

Biological Analysis Report

SE-DIST-2023-09-15-03

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

Event Description: **SMP - Vero Beach**
Request ID: **RQ-2023-08-28-19**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Andrew Luering

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: 27-OCT-2023 12:00

A handwritten signature in dark ink, appearing to be 'Sarah Menz', with a long, sweeping horizontal stroke 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: Microbiology and Molecular.

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: VERO NORTH CANAL AT 66TH AVE

Collection Date/Time: 09/14/2023 09:05

Field ID: G5SE0069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437548	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	209.8	Q	MPN/100 mL	P435293	
2437556	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P434931	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P434931	LCS
	SOP-PCR-1.3	GFD-qPCR**	2.1E+03		TSC/100 mL	P434931	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P434931	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P434931	LCS

Sample Location: NORTH CANAL ATUS1

Collection Date/Time: 09/14/2023 09:40

Field ID: G5SE0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437549	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	186.0	Q	MPN/100 mL	P435293	
2437557	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P434931	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P434931	LCS
	SOP-PCR-1.3	GFD-qPCR**	570	I	TSC/100 mL	P434931	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P434931	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P434931	LCS

Sample Location: MAIN CANAL AT COUNTRY CLUB DR

Collection Date/Time: 09/14/2023 10:00

Field ID: G5SE0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437550	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	137.6	Q	MPN/100 mL	P435293	

Sample Location: MAIN CANAL AT KINGS HIGHWAY

Collection Date/Time: 09/14/2023 10:25

Field ID: G5SE0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437551	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	307.6	Q	MPN/100 mL	P435293	

Sample Location: SOUTH CANAL AT 43RD AVE

Collection Date/Time: 09/14/2023 10:45

Field ID: G5SE0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437552	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	75.0	Q	MPN/100 mL	P435293	

Sample Location: SOUTH CANAL AT 20TH AVE

Collection Date/Time: 09/14/2023 11:10

Field ID: G5SE0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437553	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	85.7	Q	MPN/100 mL	P435293	

Quality Assurance Report

Method Blank Results

Quality Assurance Report
Method Blank Results

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P435293

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P434931

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

Reference Method: SOP-PCR-1.2
Batch ID: P434931

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

Reference Method: SOP-PCR-1.3
Batch ID: P434931

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

Reference Method: SOP-PCR-1.4
Batch ID: P434931

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

Reference Method: SOP-PCR-1.5
Batch ID: P434931

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: P434931

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	79.5	59.5	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P434931

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	85.9	44.0	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P434931

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

Reference Method: SOP-PCR-1.3
Batch ID: P434931

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	91.4	37.1	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P434931

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	92.8	63.8	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P434931

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	95.3	46.5	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P434931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2436439	HF183-qPCR	77.3	79.2	P/P	50 - 175
2436992	HF183-qPCR	87.6		P	50 - 175
2436993	HF183-qPCR	89.4		P	50 - 175
2437556	HF183-qPCR	83.7		P	50 - 175
2437557	HF183-qPCR	80.4		P	50 - 175
2437634	HF183-qPCR	65.8		P	50 - 175
2437692	HF183-qPCR	74.9		P	50 - 175
2438004	HF183-qPCR	87.4		P	50 - 175
2438033	HF183-qPCR	79.6		P	50 - 175
2438446	HF183-qPCR	85.4		P	50 - 175
2438535	HF183-qPCR	86.2		P	50 - 175
2439188	HF183-qPCR	97.0		P	50 - 175
2439189	HF183-qPCR	83.1		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P434931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2436439	GULL2-qPCR	52.9	52.7	P/P	50 - 300
2437556	GULL2-qPCR	76.3		P	50 - 300
2437557	GULL2-qPCR	66.9		P	50 - 300
2437692	GULL2-qPCR	55.8		P	50 - 300
2438004	GULL2-qPCR	45.6		F	50 - 300
2438033	GULL2-qPCR	65.0		P	50 - 300
2438446	GULL2-qPCR	59.7		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P434931

