

Biological Analysis Report

SO-DIST-2023-10-12-02

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: LaBella-Ella-Ella**
Request ID: **RQ-2023-10-09-65**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

For additional information please contact
Cheryl Swanson - Administrator
Sarah Menz, Ph.D. - Bench Biology & Aquatic
Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Sarah Menz, Environmental Administrator

Date Certified: 20-NOV-2023 13:07

A handwritten signature in dark ink, appearing to be 'Sarah Menz', written in a cursive style.

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: CHAPARRALSLOUGHATSR29

Collection Date/Time: 10/11/2023 12:00

Field ID: G3SD0224

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2444614	SM 10150 B	Chlorophyll-a, Corrected	1.9	I	ug/L	P437029	
		Phaeophytin-a	1.5	U	ug/L	P437029	
		Chlorophyll-a, Uncorrected	2.1	I	ug/L	P437029	
2444621	Colilert-18	Escherichia Coli-Quanti-Tray	980		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: CALOOSA HATCHEE RIVER ABOVE S 78

Collection Date/Time: 10/11/2023 12:25

Field ID: G3SD0150

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2444615	SM 10150 B	Chlorophyll-a, Corrected	34		ug/L	P437029	
		Phaeophytin-a	5.7		ug/L	P437029	
		Chlorophyll-a, Uncorrected	39		ug/L	P437029	
2444623	Colilert-18	Escherichia Coli-Quanti-Tray	43.2		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: CALOOSA ABOVE BRIDGE ST

Collection Date/Time: 10/11/2023 12:55

Field ID: G3SD0178

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2444616	SM 10150 B	Chlorophyll-a, Corrected	7.7		ug/L	P437029	
		Phaeophytin-a	7.2		ug/L	P437029	
		Chlorophyll-a, Uncorrected	12		ug/L	P437029	
2444624	Colilert-18	Escherichia Coli-Quanti-Tray	35.9		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: BEE BRANCH AT CR78

Collection Date/Time: 10/11/2023 13:20

Field ID: G3SD0226

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2444622	Colilert-18	Escherichia Coli-Quanti-Tray	155		MPN/100 mL		

Sample Location: JACKS BRANCH

Collection Date/Time: 10/11/2023 13:50

Field ID: G3SD0176

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2444612	SM 10150 B	Chlorophyll-a, Corrected	1.9	I	ug/L	P437029	
		Phaeophytin-a	1.0	U	ug/L	P437029	
		Chlorophyll-a, Uncorrected	1.9	I	ug/L	P437029	
2444617	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P436033	
	SOP-PCR-1.4	BacR-qPCR**	5.3E+03	I	TSC/100 mL	P436033	LCS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P436033	LCS

Component	Result	Code	Units
-----------	--------	------	-------

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P437130

Component	Result	Code	Units
GULL2-purified-qPCR	600	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P437130

Component	Result	Code	Units
GFD-purified-qPCR	120	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P436033

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

Reference Method: SOP-PCR-1.4
Batch ID: P437130

Component	Result	Code	Units
BacR-purified-qPCR	510	U	TSC/100 mL

Reference Method: SOP-PCR-1.5
Batch ID: P436033

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

Reference Method: SOP-PCR-1.5
Batch ID: P437130

Component	Result	Code	Units
DG3-purified-qPCR	430	U	TSC/100 mL

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 10150 B
Batch ID: P437029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	91.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P436033

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	79.9	85.4	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P437130

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P437130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	93.4	7.72	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P437130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-purified-qPCR	102	5.22	P/F	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P437130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	81.4	6.61	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P436033

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	104	46.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P437130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	96.0	4.29	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P436033

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	94.3	43.9	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P437130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-purified-qPCR	91.2	3.94	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P436033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2443197	HF183-qPCR	83.3	80.6	P/P	50 - 175
2443379	HF183-qPCR	87.6		P	50 - 175
2443415	HF183-qPCR	87.7		P	50 - 175
2443447	HF183-qPCR	83.1		P	50 - 175
2444335	HF183-qPCR	77.0		P	50 - 175
2444337	HF183-qPCR	58.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P436033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2444617	HF183-qPCR	96.0		P	50 - 175
2444690	HF183-qPCR	99.6		P	50 - 175
2444691	HF183-qPCR	79.8		P	50 - 175
2444692	HF183-qPCR	91.5		P	50 - 175
2444960	HF183-qPCR	87.5		P	50 - 175

Reference Method: SOP-PCR-1.0

Batch ID: P437130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440676	HF183-purified-qPCR	94.7		P	50 - 175
2444336	HF183-purified-qPCR	90.3		P	50 - 175
2444618	HF183-purified-qPCR	97.4		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P437130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440676	GULL2-purified-qPCR	79.8		P	50 - 175
2444336	GULL2-purified-qPCR	90.3		P	50 - 175
2444618	GULL2-purified-qPCR	86.3		P	50 - 175

