

Biological Analysis Report

SE-DIST-2017-06-13-01

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

Overflow Analyses Performed By:
Flowers Chemical Laboratories Inc.
571 NW Mercantile Pl. Ste. 111
Port St. Lucie, FL 34986
DOH Accreditation E86562

Event Description: **SMP-G1 Okeechobee Run**
Request ID: **RQ-2017-06-12-19**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
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Certified by: Jacqueline Savage, Environmental Specialist III

Date Certified: 17-AUG-2017 14:35

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: NUBBIN SLOUGH

Collection Date/Time: 06/12/2017 11:45

Field ID: G1SE0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905614	SM 10200 H (mod.)	Chlorophyll-a, Corrected	19		ug/L	P326888	RPD
		Phaeophytin-a	6.4		ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.5			P326888	
		Chlorophyll-a, Uncorrected	23		ug/L	P326888	RPD
1905626	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	67.0		MPN/100 mL		

Sample Location: HENRY CREEK @ HWY 710

Collection Date/Time: 06/12/2017 11:50

Field ID: G1SE0002

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905618	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.2		ug/L	P326889	
		Phaeophytin-a	0.59	I	ug/L	P326889	
		Chlorophyll/Phaeophytin Ratio	1.6			P326889	
		Chlorophyll-a, Uncorrected	4.7		ug/L	P326889	
1905623	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1905630	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	261		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: HENRY CREEK @ HWY 710

Collection Date/Time: 06/12/2017 11:55

Field ID: G1SE0002_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905619	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.7		ug/L	P326889	
		Phaeophytin-a	0.68	I	ug/L	P326889	
		Chlorophyll/Phaeophytin Ratio	1.6			P326889	
		Chlorophyll-a, Uncorrected	5.2		ug/L	P326889	
1905624	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1905631	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	194		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: LETTUCE CREEK @ HWY 710

Collection Date/Time: 06/12/2017 12:20

Field ID: G1SE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905615	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.0		ug/L	P326888	RPD
		Phaeophytin-a	2.4		ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.4			P326888	
		Chlorophyll-a, Uncorrected	4.5		ug/L	P326888	RPD
1905627	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	98.7		MPN/100 mL		

Sample Location: OTTER CREEK @ 441

Collection Date/Time: 06/12/2017 10:00

Field ID: G1SE0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905616	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.3	I	ug/L	P326888	RPD
		Phaeophytin-a	2.4		ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.3			P326888	
		Chlorophyll-a, Uncorrected	2.8		ug/L	P326888	RPD
1905621	SOP-PCR-1.0	HF183-qPCR**	410	I	GEU/100 mL	P328342	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1905628	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1990		MPN/100 mL		

Sample Location: POPASH SLOUGH @ SR-70

Collection Date/Time: 06/12/2017 10:45

Field ID: G1SE0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905613	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.8	U	ug/L	P326888	RPD
		Phaeophytin-a	1.3		ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.6			P326888	
		Chlorophyll-a, Uncorrected	7.4		ug/L	P326888	RPD

Sample Location: TAYLOR CREEK @ SR-70

Collection Date/Time: 06/12/2017 11:00

Field ID: G1SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905620	SM 10200 H (mod.)	Chlorophyll-a, Corrected	64		ug/L	P326889	
		Phaeophytin-a	11		ug/L	P326889	
		Chlorophyll/Phaeophytin Ratio	1.6			P326889	
		Chlorophyll-a, Uncorrected	73		ug/L	P326889	
1905625	SOP-PCR-1.0	HF183-qPCR**	35	T	GEU/100 mL	P328342	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1905632	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	488		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: MOSQUITO CREEK @ SR 710

Collection Date/Time: 06/12/2017 11:25

Field ID: G1SE0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905617	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.5	I	ug/L	P326888	RPD
		Phaeophytin-a	0.64		ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.6			P326888	
		Chlorophyll-a, Uncorrected	4.0		ug/L	P326888	RPD
1905622	SOP-PCR-1.0	HF183-qPCR**	19	T	GEU/100 mL	P328342	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1905629	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	517		MPN/100 mL		

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P326888

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: SM 10200 H (mod.)
Batch ID: P326889

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: P328342

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: P326888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	97.7		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P326889

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	97.9		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	72.3	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905621	HF183-qPCR	101		P	50 - 175
1905622	HF183-qPCR	113		P	50 - 175
1905625	HF183-qPCR	83.7		P	50 - 175
1906223	HF183-qPCR	114		P	50 - 175
1910229	HF183-qPCR	111		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1910583	HF183-qPCR	90.7		P	50 - 175
1912962	HF183-qPCR	92.0		P	50 - 175
1912963	HF183-qPCR	74.0		P	50 - 175
1913038	HF183-qPCR	129	112	P/P	50 - 175
1913039	HF183-qPCR	94.6		P	50 - 175
1913238	HF183-qPCR	82.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P326888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905505	Chlorophyll/Phaeophytin Ratio	6.45	Sample	P	0 - 25
1905505	Chlorophyll-a, Corrected	31.7	Sample	F	0 - 25
1905505	Chlorophyll-a, Uncorrected	37.0	Sample	F	0 - 25
1905505	Phaeophytin-a	70.3	Sample	F	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913038	HF183-qPCR	13.9	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: 1905621
Field Sample ID: G1SE0007

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

Lab Sample ID: 1905622
Field Sample ID: G1SE0014

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	99.9	P	50 - 300

Lab Sample ID: 1905625
Field Sample ID: G1SE0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	79.7	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							6.45	
	Chlorophyll-a, Corrected	97.7						31.7	
	Chlorophyll-a, Corrected	97.9							
	Chlorophyll-a, Uncorrected							37.0	
	Phaeophytin-a							70.3	
SOP-PCR-1.0	HF183-qPCR	72.3	117	92.0	74.0	129	112		13.9

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1905613, 1905614, 1905615, 1905616, 1905617, 1905618, 1905619, 1905620
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1905626, 1905627, 1905628, 1905629, 1905630, 1905631, 1905632
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1905621, 1905622, 1905625
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1905621, 1905622, 1905623, 1905624, 1905625

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	06/13/2017	06/13/2017 13:35	Cathy Sherrer	06/14/2017	Kim M. Spencer	1905613, 1905614, 1905615, 1905616, 1905617, 1905618, 1905619, 1905620
SM 9223 Quanti-Tray	06/12/2017			06/12/2017 14:10	Flowers-PSL	1905626, 1905627, 1905628, 1905629, 1905630, 1905631, 1905632
SOP-PCR-1.0	06/13/2017	06/13/2017 13:14	Sarah Menz	07/18/2017	Puja Jasrotia	1905621, 1905622, 1905625
SOP-PCR-4.0	06/13/2017	06/13/2017 13:14	Puja Jasrotia	07/14/2017	Puja Jasrotia	1905621, 1905622, 1905623, 1905624, 1905625