

Biological Analysis Report

SW-DIST-2018-06-05-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Gilley Crk**
Request ID: **RQ-2018-06-04-06**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 20-JUL-2018 13:56



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, 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 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: Gilley Creek @ Stricklands

Collection Date/Time: 06/04/2018 09:35

Field ID: G2SW0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997472	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.61	U	ug/L	P346630	
		Phaeophytin-a	0.44	U	ug/L	P346630	
		Chlorophyll-a, Uncorrected	0.67	I	ug/L	P346630	

Ref. Method and Comment:

SM 10200 H (mod.): 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: Gilley Creek @ Stricklands

Collection Date/Time: 06/04/2018 09:35

Field ID: G2SW0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997473	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	410.6	Q	MPN/100 mL	P346664	
1997476	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P347472	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P347472	
	SOP-PCR-1.3	GFD-purified-qPCR**	1.90E+03		TSC/100 mL	P347895	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P347472	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Gilley Crk Downstream

Collection Date/Time: 06/04/2018 10:13

Field ID: G2SW0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997474	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	517.2	Q	MPN/100 mL	P346664	
1997477	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P347472	
	SOP-PCR-1.4	BacR-qPCR**	6.49E+05		TSC/100 mL	P347472	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Gilley Crk Downstream

Collection Date/Time: 06/04/2018 10:15

Field ID: G2SW0039_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997475	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	613.1	Q	MPN/100 mL	P346664	
1997478	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P347472	
	SOP-PCR-1.4	BacR-qPCR**	5.28E+05		TSC/100 mL	P347472	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P346630

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 Quanti-Tray
Batch ID: P346664

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

Reference Method: SOP-PCR-1.0
Batch ID: P347472

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P347472

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P347895

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P347472

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P346630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	92.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P347472

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.4	112	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P347472

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	82.3	120	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P347895

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: P347895

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	89.0	60.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P347472

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	78.9	151	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P347472

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997476	HF183-qPCR	77.9		P	50 - 175
1997477	HF183-qPCR	74.9		P	50 - 175
1997478	HF183-qPCR	76.2		P	50 - 175
1998444	HF183-qPCR	78.6		P	50 - 175
1998446	HF183-qPCR	77.6		P	50 - 175
1998475	HF183-qPCR	80.2		P	50 - 175
1998566	HF183-qPCR	63.7		P	50 - 175
2003562	HF183-qPCR	75.9		P	50 - 175
2003563	HF183-qPCR	83.2		P	50 - 175
2003564	HF183-qPCR	84.0		P	50 - 175
2003565	HF183-qPCR	93.0		P	50 - 175
2003566	HF183-qPCR	83.6	81.8	P/P	50 - 175
2003567	HF183-qPCR	73.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P347472

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997476	GULL2-qPCR	74.7		P	50 - 300
1998446	GULL2-qPCR	71.1		P	50 - 300
2003562	GULL2-qPCR	63.6		P	50 - 300
2003563	GULL2-qPCR	77.4		P	50 - 300
2003564	GULL2-qPCR	75.5		P	50 - 300
2003565	GULL2-qPCR	87.7		P	50 - 300
2003566	GULL2-qPCR	74.0	81.1	P/P	50 - 300
2003567	GULL2-qPCR	61.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P347895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996396	GFD-purified-qPCR	73.4		P	50 - 175
1997476	GFD-purified-qPCR	107		P	50 - 175
1998446	GFD-purified-qPCR	119		P	50 - 175
1999617	GFD-purified-qPCR	128		P	50 - 175
2000025	GFD-purified-qPCR	57.1		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P347895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000026	GFD-purified-qPCR	76.6		P	50 - 175
2000535	GFD-purified-qPCR	56.8		P	50 - 175
2000997	GFD-purified-qPCR	93.5		P	50 - 175
2001000	GFD-purified-qPCR	66.7		P	50 - 175
2001245	GFD-purified-qPCR	68.2		P	50 - 175
2006009	GFD-purified-qPCR	166		P	50 - 175
2006010	GFD-purified-qPCR	147		P	50 - 175
2006011	GFD-purified-qPCR	158		P	50 - 175
2006012	GFD-purified-qPCR	94.5	111	P/P	50 - 175
2006013	GFD-purified-qPCR	84.9		P	50 - 175
2006014	GFD-purified-qPCR	110		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P347472

