

Biological Analysis Report

SE-DIST-2018-07-26-02

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-2018-05-21-23**
Customer: **SE-DIST**
Project ID: **SMP**

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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 23-AUG-2018 15:41



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: ROEBUCK CREEK @ LOCKS

Collection Date/Time: 07/25/2018 11:10

Field ID: G2SE0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011033	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16		ug/L	P350630	
		Phaeophytin-a	2.0		ug/L	P350630	
		Chlorophyll-a, Uncorrected	17		ug/L	P350630	
2011037	SOP-PCR-1.0	HF183-qPCR**	310	I	GEU/100 mL	P349283	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2011041	Enterolert/QT	Enterococci-Quanti-Tray	228		MPN/100 mL		

Sample Location: ROEBUCK CREEK @ MOUTH

Collection Date/Time: 07/25/2018 12:10

Field ID: G2SE0005

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011034	SM 10200 H (mod.)	Chlorophyll-a, Corrected	11		ug/L	P350630	
		Phaeophytin-a	2.7	I	ug/L	P350630	
		Chlorophyll-a, Uncorrected	13		ug/L	P350630	
2011038	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2011042	Enterolert/QT	Enterococci-Quanti-Tray	10.0		MPN/100 mL		

Sample Location: C-17 @ 45TH

Collection Date/Time: 07/25/2018 13:50

Field ID: G3SE0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011035	SM 10200 H (mod.)	Chlorophyll-a, Corrected	40		ug/L	P350630	
		Phaeophytin-a	7.6		ug/L	P350630	
		Chlorophyll-a, Uncorrected	46		ug/L	P350630	
2011043	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	110		MPN/100 mL		

Sample Location: TIDAL CREEK TO LOX

Collection Date/Time: 07/25/2018 14:40

Field ID: G2SE0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011036	SM 10200 H (mod.)	Chlorophyll-a, Corrected	15		ug/L	P350630	
		Phaeophytin-a	15		ug/L	P350630	
		Chlorophyll-a, Uncorrected	25		ug/L	P350630	
2011040	SOP-PCR-1.0	HF183-purified-qPCR**	98	IJ	GEU/100 mL	P349731	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2011044	Enterolert/QT	Enterococci-Quanti-Tray	1340		MPN/100 mL		

Ref. Method and Comment:
SOP-PCR-1.0: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P350630

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.62	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P350630

Component	Result	Code	Units
Chlorophyll-a, Uncorrected	0.45	U	ug/L
Phaeophytin-a	0.45	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P349283

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

Reference Method: SOP-PCR-1.0
Batch ID: P349731

Component	Result	Code	Units
HF183-purified-qPCR	47	U	GEU/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P350630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	96.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P349283

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.7	156	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P349731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	99.8	19.1	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P349283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009106	HF183-qPCR	77.3		P	50 - 175
2009107	HF183-qPCR	100		P	50 - 175
2009108	HF183-qPCR	98.9		P	50 - 175
2009110	HF183-qPCR	90.9		P	50 - 175
2009364	HF183-qPCR	101		P	50 - 175
2009392	HF183-qPCR	86.3		P	50 - 175
2010189	HF183-qPCR	108		P	50 - 175
2010538	HF183-qPCR	78.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P349283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010541	HF183-qPCR	120		P	50 - 175
2010655	HF183-qPCR	55.0		P	50 - 175
2011037	HF183-qPCR	83.8		P	50 - 175
2012341	HF183-qPCR	61.7	56.8	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P349731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011040	HF183-purified-qPCR	108		P	50 - 175
2012740	HF183-purified-qPCR	105	101	P/P	50 - 175
2013611	HF183-purified-qPCR	105		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P350630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011073	Chlorophyll-a, Corrected	5.28	Sample	P	0 - 25
2011073	Chlorophyll-a, Uncorrected	5.74	Sample	P	0 - 25
2011073	Phaeophytin-a	7.77	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P349283

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012341	HF183-qPCR	8.08	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P349731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012740	HF183-purified-qPCR	3.21	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: 2011037
Field Sample ID: G2SE0029

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	100	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2011040
Field Sample ID: G2SE0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	11.8	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	96.1			5.28	
	Chlorophyll-a, Uncorrected				5.74	
	Phaeophytin-a				7.77	
SOP-PCR-1.0	HF183-purified-qPCR	19.1 99.8	108 105 101			3.21
	HF183-qPCR	156 88.7	77.3 100 98.9			8.08

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E86562	Enterococci by Enterolert Quanti-Tray method by Flowers Chemical Laboratory in Port St. Lucie	2011041, 2011042, 2011044
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2011033, 2011034, 2011035, 2011036
SM 9223 B Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by Flowers Chemical Laboratory in Port St. Lucie	2011043
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2011037
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2011040
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2011037, 2011038, 2011040

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	07/25/2018	07/25/2018 16:50		07/26/2018 17:05	Flowers-PSL	2011041, 2011042, 2011044
SM 10200 H (mod.)	07/26/2018	07/26/2018 13:45	Jennifer Mihalic	08/02/2018 15:40	Carina A. Tull	2011033, 2011034, 2011035, 2011036
SM 9223 B Quanti-Tray	07/25/2018	07/25/2018 17:00		07/26/2018 11:20	Flowers-PSL	2011043
SOP-PCR-1.0	07/26/2018	07/26/2018 11:20	Mailin Lopez	08/14/2018 12:23	Sarah Menz	2011040
	07/26/2018	07/26/2018 11:20	Sarah Menz	08/07/2018 11:01	Mailin Lopez	2011037
SOP-PCR-4.0	07/26/2018	07/26/2018 11:20	Sarah Menz	08/01/2018 11:13	Sarah Menz	2011037, 2011038, 2011040