

Biological Analysis Report

NW-DIST-2023-08-03-01

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

Overflow Analyses Performed By:
University of West Florida
11000 University Parkway
Pensacola, FL 32514
DOH Accreditation E71969

Event Description: **Laurel Hill West**
Request ID: **RQ-2023-07-31-25**
Customer: **NW-DIST**
Project ID: **SMP**

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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 15-SEP-2023 10:47

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: 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: OAK CREEK BELOW TOMMY STEELE ROAD Collection Date/Time: 08/02/2023 10:08

Field ID: G4NW0395

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2428446	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	31		MPN/100 mL		
2428451	SOP-PCR-1.0	HF183-qPCR**	6.6E+03	U	TSC/100 mL	P433273	
	SOP-PCR-1.2	GULL2-qPCR**	7.2E+03	U	TSC/100 mL	P433273	
	SOP-PCR-1.3	GFD-qPCR**	1.4E+03	U	TSC/100 mL	P433273	
	SOP-PCR-1.4	BacR-qPCR**	6.1E+03	U	TSC/100 mL	P433273	
	SOP-PCR-1.5	DG3-qPCR**	5.1E+03	U	TSC/100 mL	P433273	

Sample Location: BAGGETT CREEK UPSTREAM OF HWY 90 Collection Date/Time: 08/02/2023 11:37

Field ID: G4NW0336

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2428448	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	97		MPN/100 mL		

Sample Location: WILKINSON CREEK UPSTREAM OF WILKINSON BLUFF ROAD Collection Date/Time: 08/02/2023 11:54

Field ID: G4NW0357

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2428447	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	134		MPN/100 mL		
2428452	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P433273	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P433273	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P433273	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P433273	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P433273	

Sample Location: BLACKWATER RIVER UPSTREAM OF CHARLES BOOKER RD Collection Date/Time: 08/02/2023 09:55

Field ID: G4NW0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2430421	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	75		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P433273

