

Biological Analysis Report

WQAP-2017-09-07-03

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Pinellas LR3**
Request ID: **RQ-2017-09-04-30**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Tampa, FL 33637
Attn: Judy Ashton

For additional information please contact
Cheryl Swanson - Administrator
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Cheryl Swanson - Molecular Biology
Jennifer Walters - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Jennifer Walters, Environmental Manager

Date Certified: 23-OCT-2017 15:32

A handwritten signature in black ink, appearing to read "J Walters", is positioned below the "Certified by" text.

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 group are included in this report: Molecular.

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: Alligator Crk

Collection Date/Time: 09/06/2017 11:52

Field ID: G1SW0057

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1928747	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P331321	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
 SOP-PCR-1.0: No amplification of HF183 marker.

Sample Location: Bishop Crk

Collection Date/Time: 09/06/2017 10:18

Field ID: G1SW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1928748	SOP-PCR-1.0	HF183-qPCR**	150	I	GEU/100 mL	P331451	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P331451	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
 SOP-PCR-1.2: No amplification of GULL2 marker.

Sample Location: Bishop Crk @ Oak

Collection Date/Time: 09/06/2017 10:57

Field ID: G1SW0063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1928749	SOP-PCR-1.0	HF183-qPCR**	140	T	GEU/100 mL	P331451	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P331451	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
 SOP-PCR-1.2: No amplification of GULL2 marker.

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P331321

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

Reference Method: SOP-PCR-1.0

Batch ID: P331451

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

Reference Method: SOP-PCR-1.2

Batch ID: P331451

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

Quality Assurance Report Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P331321

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	93.0	54.7	P/P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P331451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	105	149	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P331451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	77.3	71.3	P/P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P331321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919607	HF183-qPCR	53.3		P	50 - 175
1921799	HF183-qPCR	58.4		P	50 - 175
1927980	HF183-qPCR	86.5		P	50 - 175
1927981	HF183-qPCR	89.6		P	50 - 175
1927982	HF183-qPCR	80.6	85.5	P/P	50 - 175
1928302	HF183-qPCR	89.6		P	50 - 175
1928303	HF183-qPCR	77.9		P	50 - 175
1928363	HF183-qPCR	76.9		P	50 - 175
1928530	HF183-qPCR	82.2		P	50 - 175
1928747	HF183-qPCR	87.4		P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P331451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918128	HF183-qPCR	92.7		P	50 - 175
1919424	HF183-qPCR	77.6		P	50 - 175
1928531	HF183-qPCR	89.9	94.1	P/P	50 - 175
1928748	HF183-qPCR	105		P	50 - 175
1928749	HF183-qPCR	88.5		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P331451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1928531	GULL2-qPCR	62.8	65.1	P/P	50 - 300
1928748	GULL2-qPCR	85.3		P	50 - 300
1928749	GULL2-qPCR	67.5		P	50 - 300

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P331321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927982	HF183-qPCR	5.85	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P331451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1928531	HF183-qPCR	4.48	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P331451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1928531	GULL2-qPCR	3.61	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: 1928747
 Field Sample ID: G1SW0057

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	74.9	P	50 - 300

Lab Sample ID: 1928748
 Field Sample ID: G1SW0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	80.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	77.9	P	50 - 300

Lab Sample ID: 1928749
 Field Sample ID: G1SW0063

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	82.4	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	81.5	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	54.7	93.0	86.5	89.6	80.6			5.85
				85.5					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	149	105	105	88.5	89.9		4.48
SOP-PCR-1.2	GULL2-qPCR	71.3	77.3	85.3	67.5	62.8		3.61
				94.1				
				65.1				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1928747, 1928748, 1928749
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1928748, 1928749
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1928747, 1928748, 1928749

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	09/07/2017	09/07/2017 11:00	Avril Wood	09/15/2017	Puja Jasrotia	1928747
	09/07/2017	09/07/2017 11:00	Avril Wood	09/18/2017	Sarah Menz	1928748, 1928749
SOP-PCR-1.2	09/07/2017	09/07/2017 11:00	Avril Wood	09/20/2017	Sarah Menz	1928748, 1928749
SOP-PCR-4.0	09/07/2017	09/07/2017 11:00	Avril Wood	10/11/2017	Puja Jasrotia	1928747, 1928748, 1928749