

Biological Analysis Report

SO-DIST-2023-06-29-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Overflow Analyses Performed By:
Sanders Laboratories
10090 Bavaria Road
Ft. Myers, FL 33913
DOH Accreditation E85457

Event Description: **2023 SMP: Burnt Store & More**
Request ID: **RQ-2023-06-26-10**
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
Attn: Monica Jaeger

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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 16-AUG-2023 11:35

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line extending to the right.

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: Burnt Store Marina Entrance

Collection Date/Time: 06/28/2023 08:40

Field ID: G2SD0055

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2420638	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	20.0		MPN/100 mL		

Sample Location: Yucca Pen Marine at N of Old Burntstore

Collection Date/Time: 06/28/2023 09:20

Field ID: G2SD0015

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2420635	SM 10150 B	Chlorophyll-a, Corrected	7.1		ug/L	P432073	
		Phaeophytin-a	1.7	I	ug/L	P432073	
		Chlorophyll-a, Uncorrected	8.3		ug/L	P432073	
2420639	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	47.4		MPN/100 mL		

Ref. Method and Comment:

SM 10150 B: 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: Ford Canal at Gallee Way

Collection Date/Time: 06/28/2023 10:20

Field ID: G3SD0136

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2420636	SM 10150 B	Chlorophyll-a, Corrected	6.5		ug/L	P432073	
		Phaeophytin-a	1.3	U	ug/L	P432073	
		Chlorophyll-a, Uncorrected	6.5		ug/L	P432073	
2420637	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P431600	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P431600	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P431600	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P431600	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P431600	
2420640	Colilert-18	Escherichia Coli-Quanti-Tray	219		MPN/100 mL		

Ref. Method and Comment:

SM 10150 B: 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 10150 B

Batch ID: P432073

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: P431600

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P431600

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

Reference Method: SOP-PCR-1.3
Batch ID: P431600

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

Reference Method: SOP-PCR-1.4
Batch ID: P431600

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

Reference Method: SOP-PCR-1.5
Batch ID: P431600

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: P432073

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	100		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P431600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	98.5	96.1	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P431600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	114	108	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P431600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	95.1	91.5	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P431600

