

Biological Analysis Report

SO-DIST-2022-08-05-01

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-2022-08-01-50**

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

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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 16-SEP-2022 15:40

A handwritten signature in dark ink, appearing to be 'Sarah Menz', with a long, sweeping horizontal stroke extending to the right.

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: 08/04/2022 08:40

Field ID: G1SD0095

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346587	SOP-PCR-1.0	HF183-qPCR**	2.2E+03	I	TSC/100 mL	P417615	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P417615	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P417615	
2346629	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	958		MPN/100 mL		

Sample Location: HendersonCrkRookeryDock

Collection Date/Time: 08/04/2022 09:10

Field ID: G1SD0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346634	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	520		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	540		cfu/100 mL		

Sample Location: Rookery Bay Site 1

Collection Date/Time: 08/04/2022 10:05

Field ID: G1SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346631	Colilert-18	Escherichia Coli-Quanti-Tray	10.0		MPN/100 mL		
2346635	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	10.0	U	MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	3.00	B	cfu/100 mL		

Sample Location: RookeryCanal@MoonBaySt

Collection Date/Time: 08/04/2022 11:10

Field ID: G1SD0110

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346632	Colilert-18	Escherichia Coli-Quanti-Tray	318		MPN/100 mL		
2346636	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	131		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	682	B	cfu/100 mL		

Sample Location: RookeryCanal@SalinasDr

Collection Date/Time: 08/04/2022 11:30

Field ID: G1SD0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346633	Colilert-18	Escherichia Coli-Quanti-Tray	1040		MPN/100 mL		
2346637	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	50		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	882	B	cfu/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P417615

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P417615

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

Reference Method: SOP-PCR-1.5
Batch ID: P417615

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: P417615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	64.7	83.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P417615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	93.0	83.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P417615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	81.7	95.6	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P417615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345962	HF183-qPCR	87.9	87.9	P/P	50 - 175
2346162	HF183-qPCR	87.4		P	50 - 175
2346393	HF183-qPCR	82.5		P	50 - 175
2346587	HF183-qPCR	94.6		P	50 - 175
2346598	HF183-qPCR	96.3		P	50 - 175
2346616	HF183-qPCR	102		P	50 - 175
2347375	HF183-qPCR	84.4		P	50 - 175
2347737	HF183-qPCR	92.4		P	50 - 175
2347738	HF183-qPCR	103		P	50 - 175
2347739	HF183-qPCR	101		P	50 - 175
2347740	HF183-qPCR	110		P	50 - 175
2347741	HF183-qPCR	116		P	50 - 175
2347742	HF183-qPCR	101		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P417615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345962	BacR-qPCR	71.6	75.4	P/P	50 - 175
2346162	BacR-qPCR	74.2		P	50 - 175
2346393	BacR-qPCR	70.2		P	50 - 175
2346587	BacR-qPCR	93.2		P	50 - 175
2346598	BacR-qPCR	73.8		P	50 - 175
2346616	BacR-qPCR	62.7		P	50 - 175
2347375	BacR-qPCR	86.6		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P417615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345962	DG3-qPCR	94.5	93.2	P/P	50 - 175
2346162	DG3-qPCR	89.6		P	50 - 175
2346393	DG3-qPCR	90.7		P	50 - 175
2346587	DG3-qPCR	102		P	50 - 175
2346598	DG3-qPCR	102		P	50 - 175
2346616	DG3-qPCR	108		P	50 - 175
2347375	DG3-qPCR	102		P	50 - 175
2347737	DG3-qPCR	94.0		P	50 - 175
2347738	DG3-qPCR	98.0		P	50 - 175
2347739	DG3-qPCR	103		P	50 - 175
2347740	DG3-qPCR	103		P	50 - 175
2347741	DG3-qPCR	111		P	50 - 175
2347742	DG3-qPCR	102		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P417615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345962	HF183-qPCR	0.0893	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P417615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345962	BacR-qPCR	5.23	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P417615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345962	DG3-qPCR	1.35	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: 2346587
 Field Sample ID: G1SD0095

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	121	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	126	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	83.4	64.7	87.9	87.9	87.4		0.0893
				82.5				
SOP-PCR-1.4	BacR-qPCR	83.2	93.0	71.6	75.4	74.2		5.23
				70.2				
SOP-PCR-1.5	DG3-qPCR	95.6	81.7	94.5	93.2	89.6		1.35
				90.7				

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2346631, 2346632, 2346633
Enterolert/QT	Enterococci by Enterolert/QT by Sanders in Fort Myers	2346629, 2346634, 2346635, 2346636, 2346637
SM 9222 D	Fecal coliforms by MF by Sanders in Fort Myers	2346634, 2346635, 2346636, 2346637
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2346587
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2346587
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2346587

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	08/04/2022	08/04/2022 16:25	Claudia Castro	08/05/2022 11:15	Sanders-Fort Myers	2346631, 2346632, 2346633
Enterolert/QT	08/04/2022	08/04/2022 14:25		08/05/2022 15:24	Sanders-Fort Myers	2346629, 2346634, 2346635, 2346636, 2346637
SM 9222 D	08/04/2022	08/04/2022 16:10		08/05/2022 16:50	Sanders-Fort Myers	2346634, 2346635, 2346636, 2346637
SOP-PCR-1.0	08/05/2022	08/05/2022 13:50		08/29/2022 14:25	DeAsia Armster	2346587
SOP-PCR-1.4	08/05/2022	08/05/2022 13:50	Claudia Castro	08/30/2022 09:34	DeAsia Armster	2346587
SOP-PCR-1.5	08/05/2022	08/05/2022 13:50	Claudia Castro	08/31/2022 09:46	Roberta Tatti	2346587