab Sample ID: 2327337
Field Sample ID: G3SD0226

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	78.4	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	66.1	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	77.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	84.4	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	95.3	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	91.3			9.97	
	Chlorophyll-a, Uncorrected				9.06	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	118	97.1	88.7	94.7	103			6.57
SOP-PCR-1.2	GULL2-qPCR	121	105	88.9	92.1	94.5			3.53
SOP-PCR-1.3	GFD-qPCR	119	103	99.4	94.6	102			4.97
SOP-PCR-1.4	BacR-qPCR	54.6	83.8	74.0	75.1	91.1			1.57
SOP-PCR-1.5	DG3-qPCR	53.9	57.1	56.2	56.0	59.4			0.294

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2327338, 2327339, 2327340, 2327341, 2327342, 2327343
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2327326, 2327327, 2327328, 2327329
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2327336, 2327337
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2327336, 2327337
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2327336, 2327337
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2327336, 2327337
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2327336, 2327337

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	05/16/2022	05/16/2022 13:20		05/17/2022 11:06	Sanders-Fort Myers	2327338, 2327339, 2327340, 2327341, 2327342, 2327343
SM 10200 H (mod.)	05/17/2022	05/17/2022 11:05	Ethan Wickline	05/20/2022 09:20	Ethan Wickline	2327326, 2327327, 2327328, 2327329
SOP-PCR-1.0	05/17/2022	05/17/2022 13:50	Claudia Castro	06/09/2022 16:54	Jennifer Mihalic	2327336, 2327337
SOP-PCR-1.2	05/17/2022	05/17/2022 13:50	Claudia Castro	06/14/2022 13:20	Roberta Tatti	2327336, 2327337
SOP-PCR-1.3	05/17/2022	05/17/2022 13:50	Claudia Castro	06/13/2022 17:55	Jennifer Mihalic	2327336, 2327337
SOP-PCR-1.4	05/17/2022	05/17/2022 13:50	Claudia Castro	06/10/2022 09:52	Roberta Tatti	2327336, 2327337
SOP-PCR-1.5	05/17/2022	05/17/2022 13:50	Claudia Castro	06/10/2022 12:20	Roberta Tatti	2327336, 2327337