Biological Analysis Report

SO-DIST-2021-03-16-01

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: **2021 SMP : Collier Coco**
Request ID: **RQ-2021-03-15-54**
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
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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 26-APR-2021 14:29

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: HendersonCrkRookeryDock **Collection Date/Time: 03/15/2021 10:25**

Field ID: G1SD0112 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2231604	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	153		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	2	B	cfu/100 mL		

Sample Location: Rookery Bay Site 1 **Collection Date/Time: 03/15/2021 11:40**

Field ID: G1SD0067 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2231605	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	10.0	U	MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	2	U	cfu/100 mL		

Sample Location: RookeryCanal@MoonBaySt **Collection Date/Time: 03/15/2021 12:55**

Field ID: G1SD0110 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2231606	Colilert-18	Escherichia Coli-Quanti-Tray	19.3		MPN/100 mL		
	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	57.3		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	2	B	cfu/100 mL		

Sample Location: RookeryCanal@SalinasDr **Collection Date/Time: 03/15/2021 13:10**

Field ID: G1SD0111 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2231607	Colilert-18	Escherichia Coli-Quanti-Tray	34.5		MPN/100 mL		
2231608	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	291		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	2	B	cfu/100 mL		

Sample Location: Coco @ Ibis Way **Collection Date/Time: 03/15/2021 14:00**

Field ID: G1SD0119 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2231603	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P394546	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	UJ	TSC/100 mL	P394546	MS
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P394546	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P394546	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P394546	
2231609	Colilert-18	Escherichia Coli-Quanti-Tray	39.5		MPN/100 mL		

Ref. Method and Comment:
SOP-PCR-1.2: Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P394546

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: P394546

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

Reference Method: SOP-PCR-1.3
Batch ID: P394546

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

Reference Method: SOP-PCR-1.4
Batch ID: P394546

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

Reference Method: SOP-PCR-1.5
Batch ID: P394546

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: P394546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	95.7	99.3	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P394546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	85.9	88.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P394546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	108	101	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P394546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	86.9	93.1	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P394546

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P394546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	92.2	104	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P394546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229538	HF183-qPCR	105	94.6	P/P	50 - 175
2229646	HF183-qPCR	78.0		P	50 - 175
2229816	HF183-qPCR	86.3		P	50 - 175
2229817	HF183-qPCR	81.0		P	50 - 175
2230735	HF183-qPCR	79.5		P	50 - 175
2230736	HF183-qPCR	81.7		P	50 - 175
2231603	HF183-qPCR	68.4		P	50 - 175
2231634	HF183-qPCR	73.2		P	50 - 175
2231754	HF183-qPCR	82.7		P	50 - 175
2233147	HF183-qPCR	85.8		P	50 - 175
2233254	HF183-qPCR	76.4		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P394546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229538	GULL2-qPCR	62.8	74.7	P/P	50 - 300
2230735	GULL2-qPCR	60.4		P	50 - 300
2230736	GULL2-qPCR	61.2		P	50 - 300
2231603	GULL2-qPCR	45.3		F	50 - 300
2231634	GULL2-qPCR	72.0		P	50 - 300
2231754	GULL2-qPCR	70.2		P	50 - 300
2232075	GULL2-qPCR	98.1		P	50 - 300
2233147	GULL2-qPCR	97.4		P	50 - 300
2233254	GULL2-qPCR	78.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P394546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229538	GFD-qPCR	95.7	96.5	P/P	50 - 175
2230735	GFD-qPCR	103		P	50 - 175
2230736	GFD-qPCR	96.3		P	50 - 175
2231603	GFD-qPCR	68.2		P	50 - 175
2231634	GFD-qPCR	72.3		P	50 - 175
2231754	GFD-qPCR	87.7		P	50 - 175
2232075	GFD-qPCR	108		P	50 - 175
2233147	GFD-qPCR	94.1		P	50 - 175
2233254	GFD-qPCR	86.0		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P394546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229538	BacR-qPCR	85.4	92.4	P/P	50 - 175
2229646	BacR-qPCR	74.4		P	50 - 175
2229816	BacR-qPCR	83.9		P	50 - 175
2229817	BacR-qPCR	83.2		P	50 - 175
2230735	BacR-qPCR	76.3		P	50 - 175
2230736	BacR-qPCR	69.0		P	50 - 175
2231603	BacR-qPCR	74.8		P	50 - 175
2231634	BacR-qPCR	71.2		P	50 - 175
2231754	BacR-qPCR	76.0		P	50 - 175
2232075	BacR-qPCR	81.6		P	50 - 175
2233147	BacR-qPCR	76.4		P	50 - 175
2233254	BacR-qPCR	67.9		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P394546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229538	DG3-qPCR	113	107	P/P	50 - 175
2229646	DG3-qPCR	77.4		P	50 - 175
2229816	DG3-qPCR	96.6		P	50 - 175
2229817	DG3-qPCR	94.2		P	50 - 175
2230735	DG3-qPCR	91.8		P	50 - 175
2230736	DG3-qPCR	90.5		P	50 - 175
2231603	DG3-qPCR	73.0		P	50 - 175
2231634	DG3-qPCR	78.0		P	50 - 175
2231754	DG3-qPCR	74.4		P	50 - 175
2232075	DG3-qPCR	83.1		P	50 - 175
2233147	DG3-qPCR	90.7		P	50 - 175
2233254	DG3-qPCR	109		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.0
Batch ID: P394546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229538	HF183-qPCR	9.92	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P394546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229538	GULL2-qPCR	17.4	Spike	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.3
Batch ID: P394546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229538	GFD-qPCR	0.898	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P394546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229538	BacR-qPCR	7.89	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P394546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229538	DG3-qPCR	5.58	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2231603
Field Sample ID: G1SD0119

