

Biological Analysis Report

CEN-DIST-2023-07-19-02

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 8**
Request ID: **RQ-2023-07-17-32**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

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: Puja Jasrotia, Environmental Administrator

Date Certified: 01-SEP-2023 12:15

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', written over a horizontal line.

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, Microbiology and 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: Lake Henry at Center

Collection Date/Time: 07/18/2023 10:28

Field ID: G3CE0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425105	SM 10150 B	Chlorophyll-a, Corrected	12		ug/L	P433075	
		Phaeophytin-a	2.9		ug/L	P433075	
		Chlorophyll-a, Uncorrected	14		ug/L	P433075	
2425106	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	9.8	Q	MPN/100 mL	P432896	
2425107	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P432478	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P432478	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P432478	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P432478	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P432478	

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.
SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Quality Assurance Report
Method Blank Results

Reference Method: SM 10150 B
Batch ID: P433075

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: SM 9223 B Quanti-Tray
Batch ID: P432896

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P432478

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

Reference Method: SOP-PCR-1.2
Batch ID: P432478

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

Reference Method: SOP-PCR-1.3
Batch ID: P432478

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: P432478

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

Reference Method: SOP-PCR-1.5
Batch ID: P432478

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: P433075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	90.3		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P432478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	90.5	109	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P432478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.9	89.2	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P432478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	84.2	88.5	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P432478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	95.7	77.8	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P432478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	73.2	84.3	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P432478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424198	HF183-qPCR	110	112	P/P	50 - 175
2424199	HF183-qPCR	123		P	50 - 175
2424200	HF183-qPCR	127		P	50 - 175
2424201	HF183-qPCR	122		P	50 - 175
2424202	HF183-qPCR	120		P	50 - 175
2424400	HF183-qPCR	99.1		P	50 - 175
2424438	HF183-qPCR	87.6		P	50 - 175
2424478	HF183-qPCR	93.6		P	50 - 175
2424514	HF183-qPCR	85.2		P	50 - 175
2425107	HF183-qPCR	88.8		P	50 - 175
2425712	HF183-qPCR	97.3		P	50 - 175
2425713	HF183-qPCR	99.1		P	50 - 175
2426060	HF183-qPCR	91.7		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P432478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424198	GULL2-qPCR	87.6	85.8	P/P	50 - 300
2424199	GULL2-qPCR	87.4		P	50 - 300
2424200	GULL2-qPCR	85.3		P	50 - 300
2424201	GULL2-qPCR	82.5		P	50 - 300
2424202	GULL2-qPCR	76.0		P	50 - 300
2424400	GULL2-qPCR	31.9		F	50 - 300
2424438	GULL2-qPCR	40.2		F	50 - 300
2424478	GULL2-qPCR	53.2		P	50 - 300
2424514	GULL2-qPCR	74.8		P	50 - 300
2425107	GULL2-qPCR	71.6		P	50 - 300
2425712	GULL2-qPCR	74.6		P	50 - 300
2425713	GULL2-qPCR	69.7		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P432478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424198	GFD-qPCR	90.6	96.3	P/P	50 - 175
2424199	GFD-qPCR	99.1		P	50 - 175
2424200	GFD-qPCR	99.5		P	50 - 175
2424201	GFD-qPCR	94.6		P	50 - 175
2424202	GFD-qPCR	79.8		P	50 - 175
2424400	GFD-qPCR	88.5		P	50 - 175
2424438	GFD-qPCR	98.7		P	50 - 175
2424478	GFD-qPCR	81.4		P	50 - 175
2424514	GFD-qPCR	89.2		P	50 - 175
2425107	GFD-qPCR	84.2		P	50 - 175
2425712	GFD-qPCR	88.8		P	50 - 175
2425713	GFD-qPCR	74.9		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P432478

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P432478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424400	BacR-qPCR	73.5		P	50 - 175
2424438	BacR-qPCR	65.6		P	50 - 175
2424478	BacR-qPCR	52.4		P	50 - 175
2424514	BacR-qPCR	77.1		P	50 - 175
2425107	BacR-qPCR	61.9		P	50 - 175
2425712	BacR-qPCR	93.5		P	50 - 175
2425713	BacR-qPCR	84.3		P	50 - 175
2426060	BacR-qPCR	57.9		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P432478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424198	DG3-qPCR	102	102	P/P	50 - 175
2424199	DG3-qPCR	109		P	50 - 175
2424200	DG3-qPCR	113		P	50 - 175
2424201	DG3-qPCR	114		P	50 - 175
2424202	DG3-qPCR	113		P	50 - 175
2424400	DG3-qPCR	91.1		P	50 - 175
2424438	DG3-qPCR	87.1		P	50 - 175
2424478	DG3-qPCR	73.0		P	50 - 175
2424514	DG3-qPCR	89.5		P	50 - 175
2425107	DG3-qPCR	84.6		P	50 - 175
2425712	DG3-qPCR	106		P	50 - 175
2425713	DG3-qPCR	110		P	50 - 175
2426060	DG3-qPCR	81.9		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10150 B
Batch ID: P433075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425368	Chlorophyll-a, Corrected	3.82	Sample	P	0 - 25
2425368	Chlorophyll-a, Uncorrected	3.51	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P432478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424198	HF183-qPCR	2.17	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P432478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424198	GULL2-qPCR	2.16	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P432478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424198	GFD-qPCR	6.03	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P432478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424198	BacR-qPCR	4.46	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P432478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424198	DG3-qPCR	0.398	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2425107
Field Sample ID: G3CE0040

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.4	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	106	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	92.0	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	90.3					3.82	
	Chlorophyll-a, Uncorrected						3.51	
SOP-PCR-1.0	HF183-qPCR	109	90.5	110	112	123		2.17
SOP-PCR-1.2	GULL2-qPCR	89.2	90.9	127				2.16
				87.6	85.8	87.4		
SOP-PCR-1.3	GFD-qPCR	88.5	84.2	85.3				6.03
				90.6	96.3	99.1		
SOP-PCR-1.4	BacR-qPCR	77.8	95.7	99.5				4.46
				73.5	65.6	52.4		
SOP-PCR-1.5	DG3-qPCR	84.3	73.2	77.1				0.398
				102	102	109		
				113				

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2425105
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2425106
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2425107
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2425107
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2425107
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2425107
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2425107

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10150 B	07/19/2023	07/19/2023 13:09	Keanu Thijm	07/25/2023 11:03	Callie Williams	2425105
SM 9223 B Quanti-Tray	07/19/2023	07/19/2023 16:23	Julia Herten	07/20/2023 10:29	Aidan Cronin	2425106
SOP-PCR-1.0	07/19/2023	07/19/2023 13:20	Claudia Castro	07/28/2023 18:18	Madeline Gruver	2425107
SOP-PCR-1.2	07/19/2023	07/19/2023 13:20	Claudia Castro	08/03/2023 14:46	Roberta Tatti	2425107
SOP-PCR-1.3	07/19/2023	07/19/2023 13:20	Claudia Castro	08/02/2023 12:05	Roberta Tatti	2425107
SOP-PCR-1.4	07/19/2023	07/19/2023 13:20	Claudia Castro	07/31/2023 15:36	Madeline Gruver	2425107
SOP-PCR-1.5	07/19/2023	07/19/2023 13:20	Claudia Castro	07/31/2023 11:36	Madeline Gruver	2425107