Biological Analysis Report

SO-DIST-2023-02-21-01

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: JohnHenrySlough**
Request ID: **RQ-2023-02-20-77**
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: William Mullen

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: 05-APR-2023 12:03

NON-CONFORMANCE REPORT INCLUDED

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: JohnHenrySlough AtCR731 **Collection Date/Time: 02/20/2023 09:00**

Field ID: G4SD0215 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2388923	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.7	I	ug/L	P426254	
		Phaeophytin-a	1.0	U	ug/L	P426254	
		Chlorophyll-a, Uncorrected	2.1		ug/L	P426254	
2388924	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	UY	TSC/100 mL	P426170	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	UY	TSC/100 mL	P426170	
	SOP-PCR-1.3	GFD-qPCR**	1.2E+03	IY	TSC/100 mL	P426170	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	UY	TSC/100 mL	P426170	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	UY	TSC/100 mL	P426170	
2388925	Colilert-18	Escherichia Coli-Quanti-Tray	75.9		MPN/100 mL		

Ref. Method and Comment:
SOP-PCR-1.0: See non-conformance report # 9760
SOP-PCR-1.2: Precision data unavailable for Gull2-qPCR component. See non-conformance report # 9760.
SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component. See non-conformance report # 9760.
SOP-PCR-1.4: See non-conformance report # 9760
SOP-PCR-1.5: See non-conformance report # 9760

Non-Conformance Report

NCR ID: 9760

Event(s)	Job(s)	Sample(s)	Test(s)
SO-DIST-2023-02-21-01	TLH-2023-02-21-54	2388924	

NCR Type: SHIPPING/RECEIVING **NCR Category: Sample Integrity**

Observation: Sample collected in an improper container.

Resolution: Samples will be qualified as appropriate.

Authorized by/Date: Kyle Klug 3/8/2023

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P426254

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P426170

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

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P426170

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

Reference Method: SOP-PCR-1.3
Batch ID: P426170

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

Reference Method: SOP-PCR-1.4
Batch ID: P426170

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

Reference Method: SOP-PCR-1.5
Batch ID: P426170

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: P426254

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: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	98.1	101	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	115	92.0	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	101	95.3	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P426170

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.2	131	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P426170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	108	130	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	HF183-qPCR	83.8		P	50 - 175
2388924	HF183-qPCR	83.0		P	50 - 175
2388987	HF183-qPCR	94.4	104	P/P	50 - 175
2388988	HF183-qPCR	113		P	50 - 175
2389048	HF183-qPCR	98.3		P	50 - 175
2389394	HF183-qPCR	87.7		P	50 - 175
2389395	HF183-qPCR	88.0		P	50 - 175
2389425	HF183-qPCR	79.4		P	50 - 175
2389426	HF183-qPCR	83.8		P	50 - 175
2389592	HF183-qPCR	87.1		P	50 - 175
2389680	HF183-qPCR	93.0		P	50 - 175
2389850	HF183-qPCR	88.3		P	50 - 175
2389851	HF183-qPCR	73.2		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	GULL2-qPCR	83.8		P	50 - 300
2388924	GULL2-qPCR	85.4		P	50 - 300
2388988	GULL2-qPCR	84.3		P	50 - 300
2389048	GULL2-qPCR	77.2		P	50 - 300
2389394	GULL2-qPCR	78.7		P	50 - 300
2389395	GULL2-qPCR	84.6		P	50 - 300
2389425	GULL2-qPCR	73.0		P	50 - 300
2389426	GULL2-qPCR	98.6		P	50 - 300
2389592	GULL2-qPCR	80.7		P	50 - 300
2389850	GULL2-qPCR	110		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	GFD-qPCR	106		P	50 - 175
2388924	GFD-qPCR	99.1		P	50 - 175
2388988	GFD-qPCR	102		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389048	GFD-qPCR	98.1		P	50 - 175
2389394	GFD-qPCR	100		P	50 - 175
2389395	GFD-qPCR	91.5		P	50 - 175
2389425	GFD-qPCR	107		P	50 - 175
2389426	GFD-qPCR	99.1		P	50 - 175
2389592	GFD-qPCR	81.5		P	50 - 175
2389850	GFD-qPCR	97.3		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	BacR-qPCR	86.8		P	50 - 175
2388924	BacR-qPCR	81.6		P	50 - 175
2388987	BacR-qPCR	96.8	93.5	P/P	50 - 175
2388988	BacR-qPCR	98.3		P	50 - 175
2389048	BacR-qPCR	83.4		P	50 - 175
2389394	BacR-qPCR	83.6		P	50 - 175
2389395	BacR-qPCR	88.3		P	50 - 175
2389425	BacR-qPCR	78.4		P	50 - 175
2389426	BacR-qPCR	79.1		P	50 - 175
2389592	BacR-qPCR	73.9		P	50 - 175
2389680	BacR-qPCR	79.8		P	50 - 175
2389850	BacR-qPCR	84.0		P	50 - 175
2389851	BacR-qPCR	72.6		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P426170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2388866	DG3-qPCR	99.7		P	50 - 175
2388924	DG3-qPCR	97.6		P	50 - 175
2388987	DG3-qPCR	105	109	P/P	50 - 175
2388988	DG3-qPCR	114		P	50 - 175
2389048	DG3-qPCR	95.1		P	50 - 175
2389394	DG3-qPCR	88.2		P	50 - 175
2389395	DG3-qPCR	97.6		P	50 - 175
2389425	DG3-qPCR	85.5		P	50 - 175
2389426	DG3-qPCR	88.2		P	50 - 175
2389592	DG3-qPCR	92.0		P	50 - 175
2389680	DG3-qPCR	91.1		P	50 - 175
2389850	DG3-qPCR	93.5		P	50 - 175
2389851	DG3-qPCR	91.1		P	50 - 175

