

Biological Analysis Report

SO-DIST-2022-08-03-01

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: **2022 SMP: Peace River**
Request ID: **RQ-2022-08-01-45**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 15-SEP-2022 13:45

A handwritten signature in dark ink, appearing to be 'Sarah Menz', written in a cursive 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: Emerald Pointe Canal

Collection Date/Time: 08/02/2022 08:35

Field ID: G3SD0216

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345635	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.7		ug/L	P418129	
		Phaeophytin-a	0.90	U	ug/L	P418129	
		Chlorophyll-a, Uncorrected	5.1		ug/L	P418129	
2345640	Enterolert/QT	Enterococci-Quanti-Tray	52		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: Peace River Estuary @ Harbour Heights

Collection Date/Time: 08/02/2022 09:10

Field ID: G3SD0148

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345636	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.1		ug/L	P418129	
		Phaeophytin-a	1.5	I	ug/L	P418129	
		Chlorophyll-a, Uncorrected	6.1		ug/L	P418129	
2345639	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P417506	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P417506	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P417506	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P417506	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P417506	
2345641	Enterolert/QT	Enterococci-Quanti-Tray	20		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: BOBCAT CREEK IN PRESERVE EAST

Collection Date/Time: 08/02/2022 09:50

Field ID: G3SD0131

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345642	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	450		MPN/100 mL		

Sample Location: Peace River Above Horse Creek 2

Collection Date/Time: 08/02/2022 10:50

Field ID: G3SD0154

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345637	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3	I	ug/L	P418129	
		Phaeophytin-a	0.90	U	ug/L	P418129	
		Chlorophyll-a, Uncorrected	2.7		ug/L	P418129	
2345643	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41		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: MYAKKA CUTOFF

Collection Date/Time: 08/02/2022 12:30

Field ID: G3SD0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345638	SM 10200 H (mod.)	Chlorophyll-a, Corrected	53		ug/L	P418129	

Field ID: G3SD0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345638	SM 10200 H (mod.)	Phaeophytin-a	0.90	U	ug/L	P418129	
		Chlorophyll-a, Uncorrected	56		ug/L	P418129	
2345644	Enterolert/QT	Enterococci-Quanti-Tray	10		MPN/100 mL		
2345645	SM 9222 D	Fecal Coliforms-Membrane Filter	1		cfu/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.

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P418129

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P417506

Component	Result	Code	Units
HF183-qPCR	3.3E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P417506

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

Reference Method: SOP-PCR-1.3
Batch ID: P417506

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

Reference Method: SOP-PCR-1.4
Batch ID: P417506

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

Reference Method: SOP-PCR-1.5
Batch ID: P417506

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report

Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P418129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	89.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P417506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.0	67.6	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P417506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	86.1	77.2	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P417506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	78.2	80.1	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P417506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	92.4	72.7	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P417506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	87.0	73.4	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P417506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345124	HF183-qPCR	90.7		P	50 - 175
2345125	HF183-qPCR	75.9	80.1	P/P	50 - 175
2345224	HF183-qPCR	73.6		P	50 - 175
2345225	HF183-qPCR	74.9		P	50 - 175
2345226	HF183-qPCR	67.9		P	50 - 175
2345227	HF183-qPCR	62.3		P	50 - 175
2345228	HF183-qPCR	70.5		P	50 - 175
2345229	HF183-qPCR	66.9		P	50 - 175
2345230	HF183-qPCR	74.4		P	50 - 175
2345558	HF183-qPCR	80.0		P	50 - 175
2345584	HF183-qPCR	77.0		P	50 - 175
2345639	HF183-qPCR	87.4		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P417506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345693	HF183-qPCR	69.5		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P417506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345124	GULL2-qPCR	82.7		P	50 - 300
2345125	GULL2-qPCR	94.6	96.5	P/P	50 - 300
2345224	GULL2-qPCR	84.0		P	50 - 300
2345225	GULL2-qPCR	85.5		P	50 - 300
2345226	GULL2-qPCR	73.3		P	50 - 300
2345227	GULL2-qPCR	73.4		P	50 - 300
2345230	GULL2-qPCR	72.3		P	50 - 300
2345558	GULL2-qPCR	89.2		P	50 - 300
2345639	GULL2-qPCR	71.8		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P417506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345124	GFD-qPCR	97.3		P	50 - 175
2345125	GFD-qPCR	108	105	P/P	50 - 175
2345224	GFD-qPCR	102		P	50 - 175
2345225	GFD-qPCR	102		P	50 - 175
2345226	GFD-qPCR	104		P	50 - 175
2345227	GFD-qPCR	97.0		P	50 - 175
2345230	GFD-qPCR	99.3		P	50 - 175
2345558	GFD-qPCR	98.0		P	50 - 175
2345639	GFD-qPCR	109		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P417506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345124	BacR-qPCR	90.7		P	50 - 175
2345125	BacR-qPCR	84.6	85.8	P/P	50 - 175
2345224	BacR-qPCR	62.0		P	50 - 175
2345225	BacR-qPCR	70.4		P	50 - 175
2345226	BacR-qPCR	58.6		P	50 - 175
2345227	BacR-qPCR	48.3		F	50 - 175
2345228	BacR-qPCR	77.3		P	50 - 175
2345229	BacR-qPCR	57.1		P	50 - 175
2345230	BacR-qPCR	55.7		P	50 - 175
2345558	BacR-qPCR	83.0		P	50 - 175
2345584	BacR-qPCR	58.1		P	50 - 175
2345639	BacR-qPCR	61.9		P	50 - 175
2345693	BacR-qPCR	54.4		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P417506