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997476	BacR-qPCR	68.9		P	50 - 175
1997477	BacR-qPCR	58.4		P	50 - 175
1997478	BacR-qPCR	52.2		P	50 - 175
1998444	BacR-qPCR	58.4		P	50 - 175
1998446	BacR-qPCR	56.8		P	50 - 175
2003562	BacR-qPCR	50.3		P	50 - 175
2003563	BacR-qPCR	57.8		P	50 - 175
2003564	BacR-qPCR	66.0		P	50 - 175
2003565	BacR-qPCR	53.4		P	50 - 175
2003566	BacR-qPCR	50.1	70.3	P/P	50 - 175
2003567	BacR-qPCR	56.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P346630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997697	Chlorophyll-a, Corrected	4.06	Sample	P	0 - 25
1997697	Chlorophyll-a, Uncorrected	3.65	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray
Batch ID: P346664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996999	Escherichia Coli-Quanti-Tray	16.9	Sample	P	0 - 80
1997298	Escherichia Coli-Quanti-Tray	43.5	Sample	P	0 - 80
1997528	Escherichia Coli-Quanti-Tray	8.53	Sample	P	0 - 80

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P347472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003566	HF183-qPCR	2.18	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P347472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003566	GULL2-qPCR	9.07	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P347895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2006012	GFD-purified-qPCR	15.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P347472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003566	BacR-qPCR	33.6	Spike	F	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1997476
Field Sample ID: G2SW0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	102	P	50 - 300

Lab Sample ID: 1997477
Field Sample ID: G2SW0039

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	99.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	99.3	P	50 - 300

Lab Sample ID: 1997478
Field Sample ID: G2SW0039_DUP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	107	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	
								SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	92.6						4.06	
	Chlorophyll-a, Uncorrected							3.65	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							16.9	43.5
								8.53	
SOP-PCR-1.0	HF183-qPCR	112	94.4	77.9	74.9	76.2			2.18
				80.2					
SOP-PCR-1.2	GULL2-qPCR	120	82.3	74.7	63.6	77.4			9.07
				75.5					
SOP-PCR-1.3	GFD-purified-qPCR	60.0	89.0	107	119	166			15.7
				147					
SOP-PCR-1.4	BacR-qPCR	151	78.9	68.9	58.4	52.2			33.6
				50.3					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1997472
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1997473, 1997474, 1997475
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1997476, 1997477, 1997478
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1997476
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1997476
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1997476, 1997477, 1997478
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1997476, 1997477, 1997478

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	06/05/2018	06/05/2018 13:35	Mariam Hanna	06/08/2018 09:15	Carina A. Tull	1997472
SM 9223 Quanti-Tray	06/05/2018	06/05/2018 16:30	Jennifer Mihalic	06/06/2018 11:20	Jennifer Mihalic	1997473, 1997474, 1997475
SOP-PCR-1.0	06/05/2018	06/05/2018 14:00	Puja Jasrotia	07/02/2018 14:24	Mailin Lopez	1997476, 1997477, 1997478
SOP-PCR-1.2	06/05/2018	06/05/2018 14:00	Puja Jasrotia	07/05/2018 10:25	Sarah Menz	1997476
SOP-PCR-1.3	06/05/2018	06/05/2018 14:00	Mailin Lopez	07/12/2018 09:59	Sarah Menz	1997476
SOP-PCR-1.4	06/05/2018	06/05/2018 14:00	Puja Jasrotia	07/03/2018 10:29	Mailin Lopez	1997476, 1997477, 1997478
SOP-PCR-4.0	06/05/2018	06/05/2018 14:00	Angela Smith	06/25/2018 16:15	Puja Jasrotia	1997476, 1997477, 1997478