

Biological Analysis Report

SO-DIST-2017-08-08-01

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: **SMP: Lee County Streams**
Request ID: **RQ-2017-07-24-06**
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 33901-3381
Attn: Ben Paswater

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

Certified by: Cheryl A. Swanson, Environmental Manager

Date Certified: 19-OCT-2017 11:00



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: Imperial River at Orr Rd in Bonita

Collection Date/Time: 08/07/2017 11:00

Field ID: G1SD080717-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919398	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.3		ug/L	P330028	
		Phaeophytin-a	0.57	I	ug/L	P330028	
		Chlorophyll/Phaeophytin Ratio	1.6			P330028	
		Chlorophyll-a, Uncorrected	3.8		ug/L	P330028	
1919446	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	57		MPN/100 mL		

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: Imperial River at Orr Rd in Bonita

Collection Date/Time: 08/07/2017 11:00

Field ID: G1SD080717-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919423	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Oak Creek @ Oak Creek Preserve

Collection Date/Time: 08/07/2017 11:30

Field ID: G1SD080717-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919399	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.9		ug/L	P330028	
		Phaeophytin-a	0.57	I	ug/L	P330028	
		Chlorophyll/Phaeophytin Ratio	1.6			P330028	
		Chlorophyll-a, Uncorrected	3.3		ug/L	P330028	
1919447	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	222		MPN/100 mL		

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: Field Blank

Collection Date/Time: 08/07/2017 11:40

Field ID: G1SD080717-6

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919400	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P330031	
		Phaeophytin-a	0.40	U	ug/L	P330031	
		Chlorophyll/Phaeophytin Ratio	1.4			P330031	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P330031	

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: Hendry Creek @ Old Gladiolus Dr.

Collection Date/Time: 08/07/2017 09:30

Field ID: G1SD080717-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919402	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.2		ug/L	P330031	
		Phaeophytin-a	0.40	U	ug/L	P330031	
		Chlorophyll/Phaeophytin Ratio	1.6			P330031	
		Chlorophyll-a, Uncorrected	2.4		ug/L	P330031	

Field ID: G1SD080717-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919450	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	461		MPN/100 mL		

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: Hendry Creek @ Old Gladiolus Dr.

Collection Date/Time: 08/07/2017 09:30

Field ID: G1SD080717-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919424	SOP-PCR-1.0	HF183-qPCR**	22	T	GEU/100 mL	P331451	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Imperial River near US 41

Collection Date/Time: 08/07/2017 10:20

Field ID: G1SD0057

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919401	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3		ug/L	P330031	
		Phaeophytin-a	0.80	I	ug/L	P330031	
		Chlorophyll/Phaeophytin Ratio	1.5			P330031	
		Chlorophyll-a, Uncorrected	2.8		ug/L	P330031	
1919449	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	121		MPN/100 mL		

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: Imperial River near US 41

Collection Date/Time: 08/07/2017 10:20

Field ID: G1SD0057

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919425	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: G1SD0005

Collection Date/Time: 08/07/2017 12:20

Field ID: G1SD0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1931310	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray**	579		MPN/100 mL		

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P330028

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 10200 H (mod.)
Batch ID: P330031

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: P331451

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: P330028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	106		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P330031

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	105		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P331451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	105	149	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P331451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918128	HF183-qPCR	92.7		P	50 - 175
1919424	HF183-qPCR	77.6		P	50 - 175
1928531	HF183-qPCR	89.9	94.1	P/P	50 - 175
1928748	HF183-qPCR	105		P	50 - 175
1928749	HF183-qPCR	88.5		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P330028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919157	Chlorophyll-a, Uncorrected	10.7	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P330031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919412	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1919412	Chlorophyll-a, Corrected	8.64	Sample	P	0 - 25
1919412	Chlorophyll-a, Uncorrected	12.6	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P331451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1928531	HF183-qPCR	4.48	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: 1919424
Field Sample ID: G1SD080717-1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	75.4	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio							0.0	
	Chlorophyll-a, Corrected	106						8.64	
	Chlorophyll-a, Corrected	105						10.7	
	Chlorophyll-a, Uncorrected							12.6	
	Chlorophyll-a, Uncorrected								
SOP-PCR-1.0	HF183-qPCR	149	105	105	88.5	89.9	94.1		4.48

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1919398, 1919399, 1919400, 1919401, 1919402

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 9223 Quanti-Tray / E85457	Escherichia coli by Colilert 18 Quanti-Tray method by Sanders Laboratories for South District	1919446, 1919447, 1919449, 1919450, 1931310
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1919424
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1919423, 1919424, 1919425

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	08/08/2017	08/08/2017 13:53	Cathy Sherrer	08/10/2017	Kim M. Spencer	1919398, 1919399, 1919400, 1919401, 1919402
SM 9223 Quanti-Tray	08/07/2017	08/07/2017 16:30		08/08/2017 11:45	Sanders-Fort Myers	1919446, 1919447, 1919449, 1919450, 1931310
SOP-PCR-1.0	08/08/2017	08/08/2017 14:00	Avril Wood	09/18/2017	Sarah Menz	1919424
SOP-PCR-4.0	08/08/2017	08/08/2017 14:00	Avril Wood	09/15/2017	Puja Jasrotia	1919423, 1919424, 1919425