

Biological Analysis Report

SO-DIST-2018-04-05-02

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: **D.T. Sara**
Request ID: **RQ-2018-04-02-68**
Customer: **SO-DIST**
Project ID: **SMP**

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Date Certified: 29-MAY-2018 10:54



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 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: DrainToHudson @ShadeAve

Collection Date/Time: 04/04/2018 10:05

Field ID: G3SD0134

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981725	SOP-PCR-1.0	HF183-qPCR**	20	T	GEU/100 mL	P344786	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1981736	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	1553		MPN/100 mL		

Sample Location: Whitaker @ Museum Pier

Collection Date/Time: 04/04/2018 10:50

Field ID: G3SD0105

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981726	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P344787	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.5E+03	T	TSC/100 mL	P344787	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P344787	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of HF183 marker.

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A83961.

SOP-PCR-1.4: No amplification of BACR marker. Precision data unavailable for Analysis Batch A83916.

Sample Location: Whitaker @ Museum Pier

Collection Date/Time: 04/04/2018 10:50

Field ID: G3SD0105

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981728	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	2420	J	MPN/100 mL		

Ref. Method and Comment:

Enterolert/QT: All Quanti Trays were positive. Results may be higher than reported. Lab did not properly dilute Marine Sample

Sample Location: Walker Creek @ 32nd St

Collection Date/Time: 04/04/2018 11:15

Field ID: G3SD0094

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981727	SOP-PCR-1.0	HF183-qPCR**	84	I	GEU/100 mL	P344787	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1981737	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	1300	J	MPN/100 mL		

Ref. Method and Comment:

SM 9223 Quanti-Tray: Lab did not properly dilute Marine Sample

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P344786

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.0

Batch ID: P344787

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P344787

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P344787

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P344787

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P344786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	60.9	115	P/P	50 - 175
HF183-qPCR	117	115	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P344787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	45.9	85.4	F/P	50 - 175
HF183-qPCR	108	85.4	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P344787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	92.0	86.7	P/P	50 - 300

Reference Method: SOP-PCR-1.4
Batch ID: P344787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	92.2	98.4	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P344786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977968	HF183-qPCR	96.0		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P344786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978108	HF183-qPCR	99.1		P	50 - 175
1978110	HF183-qPCR	104		P	50 - 175
1978111	HF183-qPCR	107		P	50 - 175
1978684	HF183-qPCR	109	96.7	P/P	50 - 175
1978942	HF183-qPCR	104		P	50 - 175
1979108	HF183-qPCR	106		P	50 - 175
1979109	HF183-qPCR	98.5		P	50 - 175
1979111	HF183-qPCR	104		P	50 - 175
1979368	HF183-qPCR	97.0		P	50 - 175
1981725	HF183-qPCR	101		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P344787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981726	HF183-qPCR	71.7		P	50 - 175
1981727	HF183-qPCR	79.6		P	50 - 175
1985574	HF183-qPCR	83.1		P	50 - 175
1985612	HF183-qPCR	73.0		P	50 - 175
1985665	HF183-qPCR	69.8		P	50 - 175
1985666	HF183-qPCR	83.3		P	50 - 175
1985936	HF183-qPCR	70.8		P	50 - 175
1985937	HF183-qPCR	78.1		P	50 - 175
1985938	HF183-qPCR	71.2		P	50 - 175
1985939	HF183-qPCR	74.0	71.7	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P344787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981726	GULL2-qPCR	107		P	50 - 300
1985936	GULL2-qPCR	72.3		P	50 - 300
1985938	GULL2-qPCR	91.1		P	50 - 300

Reference Method: SOP-PCR-1.4
Batch ID: P344787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981726	BacR-qPCR	65.0		P	50 - 175
1985666	BacR-qPCR	62.1		P	50 - 175
1985936	BacR-qPCR	65.9		P	50 - 175
1985938	BacR-qPCR	90.9		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P344786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P344786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978684	HF183-qPCR	12.2	Spike	P	0 - 25
1978684	HF183-qPCR	12.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P344787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985939	HF183-qPCR	3.22	Spike	P	0 - 25
1985939	HF183-qPCR	3.22	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
 Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1981725
 Field Sample ID: G3SD0134

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	94.9	P	50 - 300

Lab Sample ID: 1981726
 Field Sample ID: G3SD0105

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	82.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	92.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	76.5	P	50 - 300

Lab Sample ID: 1981727
 Field Sample ID: G3SD0094

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.1	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	60.9	115	117	99.1	96.0	104			12.2
		115			107					
	HF183-qPCR	45.9	85.4	108	73.0	71.7	79.6			3.22
		85.4			83.1					3.22
SOP-PCR-1.2	GULL2-qPCR	86.7	92.0		107	72.3	91.1			
SOP-PCR-1.4	BacR-qPCR	98.4	92.2		65.0	62.1	65.9			
					90.9					

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
Enterolert/QT / E85457	Enterococci by MPN method by Sanders Laboratories Overflow Laboratory for SD	1981728
SM 9223 Quanti-Tray / E85457	Escherichia coli by Colilert 18 Quanti-Tray method by Sanders Laboratories for South District	1981736, 1981737
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1981725, 1981726, 1981727
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1981726
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1981726
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1981725, 1981726, 1981727

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	04/04/2018	04/04/2018 14:40		04/05/2018 14:59	Sanders-Fort Myers	1981728
SM 9223 Quanti-Tray	04/04/2018	04/04/2018 15:22		04/05/2018 10:08	Sanders-Fort Myers	1981737
	04/04/2018	04/04/2018 15:33		04/05/2018 10:08	Sanders-Fort Myers	1981736
	04/05/2018	04/05/2018 13:30	Puja Jasrotia	05/08/2018 09:15	Sarah Menz	1981725
SOP-PCR-1.0	04/05/2018	04/05/2018 13:30	Sarah Menz	05/10/2018 09:32	Mailin Lopez	1981726, 1981727
SOP-PCR-1.2	04/05/2018	04/05/2018 13:30	Sarah Menz	05/16/2018 15:33	Sarah Menz	1981726
SOP-PCR-1.4	04/05/2018	04/05/2018 13:30	Sarah Menz	05/15/2018 14:34	Sarah Menz	1981726
SOP-PCR-4.0	04/05/2018	04/05/2018 13:30	Angela Smith	05/07/2018 13:02	Puja Jasrotia	1981725, 1981726, 1981727