

Biological Analysis Report

SW-DIST-2019-02-20-01

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

Event Description: **Bishop Creek-Pinellas Sites 12-04, 12-02**
Request ID: **RQ-2019-02-18-16**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Judy Ashton

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Andrew Tintle - Aquatic Toxicology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 26-MAR-2019 10:05



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Bishop Crk @ Oakcrest Dr.(PC 12-02)

Collection Date/Time: 02/19/2019 09:00

Field ID: G1SW0063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2063932	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P360249	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P360249	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P360503	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P360249	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P358952	

Ref. Method and Comment:

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-4.0: Bacterial results for threshold obtained from county lab.

Sample Location: Bishop Crk @ Harbor Lakes (PC 12-04)

Collection Date/Time: 02/19/2019 09:48

Field ID: G1SW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2063933	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P360249	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P360249	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P360503	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P360249	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P358952	

Ref. Method and Comment:

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-4.0: Bacterial results for threshold obtained from county lab.

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P360249

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

Reference Method: SOP-PCR-1.2

Batch ID: P360249

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

Reference Method: SOP-PCR-1.3

Batch ID: P360503

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

Reference Method: SOP-PCR-1.4

Batch ID: P360249

Component	Result	Code	Units
BacR-qPCR	3.0E+03	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: P360249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	106	170	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P360249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	139	236	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P360503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	163	40.3	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P360249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	97.4	115	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P360249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062673	HF183-qPCR	115		P	50 - 175
2062674	HF183-qPCR	112		P	50 - 175
2062676	HF183-qPCR	116		P	50 - 175
2062677	HF183-qPCR	115		P	50 - 175
2062678	HF183-qPCR	113		P	50 - 175
2063932	HF183-qPCR	107		P	50 - 175
2063933	HF183-qPCR	109		P	50 - 175
2064412	HF183-qPCR	109	108	P/P	50 - 175
2070025	HF183-qPCR	117		P	50 - 175
2070026	HF183-qPCR	101		P	50 - 175
2070612	HF183-qPCR	116		P	50 - 175
2070614	HF183-qPCR	121		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P360249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062673	GULL2-qPCR	125		P	50 - 300
2062674	GULL2-qPCR	70.6		P	50 - 300
2062676	GULL2-qPCR	84.7		P	50 - 300
2063932	GULL2-qPCR	66.9		P	50 - 300
2063933	GULL2-qPCR	82.6		P	50 - 300
2064412	GULL2-qPCR	83.3	90.8	P/P	50 - 300
2070612	GULL2-qPCR	90.4		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P360249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070614	GULL2-qPCR	75.6		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P360503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061146	GFD-purified-qPCR	420		F	50 - 175
2062106	GFD-purified-qPCR	399		F	50 - 175
2063932	GFD-purified-qPCR	368		F	50 - 175
2063933	GFD-purified-qPCR	417		F	50 - 175
2064412	GFD-purified-qPCR	364		F	50 - 175
2066184	GFD-purified-qPCR	404		F	50 - 175
2070612	GFD-purified-qPCR	418		F	50 - 175
2070613	GFD-purified-qPCR	463	395	F/F	50 - 175
2070614	GFD-purified-qPCR	406		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P360249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062673	BacR-qPCR	74.1		P	50 - 175
2062674	BacR-qPCR	85.9		P	50 - 175
2062676	BacR-qPCR	89.7		P	50 - 175
2063932	BacR-qPCR	90.2		P	50 - 175
2063933	BacR-qPCR	90.0		P	50 - 175
2064412	BacR-qPCR	91.7	96.2	P/P	50 - 175
2070025	BacR-qPCR	87.4		P	50 - 175
2070026	BacR-qPCR	84.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0

Batch ID: P360249

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2064412	HF183-qPCR	0.665	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2

Batch ID: P360249

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2064412	GULL2-qPCR	8.52	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3

Batch ID: P360503

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P360503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2070613	GFD-purified-qPCR	15.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P360249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2064412	BacR-qPCR	4.80	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: 2063932
Field Sample ID: G1SW0063

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	260	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	97.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	98.7	P	50 - 300

Lab Sample ID: 2063933
Field Sample ID: G1SW0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	254	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	95.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	100	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	170	106	107	109	109			0.665
SOP-PCR-1.2	GULL2-qPCR	236	139	66.9	82.6	83.3			8.52
SOP-PCR-1.3	GFD-purified-qPCR	40.3	163	418	463	395			15.7
SOP-PCR-1.4	BacR-qPCR	115	97.4	90.2	90.0	91.7			4.80
				96.2					

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	2063932, 2063933

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific <i>Catelliboccus marimammalium</i> Gull2 genetic marker with quantitative polymerase chain reaction	2063932, 2063933
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific <i>Helicobacter</i> GFD genetic marker with quantitative polymerase chain reaction	2063932, 2063933
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific <i>Bacteroidetes</i> BacR genetic marker with quantitative polymerase chain reaction	2063932, 2063933
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2063932, 2063933

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	02/20/2019	02/20/2019 13:00	Angela Smith	03/19/2019 08:35	Mailin Lopez	2063932, 2063933
SOP-PCR-1.2	02/20/2019	02/20/2019 13:00	Angela Smith	03/20/2019 09:56	Mailin Lopez	2063932, 2063933
SOP-PCR-1.3	02/20/2019	02/20/2019 13:00	Angela Smith	03/21/2019 08:49	Sarah Menz	2063932, 2063933
SOP-PCR-1.4	02/20/2019	02/20/2019 13:00	Angela Smith	03/19/2019 15:04	Mailin Lopez	2063932, 2063933
SOP-PCR-4.0	02/20/2019	02/20/2019 13:00	Angela Smith	03/12/2019 13:44	Puja Jasrotia	2063932, 2063933