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

Reference Method: SOP-PCR-1.4
Batch ID: P431600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	87.7	82.5	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P431600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	91.8	88.8	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P431600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418910	HF183-qPCR	82.9	86.1	P/P	50 - 175
2419414	HF183-qPCR	91.0		P	50 - 175
2419415	HF183-qPCR	96.1		P	50 - 175
2419463	HF183-qPCR	88.1		P	50 - 175
2419807	HF183-qPCR	79.5		P	50 - 175
2419977	HF183-qPCR	92.9		P	50 - 175
2420116	HF183-qPCR	79.2		P	50 - 175
2420210	HF183-qPCR	77.1		P	50 - 175
2420235	HF183-qPCR	81.8		P	50 - 175
2420637	HF183-qPCR	95.2		P	50 - 175
2420993	HF183-qPCR	106		P	50 - 175
2421484	HF183-qPCR	91.3		P	50 - 175
2421578	HF183-qPCR	80.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P431600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2419463	GULL2-qPCR	92.0		P	50 - 300
2419807	GULL2-qPCR	69.6		P	50 - 300
2419977	GULL2-qPCR	89.7		P	50 - 300
2420235	GULL2-qPCR	75.6		P	50 - 300
2420637	GULL2-qPCR	59.0		P	50 - 300
2421578	GULL2-qPCR	94.3		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P431600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2419463	GFD-qPCR	95.2		P	50 - 175
2419807	GFD-qPCR	97.1		P	50 - 175
2419977	GFD-qPCR	96.0		P	50 - 175
2420235	GFD-qPCR	96.6		P	50 - 175
2420637	GFD-qPCR	91.4		P	50 - 175
2421578	GFD-qPCR	97.2		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P431600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418910	BacR-qPCR	77.7	75.8	P/P	50 - 175
2419414	BacR-qPCR	74.3		P	50 - 175
2419415	BacR-qPCR	75.7		P	50 - 175
2419463	BacR-qPCR	74.0		P	50 - 175
2419807	BacR-qPCR	68.2		P	50 - 175
2419977	BacR-qPCR	69.0		P	50 - 175
2420116	BacR-qPCR	63.7		P	50 - 175
2420210	BacR-qPCR	59.8		P	50 - 175
2420235	BacR-qPCR	71.6		P	50 - 175
2420637	BacR-qPCR	74.8		P	50 - 175
2420993	BacR-qPCR	68.3		P	50 - 175
2421484	BacR-qPCR	73.8		P	50 - 175
2421578	BacR-qPCR	73.9		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P431600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418910	DG3-qPCR	79.1	81.3	P/P	50 - 175
2419414	DG3-qPCR	82.7		P	50 - 175
2419415	DG3-qPCR	86.5		P	50 - 175
2419463	DG3-qPCR	85.0		P	50 - 175
2419807	DG3-qPCR	73.7		P	50 - 175
2419977	DG3-qPCR	77.4		P	50 - 175
2420116	DG3-qPCR	72.8		P	50 - 175
2420210	DG3-qPCR	77.1		P	50 - 175
2420235	DG3-qPCR	78.3		P	50 - 175
2420637	DG3-qPCR	83.5		P	50 - 175
2420993	DG3-qPCR	77.9		P	50 - 175
2421484	DG3-qPCR	81.8		P	50 - 175
2421578	DG3-qPCR	88.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10150 B
Batch ID: P432073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2420772	Chlorophyll-a, Uncorrected	11.3	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P431600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418910	HF183-qPCR	3.87	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
Batch ID: P431600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418910	GULL2-qPCR	0.930	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P431600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418910	GFD-qPCR	4.77	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P431600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418910	BacR-qPCR	2.46	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P431600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418910	DG3-qPCR	2.71	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2420637
Field Sample ID: G3SD0136

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.1	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	93.5	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	93.2	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	87.9	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	100							
	Chlorophyll-a, Uncorrected							11.3	
SOP-PCR-1.0	HF183-qPCR	96.1	98.5	82.9	86.1	91.0			3.87
SOP-PCR-1.2	GULL2-qPCR	108	114	92.0	69.6	89.7			0.930
				75.6					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.3	GFD-qPCR	91.5	95.1	95.2	97.1	96.0			4.77
SOP-PCR-1.4	BacR-qPCR	82.5	87.7	77.7	75.8	74.3			2.46
SOP-PCR-1.5	DG3-qPCR	88.8	91.8	79.1	81.3	82.7			2.71
				96.6					
				75.7					
				86.5					

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2420640
Enterolert/QT	Enterococci by Enterolert/QT by Sanders in Fort Myers	2420638, 2420639
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2420635, 2420636
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2420637
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2420637
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2420637
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2420637
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2420637

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	06/28/2023	06/28/2023 14:54		06/29/2023 09:14	Sanders-Fort Myers	2420640
Enterolert/QT	06/28/2023	06/28/2023 13:30		06/29/2023 13:54	Sanders-Fort Myers	2420638, 2420639
SM 10150 B	06/29/2023	06/29/2023 13:38	Keanu Thijm	07/05/2023 10:38	Tynan A Branch	2420635, 2420636
SOP-PCR-1.0	06/29/2023	06/29/2023 14:35	Claudia Castro	07/18/2023 10:45	Roberta Tatti	2420637
SOP-PCR-1.2	06/29/2023	06/29/2023 14:35	Claudia Castro	07/21/2023 12:52	Madeline Gruver	2420637
SOP-PCR-1.3	06/29/2023	06/29/2023 14:35	Claudia Castro	07/20/2023 16:09	Madeline Gruver	2420637
SOP-PCR-1.4	06/29/2023	06/29/2023 14:35	Claudia Castro	07/20/2023 08:56	Roberta Tatti	2420637
SOP-PCR-1.5	06/29/2023	06/29/2023 14:35	Claudia Castro	07/19/2023 13:37	Roberta Tatti	2420637