

Biological Analysis Report

SO-DIST-2023-06-15-01

Florida DEP 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: **2023 SMP: Lebella-Ella-Ella**
Request ID: **RQ-2023-06-12-23**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
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Date Certified: 31-JUL-2023 10:21



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: FORT SIMMONS BRANCH

Collection Date/Time: 06/14/2023 08:30

Field ID: G3SD0177

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2417684	SM 10150 B	Chlorophyll-a, Corrected	3.6		ug/L	P431618	
		Phaeophytin-a	1.3	U	ug/L	P431618	
		Chlorophyll-a, Uncorrected	3.5		ug/L	P431618	
2417687	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P431323	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P431323	LCS
	SOP-PCR-1.3	GFD-qPCR**	3.5E+03		TSC/100 mL	P431323	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P431323	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P431323	
2417710	Colilert-18	Escherichia Coli-Quanti-Tray	24.9		MPN/100 mL		

Ref. Method and Comment:
SM 10150 B: 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: CHAPARRALSLOUGHATSR29

Collection Date/Time: 06/14/2023 09:10

Field ID: G3SD0224

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2417686	SM 10150 B	Chlorophyll-a, Corrected	2.5	I	ug/L	P431618	
		Phaeophytin-a	2.2	U	ug/L	P431618	
		Chlorophyll-a, Uncorrected	2.1	I	ug/L	P431618	
2417712	Colilert-18	Escherichia Coli-Quanti-Tray	579		MPN/100 mL		

Ref. Method and Comment:
SM 10150 B: 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: 06/14/2023 09:55

Field ID: G3SD0176

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2417685	SM 10150 B	Chlorophyll-a, Corrected	2.5	I	ug/L	P431618	
		Phaeophytin-a	2.2	U	ug/L	P431618	
		Chlorophyll-a, Uncorrected	1.9	I	ug/L	P431618	
2417688	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P431323	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.6E+03	I	TSC/100 mL	P431323	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P431323	
2417711	Colilert-18	Escherichia Coli-Quanti-Tray	210		MPN/100 mL		

Ref. Method and Comment:
SM 10150 B: 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: 06/14/2023 10:35

Field ID: G3SD0226

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2417713	Colilert-18	Escherichia Coli-Quanti-Tray	166		MPN/100 mL		

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: SM 10150 B
Batch ID: P431618

