

Biological Analysis Report

SO-DIST-2019-06-06-01

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: **SMP: Canals**
Request ID: **RQ-2019-05-27-09**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
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Certified by: Jacqueline Savage, Environmental Administrator

Date Certified: 16-JUL-2019 09:45

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, 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: Myakka(Tidal) @US41

Collection Date/Time: 06/05/2019 10:25

Field ID: G3SD0068

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092577	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold			P364795	
2092585	Enterolert/QT	Enterococci-Quanti-Tray	41		MPN/100 mL		

Sample Location: UnnamedDitch@IndianaAve

Collection Date/Time: 06/05/2019 11:05

Field ID: G2SD0022

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092582	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	86		MPN/100 mL		

Sample Location: PhillippeCreek@Proctor

Collection Date/Time: 06/05/2019 12:05

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092575	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.6	I	ug/L	P366319	
		Phaeophytin-a	2.0	U	ug/L	P366319	
		Chlorophyll-a, Uncorrected	4.2		ug/L	P366319	
2092583	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1607		MPN/100 mL		

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: NorthCreek(Tidal)@41

Collection Date/Time: 06/05/2019 13:10

Field ID: G3SD0089

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092578	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P365930	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P365930	
	SOP-PCR-1.3	GFD-purified-qPCR**	1.73E+03	J	TSC/100 mL	P365420	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P365930	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P364795	
2092586	Enterolert/QT	Enterococci-Quanti-Tray	146		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A92599

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

Sample Location: NorthCreek(Tidal)@41

Collection Date/Time: 06/05/2019 13:15

Field ID: G3SD0089_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092579	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P365930	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P365930	
	SOP-PCR-1.3	GFD-purified-qPCR**	1.59E+03		TSC/100 mL	P365420	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P365930	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P364795	
2092587	Enterolert/QT	Enterococci-Quanti-Tray	160		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A92599

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P366319

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: P365930

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

Reference Method: SOP-PCR-1.2
Batch ID: P365930

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

Reference Method: SOP-PCR-1.3
Batch ID: P365420

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

Reference Method: SOP-PCR-1.4
Batch ID: P365930

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P366319

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P365930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	125	185	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P365930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	112	224	P/P	50 - 300

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P365420

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	111	67.8	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P365930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	90.9	78.8	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P365930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091168	HF183-qPCR	104		P	50 - 175
2092578	HF183-qPCR	98.0		P	50 - 175
2092579	HF183-qPCR	97.2		P	50 - 175
2096760	HF183-qPCR	104		P	50 - 175
2096761	HF183-qPCR	115		P	50 - 175
2096762	HF183-qPCR	126	123	P/P	50 - 175
2097400	HF183-qPCR	93.6		P	50 - 175
2097401	HF183-qPCR	109		P	50 - 175
2097402	HF183-qPCR	90.7		P	50 - 175
2097845	HF183-qPCR	91.5		P	50 - 175
2098198	HF183-qPCR	95.6		P	50 - 175
2098560	HF183-qPCR	88.2		P	50 - 175
2098561	HF183-qPCR	91.5		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P365930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091168	GULL2-qPCR	112		P	50 - 300
2092578	GULL2-qPCR	102		P	50 - 300
2092579	GULL2-qPCR	85.4		P	50 - 300
2097845	GULL2-qPCR	89.4		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P365420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091168	GFD-purified-qPCR	219		F	50 - 175
2092578	GFD-purified-qPCR	225		F	50 - 175
2092579	GFD-purified-qPCR	144		P	50 - 175
2094286	GFD-purified-qPCR	331		F	50 - 175
2095801	GFD-purified-qPCR	151		P	50 - 175
2095804	GFD-purified-qPCR	237		F	50 - 175
2095805	GFD-purified-qPCR	144		P	50 - 175
2098709	GFD-purified-qPCR	342	294	F/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P365930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091168	BacR-qPCR	73.0		P	50 - 175
2092578	BacR-qPCR	60.0		P	50 - 175
2092579	BacR-qPCR	66.8		P	50 - 175
2096760	BacR-qPCR	80.7		P	50 - 175
2096761	BacR-qPCR	69.6		P	50 - 175
2096762	BacR-qPCR	83.5	88.5	P/P	50 - 175
2098198	BacR-qPCR	72.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P366319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092266	Chlorophyll-a, Uncorrected	14.5	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P365930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2096762	HF183-qPCR	2.64	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P365420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2098709	GFD-purified-qPCR	15.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P365930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2096762	BacR-qPCR	5.83	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: 2092578
Field Sample ID: G3SD0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	138	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2092578
Field Sample ID: G3SD0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.4	SKETA-qPCR	127	P	50 - 300

Lab Sample ID: 2092579
Field Sample ID: G3SD0089_DUP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	149	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	133	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	95.1				
	Chlorophyll-a, Uncorrected				14.5	
SOP-PCR-1.0	HF183-qPCR	185 125	104 115 126			2.64
			123			
SOP-PCR-1.2	GULL2-qPCR	224 112	112 102 85.4			
			89.4			
SOP-PCR-1.3	GFD-purified-qPCR	67.8 111	342 294 225			15.1
			144			
SOP-PCR-1.4	BacR-qPCR	78.8 90.9	80.7 69.6 83.5			5.83
			88.5			

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E85086	Enterococci by Enterolert/QT by BEA South in North Port	2092585, 2092586, 2092587
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2092575
SM 9223 Quanti-Tray / E85086	E. coli by Colilert/QT by BEA South in North Port	2092582, 2092583
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2092578, 2092579
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2092578, 2092579
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2092578, 2092579
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2092578, 2092579
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2092577, 2092578, 2092579

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	06/05/2019	06/05/2019 16:47		06/06/2019 16:56	Benchmark EnviroAnalytical in North Port	2092585, 2092586, 2092587
SM 10200 H (mod.)	06/06/2019	06/06/2019 14:09	Jennifer Mihalic	06/25/2019 10:25	Carina A. Tull	2092575
SM 9223 Quanti-Tray	06/05/2019	06/05/2019 16:39		06/06/2019 16:57	Benchmark EnviroAnalytical in North Port	2092582, 2092583
SOP-PCR-1.0	06/06/2019	06/06/2019 15:15	Angela Smith	07/01/2019 12:09	Mailin Lopez	2092578, 2092579
SOP-PCR-1.2	06/06/2019	06/06/2019 15:15	Angela Smith	07/08/2019 08:53	Mailin Lopez	2092578, 2092579
SOP-PCR-1.3	06/06/2019	06/06/2019 15:15	Angela Smith	07/12/2019 11:35	Mailin Lopez	2092578, 2092579
SOP-PCR-1.4	06/06/2019	06/06/2019 15:15	Angela Smith	07/02/2019 08:27	Mailin Lopez	2092578, 2092579
SOP-PCR-4.0	06/06/2019	06/06/2019 15:15	Angela Smith	06/20/2019 08:42	Sarah Menz	2092577, 2092578, 2092579