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

Reference Method: SOP-PCR-1.5
Batch ID: P417506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345124	DG3-qPCR	94.7	80.9	P	50 - 175
2345125	DG3-qPCR	93.9		P/P	50 - 175
2345224	DG3-qPCR	75.0	80.9	P	50 - 175
2345225	DG3-qPCR	91.7		P	50 - 175
2345226	DG3-qPCR	87.8	80.9	P	50 - 175
2345227	DG3-qPCR	82.0		P	50 - 175
2345228	DG3-qPCR	91.0	80.9	P	50 - 175
2345229	DG3-qPCR	95.8		P	50 - 175
2345230	DG3-qPCR	89.7	80.9	P	50 - 175
2345558	DG3-qPCR	98.1		P	50 - 175
2345584	DG3-qPCR	82.7	80.9	P	50 - 175
2345639	DG3-qPCR	94.8		P	50 - 175
2345693	DG3-qPCR	85.6	80.9	P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P418129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345768	Chlorophyll-a, Corrected	1.98	Sample	P	0 - 25
2345768	Chlorophyll-a, Uncorrected	3.69	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P417506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345125	HF183-qPCR	5.38	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P417506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345125	GULL2-qPCR	1.93	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P417506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345125	GFD-qPCR	2.65	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P417506

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-1.4
Batch ID: P417506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345125	BacR-qPCR	1.43	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P417506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345125	DG3-qPCR	1.36	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2345639
Field Sample ID: G3SD0148

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	59.3	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	126	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	91.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	89.6					1.98	
	Chlorophyll-a, Uncorrected						3.69	
SOP-PCR-1.0	HF183-qPCR	67.6	88.0	90.7	75.9	80.1		5.38
SOP-PCR-1.2	GULL2-qPCR	77.2	86.1	73.6	94.6	96.5		1.93
				84.0				
SOP-PCR-1.3	GFD-qPCR	80.1	78.2	97.3	108	105		2.65
				102				
SOP-PCR-1.4	BacR-qPCR	72.7	92.4	90.7	84.6	85.8		1.43
				62.0				
SOP-PCR-1.5	DG3-qPCR	73.4	87.0	94.7	93.9	80.9		1.36
				75.0				

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA South in North Port	2345640, 2345641, 2345644
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2345635, 2345636, 2345637, 2345638
SM 9222 D	Fecal coliforms by MF by BEA South in North Port	2345645

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2345642, 2345643
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2345639
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2345639
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2345639
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2345639
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2345639

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	08/02/2022	08/02/2022 15:22	Ethan Wickline	08/03/2022 16:11	Benchmark EnviroAnalytical in North Port	2345640, 2345641, 2345644
SM 10200 H (mod.)	08/03/2022	08/03/2022 15:17		08/09/2022 15:47	Carina A. Tull	2345635, 2345636, 2345637, 2345638
SM 9222 D	08/02/2022	08/02/2022 16:12		08/03/2022 16:17	Benchmark EnviroAnalytical in North Port	2345645
SM 9223 Quanti-Tray	08/02/2022	08/02/2022 15:09		08/03/2022 15:45	Benchmark EnviroAnalytical in North Port	2345642, 2345643
SOP-PCR-1.0	08/03/2022	08/03/2022 11:45	Claudia Castro	08/15/2022 14:31	Roberta Tatti	2345639
SOP-PCR-1.2	08/03/2022	08/03/2022 11:45	Claudia Castro	08/26/2022 09:17	DeAsia Armster	2345639
SOP-PCR-1.3	08/03/2022	08/03/2022 11:45	Claudia Castro	08/29/2022 09:20	DeAsia Armster	2345639
SOP-PCR-1.4	08/03/2022	08/03/2022 11:45	Claudia Castro	08/24/2022 08:40	DeAsia Armster	2345639
SOP-PCR-1.5	08/03/2022	08/03/2022 11:45	Claudia Castro	08/24/2022 09:48	DeAsia Armster	2345639