

Biological Analysis Report

SW-DIST-2020-10-21-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 5: Salt Springs GOM**
Request ID: **RQ-2020-10-19-09**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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Certified by: Jacqueline Savage, Environmental Administrator

Date Certified: 01-DEC-2020 07:27

A handwritten signature in black ink that reads "Jackie Savage". The signature is written in a cursive, flowing style.

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, Microbiology and Molecular.

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: Gulf Of Mexico Pasco

Collection Date/Time: 10/20/2020 11:20

Field ID: G5SW0159

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2203977	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.7		ug/L	P389597	
		Phaeophytin-a	0.90	U	ug/L	P389597	
		Chlorophyll-a, Uncorrected	2.9		ug/L	P389597	
2203979	Enterolert/QT	Enterococci-Quanti-Tray	20.0	AQ	MPN/100 mL	P389398	

Ref. Method and Comment:
 SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Salt Springs

Collection Date/Time: 10/20/2020 12:20

Field ID: G5SW0158

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2203978	SM 10200 H (mod.)	Chlorophyll-a, Corrected	19		ug/L	P389597	
		Phaeophytin-a	5.5		ug/L	P389597	
		Chlorophyll-a, Uncorrected	23		ug/L	P389597	

Ref. Method and Comment:
 SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Gulf Of Mexico Pasco

Collection Date/Time: 10/20/2020 11:20

Field ID: G5SW0159

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2203980	SOP-PCR-1.0	HF183-qPCR**	71	U	GEU/100 mL	P388644	
	SOP-PCR-1.2	GULL2-qPCR**	900	U	TSC/100 mL	P388644	
	SOP-PCR-1.3	GFD-purified-qPCR**	84	U	TSC/100 mL	P388232	LCS, RPD
	SOP-PCR-1.4	BacR-qPCR**	760	U	TSC/100 mL	P388644	
	SOP-PCR-1.5	DG3-qPCR**	640	U	TSC/100 mL	P388644	

Quality Assurance Report Method Blank Results

Reference Method: Enterolert/QT

Batch ID: P389398

Component	Result	Code	Units
Enterococci-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SM 10200 H (mod.)

Batch ID: P389597

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P388644

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P388644

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

Reference Method: SOP-PCR-1.2
Batch ID: P388644

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

Reference Method: SOP-PCR-1.3
Batch ID: P388232

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P388644

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

Reference Method: SOP-PCR-1.5
Batch ID: P388644

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: P389597

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	112		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P388644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	103	76.1	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P388644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.2	107	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P388232

