

Biological Analysis Report

SW-DIST-2022-04-12-01

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

Overflow Analyses Performed By:
Benchmark EnvironAnalytical, Inc.
1711 12th Street East
Palmetto, FL 34221
DOH Accreditation E84167

Event Description: **2022 Run 9**
Request ID: **RQ-2022-04-11-08**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 25-MAY-2022 15:39



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 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: Wares Crk @ 9th Ave				Collection Date/Time: 04/11/2022 11:00			
Field ID: G2SW0029				Matrix: W-SURF-SLT			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318399	Enterolert/QT	Enterococci-Quanti-Tray	145		MPN/100 mL		
Sample Location: Wares Creek Tidal by Watertower				Collection Date/Time: 04/11/2022 11:30			
Field ID: G2SW0108				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318397	Enterolert/QT	Enterococci-Quanti-Tray	146		MPN/100 mL		
Sample Location: West Cedar Hammock @ American Legion				Collection Date/Time: 04/11/2022 12:10			
Field ID: G3SW0109				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318396	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P412253	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P412253	
	SOP-PCR-1.3	GFD-qPCR**	1.9E+03		TSC/100 mL	P412253	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P412253	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P412253	
2318398	Enterolert/QT	Enterococci-Quanti-Tray	364		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
 Batch ID: P412253

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

Reference Method: SOP-PCR-1.2
 Batch ID: P412253

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

Reference Method: SOP-PCR-1.3
 Batch ID: P412253

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

Reference Method: SOP-PCR-1.4
 Batch ID: P412253

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

Reference Method: SOP-PCR-1.5
 Batch ID: P412253

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P412253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	48.3	94.7	F/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P412253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	87.1	73.0	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P412253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	83.5	71.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P412253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	117	89.4	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P412253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	77.1	68.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P412253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318373	HF183-qPCR	81.9	78.0	P/P	50 - 175
2318396	HF183-qPCR	86.9		P	50 - 175
2318522	HF183-qPCR	93.3		P	50 - 175
2318523	HF183-qPCR	83.1		P	50 - 175
2318537	HF183-qPCR	82.3		P	50 - 175
2318667	HF183-qPCR	74.7		P	50 - 175
2318700	HF183-qPCR	75.3		P	50 - 175
2318701	HF183-qPCR	59.7		P	50 - 175
2319266	HF183-qPCR	75.8		P	50 - 175
2319267	HF183-qPCR	80.3		P	50 - 175
2319268	HF183-qPCR	83.9		P	50 - 175
2319312	HF183-qPCR	81.2		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P412253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318373	GULL2-qPCR	100	80.1	P/P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P412253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318396	GULL2-qPCR	78.1	78.1	P/P	50 - 300
2318522	GULL2-qPCR	64.0		P	50 - 300
2318523	GULL2-qPCR	61.1		P	50 - 300
2318537	GULL2-qPCR	75.7		P	50 - 300
2318667	GULL2-qPCR	70.6		P	50 - 300
2318700	GULL2-qPCR	79.4		P	50 - 300
2318701	GULL2-qPCR	47.4		F	50 - 300
2319266	GULL2-qPCR	84.6		P	50 - 300
2319267	GULL2-qPCR	80.1		P	50 - 300
2319268	GULL2-qPCR	49.8		F	50 - 300
2319312	GULL2-qPCR	72.1		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P412253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318373	GFD-qPCR	103	82.0	P/P	50 - 175
2318396	GFD-qPCR	79.5		P	50 - 175
2318522	GFD-qPCR	76.4		P	50 - 175
2318700	GFD-qPCR	80.6		P	50 - 175
2318701	GFD-qPCR	73.1		P	50 - 175
2319266	GFD-qPCR	75.2		P	50 - 175
2319267	GFD-qPCR	70.7		P	50 - 175
2319268	GFD-qPCR	59.9		P	50 - 175
2319312	GFD-qPCR	60.0		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P412253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318373	BacR-qPCR	105	107	P/P	50 - 175
2318396	BacR-qPCR	81.5		P	50 - 175
2318522	BacR-qPCR	74.4		P	50 - 175
2318523	BacR-qPCR	62.3		P	50 - 175
2318537	BacR-qPCR	64.1		P	50 - 175
2318667	BacR-qPCR	70.5		P	50 - 175
2318700	BacR-qPCR	51.5		P	50 - 175
2318701	BacR-qPCR	30.6		F	50 - 175
2319266	BacR-qPCR	75.2		P	50 - 175
2319267	BacR-qPCR	72.6		P	50 - 175
2319268	BacR-qPCR	71.7		P	50 - 175
2319312	BacR-qPCR	61.3		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P412253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318373	DG3-qPCR	78.2	72.8	P/P	50 - 175
2318396	DG3-qPCR	66.9		P	50 - 175
2318522	DG3-qPCR	73.8		P	50 - 175
2318523	DG3-qPCR	58.8		P	50 - 175
2318537	DG3-qPCR	72.4		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
 Batch ID: P412253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318667	DG3-qPCR	62.6		P	50 - 175
2318700	DG3-qPCR	59.0		P	50 - 175
2318701	DG3-qPCR	50.3		P	50 - 175
2319266	DG3-qPCR	72.3		P	50 - 175
2319267	DG3-qPCR	70.5		P	50 - 175
2319268	DG3-qPCR	77.1		P	50 - 175
2319312	DG3-qPCR	55.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P412253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318373	HF183-qPCR	4.81	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P412253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318373	GULL2-qPCR	22.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P412253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318373	GFD-qPCR	22.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P412253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318373	BacR-qPCR	1.77	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
 Batch ID: P412253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318373	DG3-qPCR	7.12	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Quality Assurance Report Surrogates

Lab Sample ID: 2318396
 Field Sample ID: G3SW0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	88.6	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	112	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	103	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	94.7	48.3	81.9	78.0	86.9			4.81
SOP-PCR-1.2	GULL2-qPCR	73.0	87.1	78.1	61.1	75.7			22.1
SOP-PCR-1.3	GFD-qPCR	71.0	83.5	103	82.0	79.5			22.8
SOP-PCR-1.4	BacR-qPCR	89.4	117	105	107	81.5			1.77
SOP-PCR-1.5	DG3-qPCR	68.9	77.1	78.2	72.8	66.9			7.12

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA in Palmetto	2318397, 2318398, 2318399
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2318396
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2318396
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2318396
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2318396
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2318396

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	04/11/2022	04/11/2022 15:20		04/12/2022 16:39	Benchmark EnviroAnalytical - Palmetto	2318397, 2318398, 2318399
SOP-PCR-1.0	04/12/2022	04/12/2022 13:45	Jennifer Mihalic	05/18/2022 09:10	DeAsia Armster	2318396
SOP-PCR-1.2	04/12/2022	04/12/2022 13:45	Jennifer Mihalic	05/18/2022 17:32	Jennifer Mihalic	2318396
SOP-PCR-1.3	04/12/2022	04/12/2022 13:45	Jennifer Mihalic	05/19/2022 17:11	Jennifer Mihalic	2318396
SOP-PCR-1.4	04/12/2022	04/12/2022 13:45	Jennifer Mihalic	05/13/2022 11:33	Roberta Tatti	2318396
SOP-PCR-1.5	04/12/2022	04/12/2022 13:45	Jennifer Mihalic	05/18/2022 10:37	DeAsia Armster	2318396