

Biological Analysis Report

SE-DIST-2018-03-29-01

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- Loxah**
Request ID: **RQ-2018-03-26-59**
Customer: **SE-DIST**
Project ID: **SMP**

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Date Certified: 15-MAY-2018 13:50



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: C-17 @ 45th

Collection Date/Time: 03/28/2018 10:00

Field ID: G3SE0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978941	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.9		ug/L	P342760	
		Phaeophytin-a	3.4		ug/L	P342760	
		Chlorophyll-a, Uncorrected	11		ug/L	P342760	
1978944	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41.0		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: Tidal Creek to Lox

Collection Date/Time: 03/28/2018 11:30

Field ID: G2SE0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978940	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.1		ug/L	P342760	
		Phaeophytin-a	0.85	I	ug/L	P342760	
		Chlorophyll-a, Uncorrected	2.7		ug/L	P342760	
1978942	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P344786	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P344786	
	SOP-PCR-1.3	GFD-purified-qPCR**	710		TSC/100 mL	P344748	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P344786	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1978943	Enterolert/QT	Enterococci-Quanti-Tray	298		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.

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

SOP-PCR-1.2: No amplification of GULL2 marker. Precision data unavailable for Analysis Batch A83764.

SOP-PCR-1.4: No amplification of BACR marker. Precision data unavailable for Analysis Batch A83742.

Sample Location: G2SE0020

Collection Date/Time: 03/28/2018 12:45

Field ID: G2SE0020

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1990019	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	10.0	U	MPN/100 mL		

Sample Location: G2SE0035

Collection Date/Time: 03/28/2018 12:55

Field ID: G2SE0035

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1990020	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	10.0		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P342760

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P342760

Component	Result	Code	Units
Phaeophytin-a	0.40	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P344786

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

Reference Method: SOP-PCR-1.2
Batch ID: P344786

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: P344748

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

Reference Method: SOP-PCR-1.4
Batch ID: P344786

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: P342760

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	103		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P344786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	60.9	115	P/P	50 - 175
HF183-qPCR	117	115	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P344786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	65.2	95.9	P/P	50 - 300
GULL2-qPCR	67.4	95.9	P/P	50 - 300

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P344748

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	134	29.1	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P344786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	101	71.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P344786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977968	HF183-qPCR	96.0		P	50 - 175
1978108	HF183-qPCR	99.1		P	50 - 175
1978110	HF183-qPCR	104		P	50 - 175
1978111	HF183-qPCR	107		P	50 - 175
1978684	HF183-qPCR	109	96.7	P/P	50 - 175
1978942	HF183-qPCR	104		P	50 - 175
1979108	HF183-qPCR	106		P	50 - 175
1979109	HF183-qPCR	98.5		P	50 - 175
1979111	HF183-qPCR	104		P	50 - 175
1979368	HF183-qPCR	97.0		P	50 - 175
1981725	HF183-qPCR	101		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P344786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978108	GULL2-qPCR	76.4		P	50 - 300
1978110	GULL2-qPCR	99.1		P	50 - 300
1978942	GULL2-qPCR	67.2		P	50 - 300
1979108	GULL2-qPCR	71.5		P	50 - 300
1979109	GULL2-qPCR	72.3		P	50 - 300
1979111	GULL2-qPCR	78.4		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P344748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978108	GFD-purified-qPCR	57.3		P	50 - 175
1978110	GFD-purified-qPCR	214		F	50 - 175
1978942	GFD-purified-qPCR	142		P	50 - 175
1979109	GFD-purified-qPCR	194	182	F/F	50 - 175
1982100	GFD-purified-qPCR	92.9		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P344786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977968	BacR-qPCR	58.2		P	50 - 175
1978110	BacR-qPCR	74.1		P	50 - 175
1978111	BacR-qPCR	95.6		P	50 - 175
1978942	BacR-qPCR	96.3		P	50 - 175
1979108	BacR-qPCR	64.3		P	50 - 175
1979109	BacR-qPCR	77.8		P	50 - 175
1979111	BacR-qPCR	69.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P342760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979024	Chlorophyll-a, Uncorrected	1.47	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P344786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978684	HF183-qPCR	12.2	Spike	P	0 - 25
1978684	HF183-qPCR	12.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P344748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979109	GFD-purified-qPCR	5.94	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: 1978942
Field Sample ID: G2SE0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	99.4	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	102	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	103								
	Chlorophyll-a, Uncorrected								1.47	
SOP-PCR-1.0	HF183-qPCR	60.9	115	117	99.1	96.0	104			12.2 12.2
		115			107					
SOP-PCR-1.2	GULL2-qPCR	65.2	95.9	67.4	76.4	99.1	67.2			
		95.9			71.5					
SOP-PCR-1.3	GFD-purified-qPCR	29.1	134		57.3	92.9	214			5.94
					142					
SOP-PCR-1.4	BacR-qPCR	71.9	101		58.2	74.1	95.6			
					96.3					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E86562	Enterococci by Enterolert Quanti-Tray method by Flowers Overflow Laboratory for Southeast District	1978943
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1978940, 1978941
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1978944, 1990019, 1990020
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1978942
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1978942
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1978942
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1978942
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1978942

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	03/28/2018	03/28/2018 14:55		03/29/2018 16:30	Flowers-PSL	1978943
SM 10200 H (mod.)	03/29/2018	03/29/2018 12:43	Carina A. Tull	04/04/2018 11:35	Jennifer Mihalic	1978940, 1978941
SM 9223 Quanti-Tray	03/28/2018	03/28/2018 15:45		03/29/2018 10:25	Flowers-PSL	1978944, 1990019, 1990020
SOP-PCR-1.0	03/29/2018	03/29/2018 14:30	Puja Jasrotia	05/08/2018 09:15	Sarah Menz	1978942
SOP-PCR-1.2	03/29/2018	03/29/2018 14:30	Puja Jasrotia	05/08/2018 15:31	Sarah Menz	1978942
SOP-PCR-1.3	03/29/2018	03/29/2018 14:30	Sarah Menz	05/10/2018 09:52	Sarah Menz	1978942
SOP-PCR-1.4	03/29/2018	03/29/2018 14:30	Puja Jasrotia	05/08/2018 12:54	Sarah Menz	1978942
SOP-PCR-4.0	03/29/2018	03/29/2018 14:30	Angela Smith	05/07/2018 13:02	Puja Jasrotia	1978942