

Biological Analysis Report

WAS-SECT-2019-03-27-01

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

Event Description: **NWQI - Alligator Creek**

Request ID: **RQ-2019-03-25-19**

Customer: **WAS-SECT**

Project ID: **SMP**

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Date Certified: 22-APR-2019 19:52



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 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: Little Alligator Creek at SR 273

Collection Date/Time: 03/27/2019 11:15

Field ID: G3WA0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2073211	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.3		ug/L	P361920	
		Phaeophytin-a	2.7	I	ug/L	P361920	
		Chlorophyll-a, Uncorrected	8.2		ug/L	P361920	
2073217	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	141.0	A	MPN/100 mL	P361258	
2073223	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P361140	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P361140	MS

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: Minnow Creek At Lovewood Rd

Collection Date/Time: 03/27/2019 10:15

Field ID: G3WA0008

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2073209	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.4	I	ug/L	P361920	
		Phaeophytin-a	1.4	U	ug/L	P361920	
		Chlorophyll-a, Uncorrected	3.7	A	ug/L	P361920	
2073215	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	117.8		MPN/100 mL	P361258	
2073221	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold			P361044	

Ref. Method and Comment:

SM 10200 H (mod.): Laboratory duplicate result is 2.9 I for Chlorophyll-a Corrected and 1.4 U for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.

Sample Location: Alligator Creek Upstream of SR 273

Collection Date/Time: 03/27/2019 12:50

Field ID: G3WA0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2073210	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.5	I	ug/L	P361920	
		Phaeophytin-a	1.4	I	ug/L	P361920	
		Chlorophyll-a, Uncorrected	3.4		ug/L	P361920	
2073216	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	397.0		MPN/100 mL	P361258	
2073222	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P361140	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P361140	MS

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: Unnamed Creek at Palmview Rd

Collection Date/Time: 03/27/2019 14:25

Field ID: G3WA0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2073212	SM 10200 H (mod.)	Chlorophyll-a, Corrected	13		ug/L	P361920	
		Phaeophytin-a	3.4	U	ug/L	P361920	
		Chlorophyll-a, Uncorrected	14		ug/L	P361920	
2073218	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	90.6		MPN/100 mL	P361258	
2073224	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P361140	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P361140	MS

Field ID: G3WA0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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: Alligator Creek upstream of Bentley Rd. Collection Date/Time: 03/27/2019 12:10

Field ID: G3WA0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2073213	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.0		ug/L	P361920	
		Phaeophytin-a	1.4	U	ug/L	P361920	
		Chlorophyll-a, Uncorrected	4.7		ug/L	P361920	
2073219	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	517.2		MPN/100 mL	P361258	
2073225	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P361140	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P361140	MS

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: Unnamed Creek at Woodrest Rd Collection Date/Time: 03/27/2019 13:58

Field ID: G3WA0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2073214	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.7	I	ug/L	P361920	
		Phaeophytin-a	3.4	U	ug/L	P361920	
		Chlorophyll-a, Uncorrected	4.3	I	ug/L	P361920	
2073220	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6		MPN/100 mL	P361258	
2073226	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P361140	
	SOP-PCR-1.4	BacR-qPCR**	1.11E+06	J	TSC/100 mL	P361140	MS

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.
 SOP-PCR-1.4: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P361920

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.62	U	ug/L
Chlorophyll-a, Uncorrected	0.45	U	ug/L
Phaeophytin-a	0.68	U	ug/L