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

Reference Method: SOP-PCR-1.2
Batch ID: P433273

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

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.3
Batch ID: P433273

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

Reference Method: SOP-PCR-1.4
Batch ID: P433273

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

Reference Method: SOP-PCR-1.5
Batch ID: P433273

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: P433273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	79.4	97.4	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P433273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	91.0	99.1	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P433273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	85.4	92.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P433273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	105	80.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P433273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	100	77.8	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P433273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427700	HF183-qPCR	84.6	85.9	P/P	50 - 175
2427810	HF183-qPCR	82.7		P	50 - 175
2428035	HF183-qPCR	107		P	50 - 175
2428451	HF183-qPCR	102		P	50 - 175
2428452	HF183-qPCR	82.2		P	50 - 175
2428475	HF183-qPCR	84.2		P	50 - 175
2428654	HF183-qPCR	88.6		P	50 - 175
2428656	HF183-qPCR	88.4		P	50 - 175
2429134	HF183-qPCR	108		P	50 - 175
2429388	HF183-qPCR	100		P	50 - 175
2429640	HF183-qPCR	88.5		P	50 - 175
2429641	HF183-qPCR	88.4		P	50 - 175
2429815	HF183-qPCR	110		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P433273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427700	GULL2-qPCR	66.1	66.6	P/P	50 - 300
2427810	GULL2-qPCR	82.8		P	50 - 300
2428451	GULL2-qPCR	87.2		P	50 - 300
2428452	GULL2-qPCR	68.1		P	50 - 300
2428475	GULL2-qPCR	60.7		P	50 - 300
2429388	GULL2-qPCR	19.1		F	50 - 300
2429640	GULL2-qPCR	63.9		P	50 - 300
2429641	GULL2-qPCR	82.4		P	50 - 300
2429815	GULL2-qPCR	5.64		F	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P433273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427700	GFD-qPCR	93.9	91.8	P/P	50 - 175
2427810	GFD-qPCR	91.7		P	50 - 175
2428451	GFD-qPCR	92.7		P	50 - 175
2428452	GFD-qPCR	86.6		P	50 - 175
2428475	GFD-qPCR	85.5		P	50 - 175
2429134	GFD-qPCR	67.5		P	50 - 175
2429388	GFD-qPCR	77.0		P	50 - 175
2429640	GFD-qPCR	83.1		P	50 - 175
2429641	GFD-qPCR	96.0		P	50 - 175
2429815	GFD-qPCR	93.1		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P433273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427700	BacR-qPCR	69.6	72.3	P/P	50 - 175
2427810	BacR-qPCR	85.5		P	50 - 175
2428035	BacR-qPCR	85.9		P	50 - 175
2428451	BacR-qPCR	89.5		P	50 - 175
2428452	BacR-qPCR	73.4		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P433273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428475	BacR-qPCR	73.9		P	50 - 175
2428654	BacR-qPCR	66.6		P	50 - 175
2428656	BacR-qPCR	76.4		P	50 - 175
2429134	BacR-qPCR	88.3		P	50 - 175
2429388	BacR-qPCR	69.7		P	50 - 175
2429640	BacR-qPCR	68.9		P	50 - 175
2429641	BacR-qPCR	84.8		P	50 - 175
2429815	BacR-qPCR	65.1		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P433273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427700	DG3-qPCR	94.5	90.1	P/P	50 - 175
2427810	DG3-qPCR	97.7		P	50 - 175
2428035	DG3-qPCR	105		P	50 - 175
2428451	DG3-qPCR	98.4		P	50 - 175
2428452	DG3-qPCR	88.9		P	50 - 175
2428475	DG3-qPCR	92.4		P	50 - 175
2428654	DG3-qPCR	80.9		P	50 - 175
2428656	DG3-qPCR	91.1		P	50 - 175
2429134	DG3-qPCR	101		P	50 - 175
2429388	DG3-qPCR	74.2		P	50 - 175
2429640	DG3-qPCR	93.2		P	50 - 175
2429641	DG3-qPCR	103		P	50 - 175
2429815	DG3-qPCR	55.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P433273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427700	HF183-qPCR	1.51	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P433273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427700	GULL2-qPCR	0.697	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P433273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427700	GFD-qPCR	2.17	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P433273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427700	BacR-qPCR	3.87	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P433273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427700	DG3-qPCR	4.80	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2428451
Field Sample ID: G4NW0395

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	122	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	118	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	133	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	125	P	50 - 300

Lab Sample ID: 2428452
Field Sample ID: G4NW0357

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	117	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	111	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	118	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	104	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	97.4	79.4	110	88.6	84.6		1.51
				85.9				
SOP-PCR-1.2	GULL2-qPCR	99.1	91.0	66.1	66.6	82.8		0.697
				87.2				
SOP-PCR-1.3	GFD-qPCR	92.4	85.4	93.9	91.8	91.7		2.17
				92.7				
SOP-PCR-1.4	BacR-qPCR	80.9	105	69.6	72.3	85.5		3.87
				85.9				
SOP-PCR-1.5	DG3-qPCR	77.8	100	55.0	94.5	90.1		4.80
				97.7				

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 B Quanti-Tray	E. coli by Colilert-18/QT by UWF in Pensacola	2428446, 2428447, 2428448, 2430421
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2428451, 2428452
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2428451, 2428452
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2428451, 2428452
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2428451, 2428452
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2428451, 2428452

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	08/02/2023	08/02/2023 14:50		08/03/2023 11:51	UWF Lab	2428446, 2428447, 2428448, 2430421
SOP-PCR-1.0	08/03/2023	08/03/2023 14:00	Claudia Castro	08/11/2023 12:04	Madeline Gruver	2428451, 2428452
SOP-PCR-1.2	08/03/2023	08/03/2023 14:00	Claudia Castro	08/14/2023 10:31	Roberta Tatti	2428451, 2428452
SOP-PCR-1.3	08/03/2023	08/03/2023 14:00	Claudia Castro	08/15/2023 08:53	Roberta Tatti	2428451, 2428452
SOP-PCR-1.4	08/03/2023	08/03/2023 14:00	Claudia Castro	08/11/2023 16:01	Madeline Gruver	2428451, 2428452
SOP-PCR-1.5	08/03/2023	08/03/2023 14:00	Claudia Castro	08/11/2023 17:51	Madeline Gruver	2428451, 2428452