

Biological Analysis Report

CEN-DIST-2017-03-14-01

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: **Haynes Crk Upper+HA / Haynes Crk Lower**
Request ID: **RQ-2017-03-13-43**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Daisys Matthews,

Date Certified: 17-APR-2017 07:56

A handwritten signature in cursive script, reading "D Matthews". The signature is written in dark ink on a white background.

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: Haynes Creek (upper)

Collection Date/Time: 03/13/2017 13:10

Field ID: G1CE0058

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879936	SM 10200 H (mod.)	Chlorophyll-a, Corrected	9.9		ug/L	P322160	
		Phaeophytin-a	1.3	U	ug/L	P322160	
		Chlorophyll/Phaeophytin Ratio	1.6			P322160	
		Chlorophyll-a, Uncorrected	11		ug/L	P322160	

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: Haynes Creek @ just DS of Burell Lock

Collection Date/Time: 03/13/2017 13:44

Field ID: 20020168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879934	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	422		MPN/100 mL		
1879937	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P322745	RPD
	SOP-PCR-1.2	GULL2-qPCR**	7.4E+03	T	TSC/100 mL	P322745	MS, RPD
	SOP-PCR-1.3	GFD-purified-qPCR**	220	T	TSC/100 mL	P321737	LCS, MS, RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

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

SOP-PCR-1.3: Analyte detected at a level below the current nominal MDL.

Sample Location: Haynes Creek @ 300m DS of CR 44

Collection Date/Time: 03/13/2017 14:00

Field ID: 20020642

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879935	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	521		MPN/100 mL		
1879938	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P322745	RPD
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P322745	MS, RPD
	SOP-PCR-1.3	GFD-purified-qPCR**	31	T	TSC/100 mL	P321737	LCS, MS, RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

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

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

SOP-PCR-1.3: Analyte detected at a level below the current nominal MDL.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P322160

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P322745

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

Reference Method: SOP-PCR-1.2
Batch ID: P322745

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

Reference Method: SOP-PCR-1.3
Batch ID: P321737

Component	Result	Code	Units
GFD-purified-qPCR	4.0E+04	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P322160

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	92.7		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P322745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	87.4	52.9	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P322745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	50.8	71.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P321737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	54.5	32.1	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P322745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879855	HF183-qPCR	87.3		P	50 - 175
1879937	HF183-qPCR	65.2		P	50 - 175
1879938	HF183-qPCR	61.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P322745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879960	HF183-qPCR	98.3	68.5	P/P	50 - 175
1879961	HF183-qPCR	71.2		P	50 - 175
1879964	HF183-qPCR	61.5		P	50 - 175
1880220	HF183-qPCR	94.5		P	50 - 175
1880222	HF183-qPCR	83.2		P	50 - 175
1880223	HF183-qPCR	72.1		P	50 - 175
1880579	HF183-qPCR	74.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P322745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879937	GULL2-qPCR	54.1		P	50 - 300
1879938	GULL2-qPCR	54.7		P	50 - 300
1880223	GULL2-qPCR	22.3		F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P321737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879036	GFD-purified-qPCR	57.7		P	50 - 175
1879937	GFD-purified-qPCR	86.9		P	50 - 175
1879938	GFD-purified-qPCR	68.6		P	50 - 175
1880174	GFD-purified-qPCR	32.2		F	50 - 175
1880175	GFD-purified-qPCR	60.6		P	50 - 175
1880177	GFD-purified-qPCR	44.5		F	50 - 175
1880179	GFD-purified-qPCR	57.9		P	50 - 175
1880223	GFD-purified-qPCR	91.1		P	50 - 175
1881136	GFD-purified-qPCR	47.5		F	50 - 175
1881137	GFD-purified-qPCR	8.76		F	50 - 175
1881138	GFD-purified-qPCR	82.1	32.3	P/F	50 - 175
1881139	GFD-purified-qPCR	32.0		F	50 - 175
1881140	GFD-purified-qPCR	45.4		F	50 - 175
1881227	GFD-purified-qPCR	29.8		F	50 - 175
1881228	GFD-purified-qPCR	28.5		F	50 - 175
1881229	GFD-purified-qPCR	47.6		F	50 - 175
1881230	GFD-purified-qPCR	53.9		P	50 - 175
1884037	GFD-purified-qPCR	110		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P322160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879841	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1879841	Chlorophyll-a, Corrected	15.5	Sample	P	0 - 25
1879841	Chlorophyll-a, Uncorrected	14.0	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P322745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879960	HF183-qPCR	35.8	Spike	F	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P322745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879960	GULL2-qPCR	37.5	Spike	F	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P321737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881138	GFD-purified-qPCR	87.0	Spike	F	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: 1879937
Field Sample ID: 20020168

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	62.6	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	69.5	P	50 - 300

Lab Sample ID: 1879938
Field Sample ID: 20020642

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	63.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	68.1	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							0.0	
	Chlorophyll-a, Corrected	92.7						15.5	
	Chlorophyll-a, Uncorrected							14.0	
SOP-PCR-1.0	HF183-qPCR	52.9	87.4	87.3	65.2	61.5			35.8
				98.3					
SOP-PCR-1.2	GULL2-qPCR	71.4	50.8	54.1	54.7	22.3			37.5
SOP-PCR-1.3	GFD-purified-qPCR	32.1	54.5	47.5	8.76	82.1			87.0
				32.3					

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1879936
SM 9223 Quanti-Tray / E83018	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Central District	1879934, 1879935
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1879937, 1879938
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium genetic marker with quantitative polymerase chain reaction	1879937, 1879938
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter genetic marker with quantitative polymerase chain reaction	1879937, 1879938
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1879937, 1879938

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	03/14/2017	03/14/2017 14:05	Carina A. Tull	03/22/2017	Jennifer Mihalic	1879936
SM 9223 Quanti-Tray	03/13/2017			03/13/2017 16:38	Flowers - Altamonte Springs	1879934, 1879935
SOP-PCR-1.0	03/14/2017	03/14/2017 13:00	Daisys Matthews	04/07/2017	Sarah Menz	1879937, 1879938
SOP-PCR-1.2	03/14/2017	03/14/2017 13:00	Daisys Matthews	04/10/2017	Sarah Menz	1879937, 1879938
SOP-PCR-1.3	03/14/2017	03/14/2017 13:00	Sarah Menz	04/13/2017	Sarah Menz	1879937, 1879938
SOP-PCR-4.0	03/14/2017	03/14/2017 13:00	Puja Jasrotia	04/04/2017	Daisys Matthews	1879937, 1879938