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: P431323

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

Reference Method: SOP-PCR-1.2
Batch ID: P431323

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

Reference Method: SOP-PCR-1.3
Batch ID: P431323

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

Reference Method: SOP-PCR-1.4
Batch ID: P431323

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

Reference Method: SOP-PCR-1.5
Batch ID: P431323

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10150 B
Batch ID: P431618

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	99.8		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P431323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	89.1	36.0	P/F	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P431323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	108	34.4	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P431323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	91.1	34.0	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P431323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	92.6	74.3	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P431323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	91.9	76.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P431323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417651	HF183-qPCR	76.2		P	50 - 175
2417687	HF183-qPCR	105		P	50 - 175
2417688	HF183-qPCR	89.6		P	50 - 175
2417932	HF183-qPCR	84.9		P	50 - 175
2417933	HF183-qPCR	84.0		P	50 - 175
2417935	HF183-qPCR	61.1	72.3	P/P	50 - 175
2418281	HF183-qPCR	72.4		P	50 - 175
2418282	HF183-qPCR	83.8		P	50 - 175
2418410	HF183-qPCR	110		P	50 - 175
2418562	HF183-qPCR	103		P	50 - 175
2418751	HF183-qPCR	92.4		P	50 - 175
2418909	HF183-qPCR	72.4		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P431323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417651	GULL2-qPCR	70.7		P	50 - 300
2417687	GULL2-qPCR	91.1		P	50 - 300
2417932	GULL2-qPCR	80.6		P	50 - 300
2417933	GULL2-qPCR	86.4		P	50 - 300
2418282	GULL2-qPCR	83.6		P	50 - 300
2418410	GULL2-qPCR	27.1		F	50 - 300
2418562	GULL2-qPCR	8.71		F	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P431323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418751	GULL2-qPCR	71.4		P	50 - 300
2418909	GULL2-qPCR	62.5		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P431323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417651	GFD-qPCR	87.1		P	50 - 175
2417687	GFD-qPCR	97.8		P	50 - 175
2417932	GFD-qPCR	91.3		P	50 - 175
2417933	GFD-qPCR	91.4		P	50 - 175
2418282	GFD-qPCR	90.3		P	50 - 175
2418410	GFD-qPCR	108		P	50 - 175
2418562	GFD-qPCR	84.5		P	50 - 175
2418751	GFD-qPCR	92.9		P	50 - 175
2418909	GFD-qPCR	95.0		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P431323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417651	BacR-qPCR	72.5		P	50 - 175
2417687	BacR-qPCR	87.9		P	50 - 175
2417688	BacR-qPCR	84.3		P	50 - 175
2417932	BacR-qPCR	74.5		P	50 - 175
2417933	BacR-qPCR	76.1		P	50 - 175
2417934	BacR-qPCR	68.4		P	50 - 175
2417935	BacR-qPCR	64.8	78.6	P/P	50 - 175
2418281	BacR-qPCR	65.4		P	50 - 175
2418282	BacR-qPCR	75.9		P	50 - 175
2418410	BacR-qPCR	80.0		P	50 - 175
2418562	BacR-qPCR	62.5		P	50 - 175
2418751	BacR-qPCR	60.0		P	50 - 175
2418909	BacR-qPCR	68.0		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P431323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417651	DG3-qPCR	85.0		P	50 - 175
2417687	DG3-qPCR	107		P	50 - 175
2417688	DG3-qPCR	94.7		P	50 - 175
2417932	DG3-qPCR	88.6		P	50 - 175
2417933	DG3-qPCR	88.4		P	50 - 175
2417934	DG3-qPCR	84.6		P	50 - 175
2417935	DG3-qPCR	69.9	82.0	P/P	50 - 175
2418281	DG3-qPCR	79.9		P	50 - 175
2418282	DG3-qPCR	89.9		P	50 - 175
2418410	DG3-qPCR	85.7		P	50 - 175
2418562	DG3-qPCR	78.5		P	50 - 175
2418751	DG3-qPCR	96.3		P	50 - 175
2418909	DG3-qPCR	89.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10150 B
Batch ID: P431618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417869	Chlorophyll-a, Corrected	4.35	Sample	P	0 - 25
2417869	Chlorophyll-a, Uncorrected	3.80	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P431323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417935	HF183-qPCR	16.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P431323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417935	GULL2-qPCR	7.34	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P431323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417935	GFD-qPCR	5.45	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P431323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417935	BacR-qPCR	19.3	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P431323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417935	DG3-qPCR	15.9	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2417687
Field Sample ID: G3SD0177

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	104	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2417687
Field Sample ID: G3SD0177

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.3	SKETA-qPCR	107	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	113	P	50 - 300

Lab Sample ID: 2417688
Field Sample ID: G3SD0176

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	138	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	120	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	MS
								SMP	
SM 10150 B	Chlorophyll-a, Corrected	99.8						4.35	
	Chlorophyll-a, Uncorrected							3.80	
SOP-PCR-1.0	HF183-qPCR	36.0	89.1	76.2	105	89.6			16.7
				84.9					
SOP-PCR-1.2	GULL2-qPCR	34.4	108	70.7	91.1	80.6			7.34
				86.4					
SOP-PCR-1.3	GFD-qPCR	34.0	91.1	87.1	97.8	91.3			5.45
				91.4					
SOP-PCR-1.4	BacR-qPCR	74.3	92.6	72.5	87.9	84.3			19.3
				74.5					
SOP-PCR-1.5	DG3-qPCR	76.2	91.9	85.0	107	94.7			15.9
				88.6					

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2417710, 2417711, 2417712, 2417713
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2417684, 2417685, 2417686
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2417687, 2417688
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2417687
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2417687
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2417687, 2417688
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2417687, 2417688

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	06/14/2023	06/14/2023 14:33		06/15/2023 09:00	Sanders-Fort Myers	2417710, 2417711, 2417712, 2417713
SM 10150 B	06/15/2023	06/15/2023 13:36	Keanu Thijm	06/20/2023 15:25	Callie Williams	2417684, 2417685, 2417686
SOP-PCR-1.0	06/15/2023	06/15/2023 14:47	Madeline Gruver	07/07/2023 09:34	Roberta Tatti	2417687, 2417688
SOP-PCR-1.2	06/15/2023	06/15/2023 14:47	Madeline Gruver	07/19/2023 18:42	Madeline Gruver	2417687
SOP-PCR-1.3	06/15/2023	06/15/2023 14:47	Madeline Gruver	07/14/2023 16:02	Madeline Gruver	2417687
SOP-PCR-1.4	06/15/2023	06/15/2023 14:47	Madeline Gruver	07/10/2023 12:29	Roberta Tatti	2417687, 2417688
SOP-PCR-1.5	06/15/2023	06/15/2023 14:47	Madeline Gruver	07/14/2023 12:00	Roberta Tatti	2417687, 2417688