

Biological Analysis Report

SO-DIST-2018-04-04-01

Florida Department of Environmental Protection
Central 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: **Peace River Streams**
Request ID: **RQ-2018-04-02-66**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Maryann Dugan

For additional information please contact
Cheryl Swanson - Administrator
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Puja Jasrotia, Ph.D. - Molecular Biology
Cheryl Swanson - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Jacqueline Savage, Environmental Manager

Date Certified: 29-MAY-2018 17:01

A handwritten signature in black ink that reads "Jackie Savage". The signature is written in a cursive, flowing style.

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 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: PrairieCreek@WshngtnLp

Collection Date/Time: 04/03/2018 09:45

Field ID: G3SD0067

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980754	SM 10200 H (mod.)	Chlorophyll-a, Corrected	9.8	A	ug/L	P343270	
		Phaeophytin-a	1.4	A	ug/L	P343270	
		Chlorophyll-a, Uncorrected	11	A	ug/L	P343270	
1980768	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	116		MPN/100 mL		

Sample Location: PrairieCreek@WshngtnLp

Collection Date/Time: 04/03/2018 09:45

Field ID: G3SD0067

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980765	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: MyrtleSlough@Pinelsland

Collection Date/Time: 04/03/2018 10:50

Field ID: G3SD0095

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980755	SM 10200 H (mod.)	Chlorophyll-a, Corrected	9.9		ug/L	P343270	
		Phaeophytin-a	0.84	I	ug/L	P343270	
		Chlorophyll-a, Uncorrected	11		ug/L	P343270	
1980769	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	816		MPN/100 mL		

Sample Location: Myrtle Slough @ SR 31

Collection Date/Time: 04/03/2018 11:20

Field ID: G3SD0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980756	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.2		ug/L	P343270	
		Phaeophytin-a	3.9		ug/L	P343270	
		Chlorophyll-a, Uncorrected	8.7		ug/L	P343270	
1980770	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	88.4		MPN/100 mL		

Sample Location: Myrtle Slough @ SR 31

Collection Date/Time: 04/03/2018 11:20

Field ID: G3SD0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980764	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Hog Bay @ CR 763

Collection Date/Time: 04/03/2018 12:05

Field ID: G3SD0096

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980752	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.4		ug/L	P343270	
		Phaeophytin-a	1.8		ug/L	P343270	
		Chlorophyll-a, Uncorrected	3.6		ug/L	P343270	
1980766	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	1730		MPN/100 mL		

Sample Location: HawthorneCrk@ReynoldsSt

Collection Date/Time: 04/03/2018 12:30

Field ID: G3SD0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980763	SOP-PCR-1.0	HF183-qPCR**	270	I	GEU/100 mL	P343698	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1980771	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	687		MPN/100 mL		

Sample Location: BobcatCreek in Preserve

Collection Date/Time: 04/03/2018 13:30

Field ID: G3SD0131

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1980753	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.6		ug/L	P343270	
		Phaeophytin-a	3.5		ug/L	P343270	
		Chlorophyll-a, Uncorrected	7.9		ug/L	P343270	
1980767	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	1730		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P343270

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

Reference Method: SOP-PCR-1.0

Batch ID: P343698

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)

Batch ID: P343270

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	86.2		P	84 - 116

Reference Method: SOP-PCR-1.0

Batch ID: P343698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	107	66.6	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P343698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
---------------	-----------	---------	---------	-----------	----------------

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P343698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976549	HF183-qPCR	85.3		P	50 - 175
1978234	HF183-qPCR	99.6		P	50 - 175
1978235	HF183-qPCR	107		P	50 - 175
1978236	HF183-qPCR	86.9		P	50 - 175
1978237	HF183-qPCR	94.0		P	50 - 175
1978253	HF183-qPCR	88.9		P	50 - 175
1978580	HF183-qPCR	76.0		P	50 - 175
1978725	HF183-qPCR	88.1		P	50 - 175
1979260	HF183-qPCR	77.8		P	50 - 175
1979313	HF183-qPCR	82.2		P	50 - 175
1979459	HF183-qPCR	90.3		P	50 - 175
1980763	HF183-qPCR	83.5		P	50 - 175
1981252	HF183-qPCR	86.4	83.4	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P343270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1980754	Chlorophyll-a, Corrected	1.85	Sample	P	0 - 25
1980754	Chlorophyll-a, Uncorrected	3.13	Sample	P	0 - 25
1980754	Phaeophytin-a	18.1	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P343698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981252	HF183-qPCR	3.58	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

Lab Sample ID: 1980763
Field Sample ID: G3SD0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.9	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision	MS
				LCS SMP	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	86.2			1.85	
	Chlorophyll-a, Uncorrected				3.13	
	Phaeophytin-a				18.1	
SOP-PCR-1.0	HF183-qPCR	66.6 107	99.6 107 86.9 94.0			3.58

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1980752, 1980753, 1980754, 1980755, 1980756
SM 9223 Quanti-Tray / E85457	Escherichia coli by Colilert 18 Quanti-Tray method by Sanders Laboratories for South District	1980766, 1980767, 1980768, 1980769, 1980770, 1980771
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1980763
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1980763, 1980764, 1980765

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	04/04/2018	04/04/2018 13:16	Mariam Hanna	04/09/2018 16:10	Jennifer Mihalic	1980752, 1980753, 1980754, 1980755, 1980756
SM 9223 Quanti-Tray	04/03/2018	04/03/2018 17:05		04/04/2018 12:34	Sanders-Fort Myers	1980766, 1980767, 1980768, 1980769, 1980770, 1980771
SOP-PCR-1.0	04/04/2018	04/04/2018 12:25	Puja Jasrotia	04/24/2018 11:38	Mailin Lopez	1980763
SOP-PCR-4.0	04/04/2018	04/04/2018 12:25	Angela Smith	04/23/2018 10:15	Puja Jasrotia	1980763, 1980764, 1980765