Reference Method: SOP-PCR-1.3

Batch ID: P437130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440676	GFD-purified-qPCR	107		P	50 - 175
2444336	GFD-purified-qPCR	92.2		P	50 - 175
2444618	GFD-purified-qPCR	97.2		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P436033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2443197	BacR-qPCR	85.7	88.2	P/P	50 - 175
2443379	BacR-qPCR	89.4		P	50 - 175
2443415	BacR-qPCR	77.0		P	50 - 175
2443447	BacR-qPCR	77.1		P	50 - 175
2444335	BacR-qPCR	72.2		P	50 - 175
2444337	BacR-qPCR	78.9		P	50 - 175
2444617	BacR-qPCR	77.8		P	50 - 175
2444690	BacR-qPCR	88.8		P	50 - 175
2444691	BacR-qPCR	82.1		P	50 - 175
2444692	BacR-qPCR	73.1		P	50 - 175
2444960	BacR-qPCR	61.0		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P437130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440676	BacR-purified-qPCR	84.4		P	50 - 175
2444336	BacR-purified-qPCR	92.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P437130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2444618	BacR-purified-qPCR	82.8		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P436033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2443197	DG3-qPCR	92.6	98.9	P/P	50 - 175
2443379	DG3-qPCR	93.6		P	50 - 175
2443415	DG3-qPCR	88.8		P	50 - 175
2443447	DG3-qPCR	79.1		P	50 - 175
2444335	DG3-qPCR	68.7		P	50 - 175
2444337	DG3-qPCR	63.4		P	50 - 175
2444617	DG3-qPCR	92.3		P	50 - 175
2444690	DG3-qPCR	90.4		P	50 - 175
2444691	DG3-qPCR	83.1		P	50 - 175
2444692	DG3-qPCR	74.6		P	50 - 175
2444960	DG3-qPCR	67.7		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P437130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440676	DG3-purified-qPCR	96.7		P	50 - 175
2444336	DG3-purified-qPCR	93.9		P	50 - 175
2444618	DG3-purified-qPCR	94.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P436033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2443197	HF183-qPCR	3.33	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P436033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2443197	BacR-qPCR	2.88	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P436033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2443197	DG3-qPCR	6.53	Spike	P	0 - 25

Quality Assurance Report Precision

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

Quality Assurance Report Surrogates

Lab Sample ID: 2444617
Field Sample ID: G3SD0176

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	83.8	P	50 - 300

Lab Sample ID: 2444618
Field Sample ID: G3SD0177

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	44.1	F	50 - 300
SOP-PCR-1.2	SKETA-qPCR	48.8	F	50 - 300
SOP-PCR-1.3	SKETA-qPCR	59.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	57.1	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	41.4	F	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	91.1								
SOP-PCR-1.0	HF183-purified-qPCR	7.72	93.4		94.7	90.3	97.4			
	HF183-qPCR	85.4	79.9		83.3	80.6	87.6			3.33
					87.7					
SOP-PCR-1.2	GULL2-purified-qPCR	5.22	102		79.8	90.3	86.3			
SOP-PCR-1.3	GFD-purified-qPCR	6.61	81.4		107	92.2	97.2			
SOP-PCR-1.4	BacR-purified-qPCR	4.29	96.0		84.4	92.5	82.8			
	BacR-qPCR	104	46.2		85.7	88.2	89.4			2.88
					77.0					
SOP-PCR-1.5	DG3-purified-qPCR	3.94	91.2		96.7	93.9	94.4			
	DG3-qPCR	43.9	94.3		88.8	79.1	68.7			6.53
					92.6					

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2444619, 2444620, 2444621, 2444622, 2444623, 2444624
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2444612, 2444613, 2444614, 2444615, 2444616
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2444617
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2444618
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2444618

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2444618
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2444617
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2444618
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2444617
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2444618

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	10/11/2023	10/11/2023 16:20		10/12/2023 10:40	Sanders-Fort Myers	2444619, 2444620, 2444621, 2444622, 2444623, 2444624
SM 10150 B	10/12/2023	10/12/2023 13:41	Tynan A Branch	10/25/2023 10:27	Megan Higbee	2444612, 2444613, 2444614, 2444615, 2444616
SOP-PCR-1.0	10/12/2023	10/12/2023 14:08	Claudia Castro	10/30/2023 09:23	Roberta Tatti	2444617
	10/12/2023	10/12/2023 14:08	Madeline Gruver	10/31/2023 10:07	Roberta Tatti	2444618
SOP-PCR-1.2	10/12/2023	10/12/2023 14:08	Madeline Gruver	10/31/2023 08:52	Roberta Tatti	2444618
SOP-PCR-1.3	10/12/2023	10/12/2023 14:08	Madeline Gruver	10/31/2023 18:06	Madeline Gruver	2444618
SOP-PCR-1.4	10/12/2023	10/12/2023 14:08	Claudia Castro	11/02/2023 09:43	Roberta Tatti	2444617
	10/12/2023	10/12/2023 14:08	Madeline Gruver	10/31/2023 18:06	Madeline Gruver	2444618
SOP-PCR-1.5	10/12/2023	10/12/2023 14:08	Claudia Castro	11/02/2023 10:57	Roberta Tatti	2444617
	10/12/2023	10/12/2023 14:08	Madeline Gruver	10/31/2023 10:07	Roberta Tatti	2444618