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	80.1	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	88.3	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	72.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	78.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	76.7	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SOP-PCR-1.0	HF183-qPCR	99.3 95.7	105 94.6 78.0 86.3			9.92
SOP-PCR-1.2	GULL2-qPCR	88.4 85.9	62.8 74.7 60.4 61.2			17.4
SOP-PCR-1.3	GFD-qPCR	101 108	95.7 96.5 103 96.3			0.898
SOP-PCR-1.4	BacR-qPCR	93.1 86.9	85.4 92.4 74.4 83.9			7.89
SOP-PCR-1.5	DG3-qPCR	104 92.2	113 107 77.4 96.6			5.58

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2231606, 2231607, 2231609
Enterolert/QT	Enterococci by Enterolert/QT by Sanders in Fort Myers	2231604, 2231605, 2231606, 2231608
SM 9222 D	Fecal coliforms by MF by Sanders in Fort Myers	2231604, 2231605, 2231606, 2231608
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2231603
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2231603
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2231603
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2231603
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2231603

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	03/15/2021	03/15/2021 17:13		03/16/2021 12:08	Sanders-Fort Myers	2231606, 2231607, 2231609
Enterolert/QT	03/15/2021	03/15/2021 16:13		03/16/2021 16:52	Sanders-Fort Myers	2231604, 2231605, 2231606, 2231608
SM 9222 D	03/15/2021	03/15/2021 16:40		03/16/2021 14:54	Sanders-Fort Myers	2231604, 2231605, 2231606, 2231608
SOP-PCR-1.0	03/16/2021	03/16/2021 14:20	DeAsia Armster	03/25/2021 09:54	Mailin Lopez	2231603
SOP-PCR-1.2	03/16/2021	03/16/2021 14:20	DeAsia Armster	03/29/2021 08:27	Mailin Lopez	2231603
SOP-PCR-1.3	03/16/2021	03/16/2021 14:20	DeAsia Armster	03/29/2021 11:41	Mailin Lopez	2231603
SOP-PCR-1.4	03/16/2021	03/16/2021 14:20	DeAsia Armster	03/26/2021 08:49	Mailin Lopez	2231603
SOP-PCR-1.5	03/16/2021	03/16/2021 14:20	DeAsia Armster	03/26/2021 12:55	Mailin Lopez	2231603