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-1.3

Batch ID: P434931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2436439	GFD-qPCR	83.6	83.6	P/P	50 - 175
2437556	GFD-qPCR	97.3		P	50 - 175
2437557	GFD-qPCR	98.4		P	50 - 175
2437692	GFD-qPCR	93.5		P	50 - 175
2438004	GFD-qPCR	88.0		P	50 - 175
2438033	GFD-qPCR	84.9		P	50 - 175
2438446	GFD-qPCR	95.2		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P434931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2436439	BacR-qPCR	68.4	70.2	P/P	50 - 175
2436992	BacR-qPCR	76.5		P	50 - 175
2436993	BacR-qPCR	77.1		P	50 - 175
2437556	BacR-qPCR	83.5		P	50 - 175
2437557	BacR-qPCR	62.0		P	50 - 175
2437634	BacR-qPCR	52.7		P	50 - 175
2437692	BacR-qPCR	54.2		P	50 - 175
2438004	BacR-qPCR	61.2		P	50 - 175
2438033	BacR-qPCR	81.4		P	50 - 175
2438446	BacR-qPCR	79.0		P	50 - 175
2438535	BacR-qPCR	86.1		P	50 - 175
2439188	BacR-qPCR	73.2		P	50 - 175
2439189	BacR-qPCR	68.8		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P434931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2436439	DG3-qPCR	89.4	80.0	P/P	50 - 175
2436992	DG3-qPCR	86.7		P	50 - 175
2436993	DG3-qPCR	95.9		P	50 - 175
2437556	DG3-qPCR	100		P	50 - 175
2437557	DG3-qPCR	97.9		P	50 - 175
2437634	DG3-qPCR	75.2		P	50 - 175
2437692	DG3-qPCR	78.7		P	50 - 175
2438004	DG3-qPCR	85.3		P	50 - 175
2438033	DG3-qPCR	92.5		P	50 - 175
2438446	DG3-qPCR	85.5		P	50 - 175
2438535	DG3-qPCR	90.0		P	50 - 175
2439188	DG3-qPCR	93.7		P	50 - 175
2439189	DG3-qPCR	91.1		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P434931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2436439	HF183-qPCR	2.41	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P434931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2436439	GULL2-qPCR	0.297	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P434931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2436439	GFD-qPCR	0.0413	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P434931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2436439	BacR-qPCR	2.60	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P434931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2436439	DG3-qPCR	11.2	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2437556
Field Sample ID: G5SE0069

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	84.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	99.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	92.0	P	50 - 300

Lab Sample ID: 2437557
Field Sample ID: G5SE0043

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
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Quality Assurance Report Surrogates

Lab Sample ID: 2437557
 Field Sample ID: G5SE0043

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	77.3	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	96.2	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	94.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	90.8	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	75.4	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	59.5	79.5	77.3	79.2	87.6		2.41
SOP-PCR-1.2	GULL2-qPCR	44.0	85.9	52.9	52.7	76.3		0.297
SOP-PCR-1.3	GFD-qPCR	37.1	91.4	83.6	83.6	97.3		0.0413
SOP-PCR-1.4	BacR-qPCR	63.8	92.8	68.4	70.2	76.5		2.60
SOP-PCR-1.5	DG3-qPCR	46.5	95.3	89.4	80.0	86.7		11.2

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2437548, 2437549, 2437550, 2437551, 2437552, 2437553
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2437556, 2437557
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2437556, 2437557
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2437556, 2437557
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2437556, 2437557
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2437556, 2437557

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 B Quanti-Tray	09/15/2023	09/15/2023 15:38	Callie Williams	09/16/2023 12:18	Julia Herten	2437548, 2437549, 2437550, 2437551, 2437552, 2437553
SOP-PCR-1.0	09/15/2023	09/15/2023 13:30	Claudia Castro	10/03/2023 09:53	Roberta Tatti	2437556, 2437557
SOP-PCR-1.2	09/15/2023	09/15/2023 13:30	Claudia Castro	10/06/2023 09:42	Roberta Tatti	2437556, 2437557
SOP-PCR-1.3	09/15/2023	09/15/2023 13:30	Claudia Castro	10/10/2023 08:59	Roberta Tatti	2437556, 2437557
SOP-PCR-1.4	09/15/2023	09/15/2023 13:30	Claudia Castro	10/05/2023 09:16	Roberta Tatti	2437556, 2437557
SOP-PCR-1.5	09/15/2023	09/15/2023 13:30	Claudia Castro	10/09/2023 09:58	Roberta Tatti	2437556, 2437557