

Biological Analysis Report

SE-DIST-2017-10-04-01

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-G2 Jupiter Run**
Request ID: **RQ-2017-09-25-54**
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
Attn: Matthew Sewell

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Date Certified: 02-NOV-2017 12:57



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: N Fork LOX

Collection Date/Time: 10/03/2017 15:00

Field ID: G2SE0021

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1933845	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.7		ug/L	P333079	
		Phaeophytin-a	0.47	I	ug/L	P333079	
		Chlorophyll-a, Uncorrected	3.1		ug/L	P333079	
1933846	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P332706	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P332706	
	SOP-PCR-1.3	GFD-purified-qPCR**	1.27E+03		TSC/100 mL	P331945	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	200	T	TSC/100 mL	P332706	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1933847	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	187		MPN/100 mL		
1933848	SM 9222 D	Fecal Coliforms-Membrane Filter	151	B	cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of HF183 marker.

SOP-PCR-1.2: No amplification of GULL2 marker.

SOP-PCR-1.4: Duplicate was analyzed and result is 1.50E3 U.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P333079

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: P332706

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

Reference Method: SOP-PCR-1.2

Batch ID: P332706

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

Reference Method: SOP-PCR-1.3

Batch ID: P331945

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Reference Method: SOP-PCR-1.4

Batch ID: P332706

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: P333079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P332706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	107	104	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P332706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	96.4	87.8	P/P	50 - 300
GULL2-qPCR	121	62.6	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P331945

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	72.4	15.0	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P332706

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P332706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926653	HF183-qPCR	81.1		P	50 - 175
1933846	HF183-qPCR	88.4	89.0	P/P	50 - 175
1934833	HF183-qPCR	94.0		P	50 - 175
1934834	HF183-qPCR	50.5		P	50 - 175
1935003	HF183-qPCR	85.4		P	50 - 175
1935005	HF183-qPCR	97.1		P	50 - 175
1935321	HF183-qPCR	72.7		P	50 - 175
1935452	HF183-qPCR	86.7		P	50 - 175
1935453	HF183-qPCR	87.5		P	50 - 175
1936163	HF183-qPCR	80.4		P	50 - 175
1936164	HF183-qPCR	79.1		P	50 - 175
1936165	HF183-qPCR	89.0		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P332706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P332706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1933846	GULL2-qPCR	69.1	54.3	P/P	50 - 300
1935004	GULL2-qPCR	76.0		P	50 - 300
1935005	GULL2-qPCR	51.4		P	50 - 300
1935006	GULL2-qPCR	79.0		P	50 - 300
1935452	GULL2-qPCR	53.9		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P331945

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926085	GFD-purified-qPCR	87.4		P	50 - 175
1927146	GFD-purified-qPCR	67.2		P	50 - 175
1930313	GFD-purified-qPCR	176		F	50 - 175
1932535	GFD-purified-qPCR	88.2	151	P/P	50 - 175
1933162	GFD-purified-qPCR	22.3		F	50 - 175
1933846	GFD-purified-qPCR	57.7		P	50 - 175
1934550	GFD-purified-qPCR	70.6		P	50 - 175
1935003	GFD-purified-qPCR	56.4		P	50 - 175
1935006	GFD-purified-qPCR	70.1		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P332706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1933846	BacR-qPCR	81.2	78.3	P/P	50 - 175
1935005	BacR-qPCR	85.6		P	50 - 175
1935452	BacR-qPCR	76.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P333079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933849	Chlorophyll-a, Corrected	7.99	Sample	P	0 - 25
1933849	Chlorophyll-a, Uncorrected	8.09	Sample	P	0 - 25
1933849	Phaeophytin-a	9.41	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P332706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933846	HF183-qPCR	0.594	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
 Batch ID: P332706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933151	GULL2-qPCR	24.3	Spike	P	0 - 25
1933846	GULL2-qPCR	24.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P331945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932535	GFD-purified-qPCR	52.5	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P332706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933846	BacR-qPCR	3.60	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: 1933846
 Field Sample ID: G2SE0021

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	84.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	87.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	102							7.99	
	Chlorophyll-a, Uncorrected								8.09	
	Phaeophytin-a								9.41	
SOP-PCR-1.0	HF183-qPCR	104	107		88.4	89.0	50.5			0.594
SOP-PCR-1.2	GULL2-qPCR	96.4 62.6 121			85.4					
		87.8			69.1 54.3 76.0					24.1 24.3
SOP-PCR-1.3	GFD-purified-qPCR	15.0 72.4			79.0					
					176 88.2 151					52.5
SOP-PCR-1.4	BacR-qPCR	110 110			22.3					
					81.2 78.3 85.6					3.60
					76.4					

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1933845
SM 9222 D / E86562	Fecal coliforms by membrane filter method by Flowers Overflow Laboratory for SED	1933848
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1933847
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1933846
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1933846
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1933846
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1933846
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1933846

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	10/04/2017	10/04/2017 13:16	Cathy Sherrer	10/10/2017	Kim M. Spencer	1933845
SM 9222 D	10/03/2017	10/03/2017 17:00		10/04/2017 15:15	Flowers-PSL	1933848
SM 9223 Quanti-Tray	10/03/2017	10/03/2017 16:45		10/04/2017 11:40	Flowers-PSL	1933847
SOP-PCR-1.0	10/04/2017	10/04/2017 14:00	Avril Wood	10/12/2017	Sarah Menz	1933846
SOP-PCR-1.2	10/04/2017	10/04/2017 14:00	Avril Wood	10/16/2017	Sarah Menz	1933846
SOP-PCR-1.3	10/04/2017	10/04/2017 14:00	Avril Wood	10/10/2017	Sarah Menz	1933846
SOP-PCR-1.4	10/04/2017	10/04/2017 14:00	Avril Wood	10/25/2017	Sarah Menz	1933846
SOP-PCR-4.0	10/04/2017	10/04/2017 14:00	Avril Wood	10/24/2017	Puja Jasrotia	1933846