

Biological Analysis Report

CEN-DIST-2018-07-12-01

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. - Altamonte
Springs
481 Newburyport Avenue
Altamonte Springs, Florida 32701
DOH Accreditation E83018

Event Description: **Wekiva (W) / Six / Gee / Soldier / Howell**
Request ID: **RQ-2018-07-09-47**
Customer: **CEN-DIST**
Project ID: **SMP**

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3319 Maguire Blvd., Suite 232
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Date Certified: 16-AUG-2018 16:04



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: HOWELL CREEK @ US OF LAKE HOWELL LN **Collection Date/Time: 07/11/2018 11:34**

Field ID: G2CE0138

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006675	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	34.1		MPN/100 mL		
2006685	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P348295	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: HOWELL CREEK @ 150M US OF LAKE HOWELL

Collection Date/Time: 07/11/2018 11:50

Field ID: G2CE0072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006676	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	29.4		MPN/100 mL		
2006686	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P348295	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: GEE CREEK @ SR HWY 419

Collection Date/Time: 07/11/2018 12:24

Field ID: G2CE0075

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006669	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	120		MPN/100 mL		
2006679	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: GEE CREEK @ ALTON RD.

Collection Date/Time: 07/11/2018 12:42

Field ID: G2CE0161

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006670	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	140		MPN/100 mL		
2006680	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: SOLDIER CREEK @ JUST DOWNSTREAM OF SR HWY 419

Collection Date/Time: 07/11/2018 13:02

Field ID: G2CE0162

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006673	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	90.9		MPN/100 mL		
2006683	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P348295	LCS, MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: SOLDIER CREEK @ 150M UPSTREAM OF SR HWY 419

Collection Date/Time: 07/11/2018 13:10

Field ID: G2CE0071

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006674	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	128		MPN/100 mL		
2006684	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P348295	LCS, MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: SIX MILE @ 400M US OF LAKE JESSUP

Collection Date/Time: 07/11/2018 13:29

Field ID: G2CE0074

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006671	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	219		MPN/100 mL		
2006681	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: ELDER SPRINGS RUN @ US OF MYRTLE ST. Collection Date/Time: 07/11/2018 13:36

Field ID: G2CE0120

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006672	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	172		MPN/100 mL		
2006682	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: LITTLE WEKIVA (WEST) @ 150M EAST OF NORTHWESTERN AVE Collection Date/Time: 07/11/2018 14:26

Field ID: G2CE0174

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006668	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	101		MPN/100 mL		
2006678	SM 10200 H (mod.)	Chlorophyll-a, Corrected	15		ug/L	P348587	
		Phaeophytin-a	8.5		ug/L	P348587	
		Chlorophyll-a, Uncorrected	20		ug/L	P348587	

Sample Location: LITTLE WEKIVA (WEST) @ 50M US OF NORTHWESTERN AVE Collection Date/Time: 07/11/2018 14:30

Field ID: G2CE0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2006677	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	192		MPN/100 mL		

Quality Assurance Report Method Blank Results

**Reference Method: SM 10200 H (mod.)
 Batch ID: P348587**

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: P348295**

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

**Reference Method: SOP-PCR-1.2
 Batch ID: P348295**

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P348587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	92.3		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P348295

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	36.9	124	F/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P348295

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	180	91.1	P/P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P348295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001769	HF183-qPCR	55.3		P	50 - 175
2002721	HF183-qPCR	44.2		F	50 - 175
2006576	HF183-qPCR	73.8		P	50 - 175
2006616	HF183-qPCR	79.3		P	50 - 175
2006617	HF183-qPCR	93.3		P	50 - 175
2006618	HF183-qPCR	84.6		P	50 - 175
2006683	HF183-qPCR	67.1		P	50 - 175
2006684	HF183-qPCR	71.2		P	50 - 175
2007508	HF183-qPCR	72.0	77.9	P/P	50 - 175
2007509	HF183-qPCR	90.4		P	50 - 175
2007531	HF183-qPCR	72.0		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P348295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001769	GULL2-qPCR	81.4		P	50 - 300
2002721	GULL2-qPCR	70.3		P	50 - 300
2006576	GULL2-qPCR	76.4		P	50 - 300
2006616	GULL2-qPCR	82.5		P	50 - 300
2006617	GULL2-qPCR	88.5		P	50 - 300
2006618	GULL2-qPCR	91.3		P	50 - 300
2006685	GULL2-qPCR	84.5		P	50 - 300
2006686	GULL2-qPCR	144		P	50 - 300
2007508	GULL2-qPCR	83.8	79.7	P/P	50 - 300
2007509	GULL2-qPCR	81.9		P	50 - 300
2007531	GULL2-qPCR	75.2		P	50 - 300

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P348587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2006790	Chlorophyll-a, Corrected	1.57	Sample	P	0 - 25
2006790	Chlorophyll-a, Uncorrected	2.03	Sample	P	0 - 25
2006790	Phaeophytin-a	4.72	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P348295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007508	HF183-qPCR	7.87	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P348295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007508	GULL2-qPCR	5.10	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: 2006683
Field Sample ID: G2CE0162

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	122	P	50 - 300

Lab Sample ID: 2006684
Field Sample ID: G2CE0071

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	115	P	50 - 300

Lab Sample ID: 2006685
Field Sample ID: G2CE0138

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

Lab Sample ID: 2006686
Field Sample ID: G2CE0072

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	103	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	MS
								SMP	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	92.3						1.57	
	Chlorophyll-a, Uncorrected							2.03	
	Phaeophytin-a							4.72	
SOP-PCR-1.0	HF183-qPCR	124	36.9	79.3	93.3	84.6			7.87
SOP-PCR-1.2	GULL2-qPCR	91.1	180	67.1					5.10
				82.5	88.5	91.3			
				84.5					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2006678
SM 9223 B Quanti-Tray / E83018	Escherichia coli by Colilert 18 Quanti-Tray method by Flowers Chemical Laboratory in Altamonte Springs	2006668, 2006669, 2006670, 2006671, 2006672, 2006673, 2006674, 2006675, 2006676, 2006677
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2006683, 2006684
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2006685, 2006686
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2006679, 2006680, 2006681, 2006682, 2006683, 2006684, 2006685, 2006686

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	07/12/2018	07/12/2018 14:50	Jennifer Mihalic	07/16/2018 09:25	Carina A. Tull	2006678
SM 9223 B Quanti-Tray	07/11/2018	07/11/2018 16:00		07/12/2018 10:02	Flowers - Altamonte Springs	2006668, 2006669, 2006670, 2006671, 2006672, 2006673, 2006674, 2006675, 2006676, 2006677
SOP-PCR-1.0	07/12/2018	07/12/2018 13:30	Angela Smith	07/18/2018 10:32	Mailin Lopez	2006683, 2006684
SOP-PCR-1.2	07/12/2018	07/12/2018 13:30	Angela Smith	07/19/2018 14:48	Mailin Lopez	2006685, 2006686
SOP-PCR-4.0	07/12/2018	07/12/2018 13:30	Angela Smith	07/26/2018 10:05	Sarah Menz	2006679, 2006680, 2006681, 2006682, 2006683, 2006684, 2006685, 2006686