

Biological Analysis Report

SO-DIST-2020-06-10-01

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

Overflow Analyses Performed By:
Benchmark EnviroAnalytical, Inc. - North Port
1001 Corporate Avenue, Suite 102
North Port, FL 34289
DOH Accreditation E85086

Event Description: **2020 Continuous Monitoring**
Request ID: **RQ-2020-06-01-20**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Date Certified: 30-JUN-2020 13:21



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, 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: LittleAlligator@Midway

Collection Date/Time: 06/09/2020 09:15

Field ID: G3SD0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2175525	SM 10200 H (mod.)	Chlorophyll-a, Corrected	19		ug/L	P383214	
		Phaeophytin-a	0.90	U	ug/L	P383214	
		Chlorophyll-a, Uncorrected	20		ug/L	P383214	
2175529	Enterolert/QT	Enterococci-Quanti-Tray	30		MPN/100 mL		

Sample Location: Apollo Waterway @ Bend

Collection Date/Time: 06/09/2020 10:25

Field ID: G3SD0069

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2175526	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.0		ug/L	P383214	
		Phaeophytin-a	1.1	I	ug/L	P383214	
		Chlorophyll-a, Uncorrected	8.0		ug/L	P383214	
2175530	Enterolert/QT	Enterococci-Quanti-Tray	391		MPN/100 mL		

Sample Location: RockCreek@EisenhowerDr

Collection Date/Time: 06/09/2020 11:00

Field ID: G3SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2175527	SM 10200 H (mod.)	Chlorophyll-a, Corrected	12		ug/L	P383214	
		Phaeophytin-a	0.90	U	ug/L	P383214	
		Chlorophyll-a, Uncorrected	12		ug/L	P383214	
2175528	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P382449	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P382449	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P383020	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P382449	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P382449	
2175531	Enterolert/QT	Enterococci-Quanti-Tray	10		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P383214

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: P382449

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P382449

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

Reference Method: SOP-PCR-1.3
Batch ID: P383020

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

Reference Method: SOP-PCR-1.4
Batch ID: P382449

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

Reference Method: SOP-PCR-1.5
Batch ID: P382449

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: P383214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	104		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P382449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	107	95.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P382449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.5	102	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P383020

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	79.5	8.93	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P382449

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: P382449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	91.3	100	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P382449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	91.3	122	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P382449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2172577	HF183-qPCR	81.9	83.1	P/P	50 - 175
2175528	HF183-qPCR	97.3		P	50 - 175
2175600	HF183-qPCR	93.9		P	50 - 175
2175601	HF183-qPCR	97.8		P	50 - 175
2175602	HF183-qPCR	93.5		P	50 - 175
2175603	HF183-qPCR	83.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P382449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2172577	GULL2-qPCR	45.5	47.0	F/F	50 - 300
2175528	GULL2-qPCR	82.6		P	50 - 300
2175600	GULL2-qPCR	102		P	50 - 300
2175601	GULL2-qPCR	86.8		P	50 - 300
2175602	GULL2-qPCR	81.4		P	50 - 300
2175603	GULL2-qPCR	67.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P383020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2172577	GFD-purified-qPCR	166		P	50 - 175
2175528	GFD-purified-qPCR	90.0		P	50 - 175
2175600	GFD-purified-qPCR	69.5		P	50 - 175
2175601	GFD-purified-qPCR	87.5		P	50 - 175
2175602	GFD-purified-qPCR	89.9		P	50 - 175
2175603	GFD-purified-qPCR	105	122	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P382449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2172577	BacR-qPCR	58.5	64.5	P/P	50 - 175
2175528	BacR-qPCR	72.8		P	50 - 175
2175600	BacR-qPCR	73.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P382449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175601	BacR-qPCR	75.1		P	50 - 175
2175602	BacR-qPCR	67.5		P	50 - 175
2175603	BacR-qPCR	63.0		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P382449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2172577	DG3-qPCR	76.5	78.6	P/P	50 - 175
2175528	DG3-qPCR	76.8		P	50 - 175
2175600	DG3-qPCR	71.8		P	50 - 175
2175601	DG3-qPCR	80.3		P	50 - 175
2175602	DG3-qPCR	81.2		P	50 - 175
2175603	DG3-qPCR	71.5		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P383214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175372	Chlorophyll-a, Corrected	2.47	Sample	P	0 - 25
2175372	Chlorophyll-a, Uncorrected	2.91	Sample	P	0 - 25
2175372	Phaeophytin-a	15.8	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P382449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2172577	HF183-qPCR	1.48	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P382449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2172577	GULL2-qPCR	3.24	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P383020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175603	GFD-purified-qPCR	14.8	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P382449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2172577	BacR-qPCR	9.69	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P382449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2172577	DG3-qPCR	2.72	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2175528
Field Sample ID: G3SD0070

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	118	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	104						2.47	
	Chlorophyll-a, Uncorrected							2.91	
	Phaeophytin-a							15.8	
SOP-PCR-1.0	HF183-qPCR	95.8	107	81.9	83.1	97.3			1.48
				93.9					
SOP-PCR-1.2	GULL2-qPCR	102	90.5	45.5	47.0	82.6			3.24
				102					
SOP-PCR-1.3	GFD-purified-qPCR	8.93	79.5	69.5	87.5	89.9			14.8
				105					
SOP-PCR-1.4	BacR-qPCR	100	91.3	58.5	64.5	72.8			9.69
				73.8					
SOP-PCR-1.5	DG3-qPCR	122	91.3	76.5	78.6	76.8			2.72
				71.8					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA South in North Port	2175529, 2175530, 2175531
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2175525, 2175526, 2175527

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2175528
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2175528
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2175528
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2175528
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2175528

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	06/09/2020	06/09/2020 13:42		06/10/2020 15:14	Benchmark EnviroAnalytical in North Port	2175529, 2175530, 2175531
SM 10200 H (mod.)	06/10/2020	06/10/2020 15:20	Carina A. Tull	06/12/2020 09:25	Jessica Fetgatter	2175525, 2175526, 2175527
SOP-PCR-1.0	06/10/2020	06/10/2020 14:00	Angela Smith	06/11/2020 10:55	Mailin Lopez	2175528
SOP-PCR-1.2	06/10/2020	06/10/2020 14:00	Angela Smith	06/12/2020 15:19	Lauren Campbell	2175528
SOP-PCR-1.3	06/10/2020	06/10/2020 14:00	Angela Smith	06/15/2020 08:44	Mailin Lopez	2175528
SOP-PCR-1.4	06/10/2020	06/10/2020 14:00	Angela Smith	06/11/2020 11:43	Mailin Lopez	2175528
SOP-PCR-1.5	06/10/2020	06/10/2020 14:00	Angela Smith	06/12/2020 10:26	Lauren Campbell	2175528