

Biological Analysis Report

SO-DIST-2023-07-14-01

Florida DEP Laboratory
2600 Blair Stone Road
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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: **2023 SMP: Stadium Arcadia**

Request ID: **RQ-2023-07-03-48**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 22-AUG-2023 14:45



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: JOSHUACREEKATAIRPORTAVE				Collection Date/Time: 07/13/2023 09:10			
Field ID: G3SD0184				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2424004	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	441		MPN/100 mL		

Sample Location: HAWTHORNE CREEK AT REYNOLDS ST				Collection Date/Time: 07/13/2023 09:45			
Field ID: G3SD0011				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2423997	SM 10150 B	Chlorophyll-a, Corrected	1.6	U	ug/L	P432837	
		Phaeophytin-a	1.8	U	ug/L	P432837	
		Chlorophyll-a, Uncorrected	1.2	U	ug/L	P432837	
2424001	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P432084	
	SOP-PCR-1.4	BacR-qPCR**	3.46E+04		TSC/100 mL	P432084	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P432084	
2424006	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	275		MPN/100 mL		

Sample Location: JOSHUA CREEK ABOVE PEACE RIVER				Collection Date/Time: 07/13/2023 10:10			
Field ID: G3SD0159				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2424000	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P432084	
	SOP-PCR-1.4	BacR-qPCR**	2.26E+05		TSC/100 mL	P432084	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P432084	
2424005	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	368		MPN/100 mL		

Quality Assurance Report

Method Blank Results

Reference Method: SM 10150 B
Batch ID: P432837

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: P432084

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

Reference Method: SOP-PCR-1.4
Batch ID: P432084

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

Reference Method: SOP-PCR-1.5
Batch ID: P432084

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P432084

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10150 B
Batch ID: P432837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	89.0		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	67.5	85.3	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	95.8	79.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	105	91.4	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	HF183-qPCR	74.0	77.3	P/P	50 - 175
2421660	HF183-qPCR	88.5		P	50 - 175
2421661	HF183-qPCR	100		P	50 - 175
2422578	HF183-qPCR	79.4		P	50 - 175
2422859	HF183-qPCR	83.3		P	50 - 175
2422860	HF183-qPCR	67.3		P	50 - 175
2424000	HF183-qPCR	103		P	50 - 175
2424001	HF183-qPCR	87.1		P	50 - 175
2424172	HF183-qPCR	98.0		P	50 - 175
2424197	HF183-qPCR	99.8		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P432084

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-1.4
Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	BacR-qPCR	76.0	76.2	P/P	50 - 175
2421660	BacR-qPCR	78.8		P	50 - 175
2421661	BacR-qPCR	74.6		P	50 - 175
2422578	BacR-qPCR	68.8		P	50 - 175
2422859	BacR-qPCR	71.7		P	50 - 175
2422860	BacR-qPCR	56.7		P	50 - 175
2424000	BacR-qPCR	74.4		P	50 - 175
2424001	BacR-qPCR	78.4		P	50 - 175
2424172	BacR-qPCR	76.4		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	DG3-qPCR	90.7	91.5	P/P	50 - 175
2421660	DG3-qPCR	96.5		P	50 - 175
2421661	DG3-qPCR	105		P	50 - 175
2422578	DG3-qPCR	90.5		P	50 - 175
2422859	DG3-qPCR	96.3		P	50 - 175
2422860	DG3-qPCR	89.8		P	50 - 175
2424000	DG3-qPCR	99.3		P	50 - 175
2424001	DG3-qPCR	100		P	50 - 175
2424172	DG3-qPCR	102		P	50 - 175
2424197	DG3-qPCR	108		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10150 B
Batch ID: P432837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424046	Chlorophyll-a, Corrected	0.159	Sample	P	0 - 25
2424046	Chlorophyll-a, Uncorrected	0.145	Sample	P	0 - 25
2424046	Phaeophytin-a	0.150	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	HF183-qPCR	4.36	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	BacR-qPCR	0.187	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.5
Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	DG3-qPCR	0.927	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2424000
Field Sample ID: G3SD0159

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	95.0	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	92.1	P	50 - 300

Lab Sample ID: 2424001
Field Sample ID: G3SD0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	118	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	105	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	89.0						0.159	
	Chlorophyll-a, Uncorrected							0.145	
	Phaeophytin-a							0.150	
SOP-PCR-1.0	HF183-qPCR	85.3	67.5		74.0	77.3	88.5		4.36
SOP-PCR-1.4	BacR-qPCR	79.2	95.8		100	76.0	76.2	78.8	0.187
					74.6				
SOP-PCR-1.5	DG3-qPCR	91.4	105		90.7	91.5	96.5		0.927
					105				

Reference Method Descriptions

Method	Description	Associated Samples
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2423997
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2424004, 2424005, 2424006
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2424000, 2424001
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2424000, 2424001

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2424000, 2424001

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10150 B	07/14/2023	07/14/2023 13:23	Keanu Thijm	07/20/2023 10:21	Megan Higbee	2423997
SM 9223 Quanti-Tray	07/13/2023	07/13/2023 14:55		07/14/2023 15:10	Benchmark EnviroAnalytical in North Port	2424004, 2424005, 2424006
SOP-PCR-1.0	07/14/2023	07/14/2023 13:45	Claudia Castro	07/21/2023 08:39	Roberta Tatti	2424000, 2424001
SOP-PCR-1.4	07/14/2023	07/14/2023 13:45	Claudia Castro	07/24/2023 10:09	Roberta Tatti	2424000, 2424001
SOP-PCR-1.5	07/14/2023	07/14/2023 13:45	Claudia Castro	07/25/2023 09:19	Roberta Tatti	2424000, 2424001