

Biological Analysis Report

SO-DIST-2022-05-10-01

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 : Rookery Bay**

Request ID: **RQ-2022-05-09-47**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:

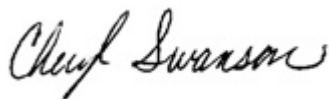
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: William Mullen

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: Cheryl A. Swanson, Program Administrator

Date Certified: 17-JUN-2022 13:10



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: 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: Rock Creek

Collection Date/Time: 05/09/2022 09:55

Field ID: G1SD0095

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325770	SOP-PCR-1.0	HF183-qPCR**	830	U	TSC/100 mL	P413411	
	SOP-PCR-1.2	GULL2-qPCR**	900	U	TSC/100 mL	P415149	
	SOP-PCR-1.3	GFD-qPCR**	1.54E+03		TSC/100 mL	P415150	
	SOP-PCR-1.4	BacR-qPCR**	760	U	TSC/100 mL	P413411	
	SOP-PCR-1.5	DG3-qPCR**	640	U	TSC/100 mL	P413411	
2325771	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	368		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for GULL2-qPCR component.

SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component.

SOP-PCR-1.4: Precision data unavailable for BacR-qPCR component.

Sample Location: Henderson Crk Rookery Dock

Collection Date/Time: 05/09/2022 10:35

Field ID: G1SD0112

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325772	Colilert-18	Escherichia Coli-Quanti-Tray	18.9		MPN/100 mL		
2325776	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	10.0	U	MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	250		cfu/100 mL		

Sample Location: Rookery Bay Site 1

Collection Date/Time: 05/09/2022 11:30

Field ID: G1SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325773	Colilert-18	Escherichia Coli-Quanti-Tray	10.0	U	MPN/100 mL		
2325777	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	10.0	U	MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	1.00	U	cfu/100 mL		

Sample Location: Rookery Canal @ MoonBaySt.

Collection Date/Time: 05/09/2022 12:30

Field ID: G1SD0110

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325774	Colilert-18	Escherichia Coli-Quanti-Tray	90.6		MPN/100 mL		
2325778	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	117		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	1.00	U	cfu/100 mL		

Sample Location: Rookery Canal@Salinas Dr

Collection Date/Time: 05/09/2022 12:45

Field ID: G1SD0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325775	Colilert-18	Escherichia Coli-Quanti-Tray	461.1		MPN/100 mL		
2325779	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	1730		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	470		cfu/100 mL		

Quality Assurance Report Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P413411

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

Reference Method: SOP-PCR-1.2
Batch ID: P415149

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

Reference Method: SOP-PCR-1.3
Batch ID: P415150

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

Reference Method: SOP-PCR-1.4
Batch ID: P413411

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

Reference Method: SOP-PCR-1.5
Batch ID: P413411

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P413411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	82.6	74.0	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P415149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	84.7	71.5	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P415150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	66.9	64.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P413411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	68.3	59.3	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	78.2	73.6	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P413411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2324765	HF183-qPCR	91.7	93.4	P/P	50 - 175
2324766	HF183-qPCR	88.0		P	50 - 175
2324767	HF183-qPCR	97.9		P	50 - 175
2324768	HF183-qPCR	94.7		P	50 - 175
2324769	HF183-qPCR	98.3		P	50 - 175
2324770	HF183-qPCR	94.7		P	50 - 175
2325456	HF183-qPCR	75.6		P	50 - 175
2325770	HF183-qPCR	80.5		P	50 - 175
2326095	HF183-qPCR	75.4		P	50 - 175
2326096	HF183-qPCR	77.1		P	50 - 175
2326122	HF183-qPCR	86.0		P	50 - 175
2326123	HF183-qPCR	91.5		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P415149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325770	GULL2-qPCR	73.5		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P415150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325770	GFD-qPCR	73.9		P	50 - 175
2326122	GFD-qPCR	86.6		P	50 - 175
2326123	GFD-qPCR	83.6		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325455	BacR-qPCR	59.0		P	50 - 175
2325456	BacR-qPCR	65.9		P	50 - 175
2325770	BacR-qPCR	53.8		P	50 - 175
2326095	BacR-qPCR	54.3		P	50 - 175
2326096	BacR-qPCR	53.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P413411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326122	BacR-qPCR	47.2		F	50 - 175
2326123	BacR-qPCR	60.1		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2324765	DG3-qPCR	84.6	87.2	P/P	50 - 175
2324766	DG3-qPCR	85.0		P	50 - 175
2324767	DG3-qPCR	86.6		P	50 - 175
2324768	DG3-qPCR	80.7		P	50 - 175
2324769	DG3-qPCR	85.8		P	50 - 175
2324770	DG3-qPCR	82.2		P	50 - 175
2325455	DG3-qPCR	72.9		P	50 - 175
2325456	DG3-qPCR	84.7		P	50 - 175
2325770	DG3-qPCR	80.7		P	50 - 175
2326095	DG3-qPCR	70.8		P	50 - 175
2326096	DG3-qPCR	76.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P413411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324765	HF183-qPCR	1.82	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P413411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324765	DG3-qPCR	3.05	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2325770
Field Sample ID: G1SD0095

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	142	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	136	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	126	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	110	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	74.0	82.6	77.1	86.0	91.5			1.82
SOP-PCR-1.2	GULL2-qPCR	71.5	84.7	73.5					
SOP-PCR-1.3	GFD-qPCR	64.0	66.9	73.9	86.6	83.6			
SOP-PCR-1.4	BacR-qPCR	59.3	68.3	59.0	65.9	53.8			
SOP-PCR-1.5	DG3-qPCR	73.6	78.2	84.6	87.2	85.0			3.05
				86.6					

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2325772, 2325773, 2325774, 2325775
Enterolert/QT	Enterococci by Enterolert/QT by Sanders in Fort Myers	2325771, 2325776, 2325777, 2325778, 2325779
SM 9222 D	Fecal coliforms by MF by Sanders in Fort Myers	2325776, 2325777, 2325778, 2325779
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2325770
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2325770
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2325770
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2325770
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2325770

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	05/09/2022	05/09/2022 15:45	Claudia Castro	05/10/2022 10:00	Sanders-Fort Myers	2325772, 2325773, 2325774, 2325775
Enterolert/QT	05/09/2022	05/09/2022 15:05		05/10/2022 16:00	Sanders-Fort Myers	2325771, 2325776, 2325777, 2325778, 2325779
SM 9222 D	05/09/2022	05/09/2022 15:35		05/10/2022 14:20	Sanders-Fort Myers	2325776, 2325777, 2325778, 2325779
SOP-PCR-1.0	05/10/2022	05/10/2022 14:00		06/07/2022 14:46	Roberta Tatti	2325770
SOP-PCR-1.2	05/10/2022	05/10/2022 14:00		06/14/2022 09:13	DeAsia Armster	2325770
SOP-PCR-1.3	05/10/2022	05/10/2022 14:00	Claudia Castro	06/14/2022 09:13	DeAsia Armster	2325770
SOP-PCR-1.4	05/10/2022	05/10/2022 14:00	Claudia Castro	06/08/2022 09:27	Roberta Tatti	2325770
SOP-PCR-1.5	05/10/2022	05/10/2022 14:00	Claudia Castro	06/07/2022 17:15	Jennifer Mihalic	2325770