Reference Method: SM 9223 Quanti-Tray
 Batch ID: P361258

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
 Batch ID: P361140

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

Reference Method: SOP-PCR-1.4
 Batch ID: P361140

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: P361920

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	96.6		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P361140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	131	110	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P361140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	109	121	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P361140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068511	HF183-qPCR	71.5		P	50 - 175
2068767	HF183-qPCR	98.2		P	50 - 175
2068768	HF183-qPCR	95.3		P	50 - 175
2070871	HF183-qPCR	96.3		P	50 - 175
2070981	HF183-qPCR	93.0		P	50 - 175
2070982	HF183-qPCR	102		P	50 - 175
2070983	HF183-qPCR	114		P	50 - 175
2071059	HF183-qPCR	96.7		P	50 - 175
2073222	HF183-qPCR	92.1		P	50 - 175
2073223	HF183-qPCR	112		P	50 - 175
2073224	HF183-qPCR	83.9		P	50 - 175
2073225	HF183-qPCR	93.8	95.7	P/P	50 - 175
2073226	HF183-qPCR	68.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P361140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068767	BacR-qPCR	102		P	50 - 175
2068768	BacR-qPCR	85.2		P	50 - 175
2070871	BacR-qPCR	86.0		P	50 - 175
2070981	BacR-qPCR	85.1		P	50 - 175
2070982	BacR-qPCR	92.6		P	50 - 175
2070983	BacR-qPCR	85.7		P	50 - 175
2071059	BacR-qPCR	88.5		P	50 - 175
2073222	BacR-qPCR	56.9		P	50 - 175
2073223	BacR-qPCR	68.9		P	50 - 175
2073224	BacR-qPCR	56.8		P	50 - 175
2073225	BacR-qPCR	69.1	61.4	P/P	50 - 175
2073226	BacR-qPCR	47.6		F	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P361920

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073209	Chlorophyll-a, Uncorrected	18.6	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray
Batch ID: P361258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073217	Escherichia Coli-Quanti-Tray	79.4	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P361140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073225	HF183-qPCR	2.00	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P361140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073225	BacR-qPCR	11.7	Spike	P	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

Quality Assurance Report Surrogates

Lab Sample ID: 2073222
Field Sample ID: G3WA0005

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	88.0	P	50 - 300

Lab Sample ID: 2073223
Field Sample ID: G3WA0006

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	80.8	P	50 - 300

Lab Sample ID: 2073224
Field Sample ID: G3WA0013

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	80.5	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	75.0	P	50 - 300

Lab Sample ID: 2073225
Field Sample ID: G3WA0004

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	88.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	89.7	P	50 - 300

Lab Sample ID: 2073226
Field Sample ID: G3WA0010

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	67.5	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	76.2	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision	
				LCS	SMP	MS		
SM 10200 H (mod.)	Chlorophyll-a, Corrected	96.6						
	Chlorophyll-a, Uncorrected						18.6	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray						79.4	
SOP-PCR-1.0	HF183-qPCR	110	131	71.5	92.1	112		2.00
				83.9				
SOP-PCR-1.4	BacR-qPCR	121	109	56.9	68.9	56.8		11.7
				69.1				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2073209, 2073210, 2073211, 2073212, 2073213, 2073214
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2073215, 2073216, 2073217, 2073218, 2073219, 2073220

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2073222, 2073223, 2073224, 2073225, 2073226
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2073222, 2073223, 2073224, 2073225, 2073226
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2073221

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	03/27/2019	03/28/2019 15:20	Edwin Gonzalez-Soto	04/10/2019 10:38	Jennifer Mihalic	2073209, 2073210, 2073211, 2073212, 2073213, 2073214
SM 9223 Quanti-Tray	03/27/2019	03/27/2019 17:55	Carina A. Tull	03/28/2019 12:15	Carina A. Tull	2073215, 2073216, 2073217, 2073218, 2073219, 2073220
SOP-PCR-1.0	03/27/2019	03/28/2019 11:30	Sarah Menz	04/04/2019 07:48	Mailin Lopez	2073222, 2073223, 2073224, 2073225, 2073226
SOP-PCR-1.4	03/27/2019	03/28/2019 11:30	Sarah Menz	04/04/2019 11:55	Mailin Lopez	2073222, 2073223, 2073224, 2073225, 2073226
SOP-PCR-4.0	03/27/2019	03/28/2019 11:30	Angela Smith	04/15/2019 09:28	Sarah Menz	2073221