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

Reference Method: SOP-PCR-1.3
Batch ID: P388232

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	104	3.94	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P388644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	94.2	93.7	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P388644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	96.8	96.4	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P388644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2201853	HF183-qPCR	89.9	97.6	P/P	50 - 175
2203770	HF183-qPCR	94.7		P	50 - 175
2203940	HF183-qPCR	84.2		P	50 - 175
2203980	HF183-qPCR	104		P	50 - 175
2204272	HF183-qPCR	94.7		P	50 - 175
2204273	HF183-qPCR	92.3		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P388644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2201853	GULL2-qPCR	74.4	75.1	P/P	50 - 300
2203492	GULL2-qPCR	84.1		P	50 - 300
2203493	GULL2-qPCR	91.1		P	50 - 300
2203494	GULL2-qPCR	90.6		P	50 - 300
2203770	GULL2-qPCR	69.6		P	50 - 300
2203940	GULL2-qPCR	57.7		P	50 - 300
2203980	GULL2-qPCR	74.3		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P388232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197889	GFD-purified-qPCR	118		P	50 - 175
2198126	GFD-purified-qPCR	61.2		P	50 - 175
2198129	GFD-purified-qPCR	99.0		P	50 - 175
2198811	GFD-purified-qPCR	54.7		P	50 - 175
2198812	GFD-purified-qPCR	90.0		P	50 - 175
2199831	GFD-purified-qPCR	126		P	50 - 175
2199832	GFD-purified-qPCR	135		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P388232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199833	GFD-purified-qPCR	107	171	P/P	50 - 175
2200720	GFD-purified-qPCR	120		P	50 - 175
2201065	GFD-purified-qPCR	113		P	50 - 175
2201769	GFD-purified-qPCR	107		P	50 - 175
2201853	GFD-purified-qPCR	138		P	50 - 175
2203492	GFD-purified-qPCR	70.8		P	50 - 175
2203493	GFD-purified-qPCR	101		P	50 - 175
2203494	GFD-purified-qPCR	113		P	50 - 175
2203770	GFD-purified-qPCR	99.8		P	50 - 175
2203940	GFD-purified-qPCR	91.4		P	50 - 175
2203980	GFD-purified-qPCR	133		P	50 - 175
2204785	GFD-purified-qPCR	143		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P388644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2201853	BacR-qPCR	74.2	74.1	P/P	50 - 175
2203492	BacR-qPCR	81.0		P	50 - 175
2203493	BacR-qPCR	85.7		P	50 - 175
2203494	BacR-qPCR	95.1		P	50 - 175
2203770	BacR-qPCR	67.5		P	50 - 175
2203940	BacR-qPCR	71.5		P	50 - 175
2203980	BacR-qPCR	86.0		P	50 - 175
2204272	BacR-qPCR	70.7		P	50 - 175
2204273	BacR-qPCR	66.9		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P388644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2201853	DG3-qPCR	101	85.0	P/P	50 - 175
2203492	DG3-qPCR	97.7		P	50 - 175
2203493	DG3-qPCR	96.3		P	50 - 175
2203494	DG3-qPCR	108		P	50 - 175
2203770	DG3-qPCR	95.7		P	50 - 175
2203940	DG3-qPCR	93.7		P	50 - 175
2203980	DG3-qPCR	95.2		P	50 - 175
2204272	DG3-qPCR	85.7		P	50 - 175
2204273	DG3-qPCR	82.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: Enterolert/QT

Batch ID: P389398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2203979	Enterococci-Quanti-Tray	0.0	Sample	P	0 - 80

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P388644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2201853	HF183-qPCR	8.24	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P388644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2201853	GULL2-qPCR	0.923	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P388232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199833	GFD-purified-qPCR	45.9	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P388644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2201853	BacR-qPCR	0.0701	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P388644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2201853	DG3-qPCR	16.9	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2203980
Field Sample ID: G5SW0159

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	150	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	93.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	98.8	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	106	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision
				LCS SMP MS

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
Enterolert/QT	Enterococci-Quanti-Tray							0.0	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	112							
SOP-PCR-1.0	HF183-qPCR	76.1	103	89.9	97.6	94.7			8.24
				84.2					
SOP-PCR-1.2	GULL2-qPCR	107	90.2	74.4	75.1	84.1			0.923
				91.1					
SOP-PCR-1.3	GFD-purified-qPCR	3.94	104	126	135	107			45.9
				171					
SOP-PCR-1.4	BacR-qPCR	93.7	94.2	74.2	74.1	81.0			0.0701
				85.7					
SOP-PCR-1.5	DG3-qPCR	96.4	96.8	101	85.0	97.7			16.9
				96.3					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert Quanti-Tray method - non-chlorinated water systems	2203979
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2203977, 2203978
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2203980
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2203980
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2203980
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2203980
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2203980

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	10/21/2020	10/21/2020 14:27	Yuliya Danyuk	10/22/2020 14:34	Jessica Sherman	2203979
SM 10200 H (mod.)	10/21/2020	10/21/2020 14:39	Jessica Sherman	10/30/2020 08:47	Jessica Fetgatter	2203977, 2203978
SOP-PCR-1.0	10/21/2020	10/21/2020 14:45	Lauren Campbell	10/26/2020 11:29	Lauren Campbell	2203980
SOP-PCR-1.2	10/21/2020	10/21/2020 14:45	Lauren Campbell	10/28/2020 09:35	Mailin Lopez	2203980
SOP-PCR-1.3	10/21/2020	10/21/2020 14:45	Lauren Campbell	10/29/2020 11:06	Mailin Lopez	2203980
SOP-PCR-1.4	10/21/2020	10/21/2020 14:45	Lauren Campbell	10/27/2020 10:10	Lauren Campbell	2203980
SOP-PCR-1.5	10/21/2020	10/21/2020 14:45	Lauren Campbell	10/27/2020 11:10	Lauren Campbell	2203980