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P426254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2388489	Chlorophyll-a, Corrected	15.2	Sample	P	0 - 25
2388489	Chlorophyll-a, Uncorrected	15.7	Sample	P	0 - 25
2388489	Phaeophytin-a	16.9	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P426170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2388987	HF183-qPCR	10.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P426170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2388987	BacR-qPCR	3.27	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P426170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2388987	DG3-qPCR	3.58	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2388924
Field Sample ID: G4SD0215

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	97.9	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	93.3	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	91.3			15.2	
	Chlorophyll-a, Uncorrected				15.7	
	Phaeophytin-a				16.9	

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SOP-PCR-1.0	HF183-qPCR	101 98.1	83.8 83.0 94.4 104			10.1
SOP-PCR-1.2	GULL2-qPCR	92.0 115	83.8 85.4 84.3 77.2			
SOP-PCR-1.3	GFD-qPCR	95.3 101	106 99.1 102 98.1			
SOP-PCR-1.4	BacR-qPCR	131 98.2	86.8 81.6 96.8 93.5			3.27
SOP-PCR-1.5	DG3-qPCR	130 108	99.7 97.6 105 109			3.58

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2388925
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2388923
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2388924
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2388924
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2388924
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2388924
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2388924

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	02/20/2023	02/20/2023 14:50		02/21/2023 09:17	Sanders-Fort Myers	2388925
SM 10200 H (mod.)	02/21/2023	02/21/2023 13:50	Callie Williams	02/22/2023 08:35	Aidan Cronin	2388923
SOP-PCR-1.0	02/21/2023	02/21/2023 13:50	Claudia Castro	03/06/2023 15:08	Roberta Tatti	2388924
SOP-PCR-1.2	02/21/2023	02/21/2023 13:50	Claudia Castro	03/10/2023 16:35	Jennifer Mihalic	2388924
SOP-PCR-1.3	02/21/2023	02/21/2023 13:50	Claudia Castro	03/09/2023 15:01	Jennifer Mihalic	2388924
SOP-PCR-1.4	02/21/2023	02/21/2023 13:50	Claudia Castro	03/07/2023 12:31	Roberta Tatti	2388924
SOP-PCR-1.5	02/21/2023	02/21/2023 13:50	Claudia Castro	03/08/2023 09:22	Roberta Tatti	2388924