Biological Analysis Report

SO-DIST-2022-01-19-01

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: DeSoto Cricks**
Request ID: **RQ-2022-01-17-31**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: William Mullen

For additional information please contact
Cheryl Swanson - Administrator
Sarah Menz, Ph.D. - Bench Biology & Aquatic Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Sarah Menz, Environmental Administrator

Date Certified: 03-MAR-2022 12:02

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: Joshua Creek above Peace River **Collection Date/Time: 01/18/2022 09:25**

Field ID: G3SD0159 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2300477	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P408621	
	SOP-PCR-1.4	BacR-qPCR**	7.7E+03		TSC/100 mL	P408621	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P408621	
2300478	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	243		MPN/100 mL		

Sample Location: BrandyBranch@NWLilyCoRd **Collection Date/Time: 01/18/2022 11:25**

Field ID: G3SD0201 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2300479	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1236		MPN/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P408621

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

Reference Method: SOP-PCR-1.4
Batch ID: P408621

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

Reference Method: SOP-PCR-1.5
Batch ID: P408621

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: P408621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	79.6	68.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P408621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	78.5	73.6	P/P	50 - 175
BacR-qPCR	78.5	73.6	P/P	50 - 175

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P408621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	80.1	85.9	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P408621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300068	HF183-qPCR	73.7		P	50 - 175
2300308	HF183-qPCR	76.6		P	50 - 175
2300309	HF183-qPCR	74.1		P	50 - 175
2300310	HF183-qPCR	86.0	78.7	P/P	50 - 175
2300311	HF183-qPCR	69.4		P	50 - 175
2300477	HF183-qPCR	73.9		P	50 - 175
2300698	HF183-qPCR	78.9		P	50 - 175
2300699	HF183-qPCR	72.8		P	50 - 175
2300891	HF183-qPCR	76.7		P	50 - 175
2300892	HF183-qPCR	73.3		P	50 - 175
2300977	HF183-qPCR	82.7		P	50 - 175
2301014	HF183-qPCR	72.6		P	50 - 175
2301272	HF183-qPCR	75.5		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P408621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300068	BacR-qPCR	57.0	57.0	P/P	50 - 175
2300308	BacR-qPCR	64.8	64.8	P/P	50 - 175
2300309	BacR-qPCR	71.5	71.5	P/P	50 - 175
2300310	BacR-qPCR	51.8	53.2	P/P	50 - 175
2300311	BacR-qPCR	57.8	57.8	P/P	50 - 175
2300477	BacR-qPCR	68.9	68.9	P/P	50 - 175
2300698	BacR-qPCR	68.1	68.1	P/P	50 - 175
2300699	BacR-qPCR	59.3	59.3	P/P	50 - 175
2300891	BacR-qPCR	53.4	53.4	P/P	50 - 175
2300892	BacR-qPCR	52.1	52.1	P/P	50 - 175
2300977	BacR-qPCR	65.6	65.6	P/P	50 - 175
2301014	BacR-qPCR	50.7	50.7	P/P	50 - 175
2301272	BacR-qPCR	62.9	62.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P408621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300068	DG3-qPCR	102		P	50 - 175
2300308	DG3-qPCR	93.1		P	50 - 175
2300309	DG3-qPCR	91.9		P	50 - 175
2300310	DG3-qPCR	107	106	P/P	50 - 175
2300311	DG3-qPCR	103		P	50 - 175
2300477	DG3-qPCR	90.1		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P408621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300698	DG3-qPCR	92.6		P	50 - 175
2300699	DG3-qPCR	103		P	50 - 175
2300891	DG3-qPCR	86.9		P	50 - 175
2300892	DG3-qPCR	87.1		P	50 - 175
2300977	DG3-qPCR	92.3		P	50 - 175
2301014	DG3-qPCR	86.8		P	50 - 175
2301272	DG3-qPCR	80.1		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.0
Batch ID: P408621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300310	HF183-qPCR	8.87	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P408621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300310	BacR-qPCR	2.72	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P408621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300310	DG3-qPCR	0.907	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2300477
Field Sample ID: G3SD0159

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	89.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	88.8	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SOP-PCR-1.0	HF183-qPCR	68.4 79.6	73.7 76.6 74.1 86.0			8.87
SOP-PCR-1.4	BacR-qPCR	78.5 73.6 78.5 73.6	57.0 64.8 71.5 51.8			2.72
SOP-PCR-1.5	DG3-qPCR	85.9 80.1	102 93.1 91.9 107			0.907

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2300478, 2300479
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2300477
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2300477
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2300477

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	01/18/2022	01/18/2022 13:41		01/19/2022 14:47	Benchmark EnviroAnalytical in North Port	2300478, 2300479
SOP-PCR-1.0	01/19/2022	01/20/2022 08:20	Luke Hudson	02/04/2022 11:18	DeAsia Armster	2300477
SOP-PCR-1.4	01/19/2022	01/20/2022 08:20	Luke Hudson	02/14/2022 09:14	DeAsia Armster	2300477
SOP-PCR-1.5	01/19/2022	01/20/2022 08:20	Luke Hudson	02/23/2022 09:46	DeAsia Armster	2300477