

Biological Analysis Report

NE-DIST-2017-08-09-02

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

Event Description: **Egan Creek-PO 8/7/17**
Request ID: **RQ-2017-08-07-31**
Customer: **NE-DIST**
Project ID: **SMP**

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Date Certified: 27-SEP-2017 16:23



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: Microbiology and 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: Egan Creek @ Sadler Rd.

Collection Date/Time: 08/08/2017 13:55

Field ID: 123456

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919955	SOP-PCR-1.0	HF183-qPCR**	45	T	GEU/100 mL	P329510	LCS
	SOP-PCR-1.2	GULL2-purified-qPCR**	1.4E+03	UJ	TSC/100 mL	P330301	LCS, RPD, SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	9.9	T	TSC/100 mL	P330301	LCS, MS, RPD
	SOP-PCR-1.4	BacR-purified-qPCR**	250	UJ	TSC/100 mL	P330301	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:

SOP-PCR-1.2: No amplification of PURG2 marker. Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.4: No amplification of PURBR marker. Quality control failure(s) observed. See QA report for details. Precision data unavailable.

Sample Location: Egan Creek @ Sadler Rd.

Collection Date/Time: 08/08/2017 13:55

Field ID: 123456

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919949	Enterolert/QT	Enterococci-Quanti-Tray	85.7	Q	MPN/100 mL	P330367	
	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	307.6	Q	MPN/100 mL	P330367	

Sample Location: Egan Creek @ Atlantic

Collection Date/Time: 08/08/2017 14:30

Field ID: 123456

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919956	SOP-PCR-1.0	HF183-purified-qPCR**	24	UJ	GEU/100 mL	P330107	LCS, SUR
	SOP-PCR-1.2	GULL2-purified-qPCR**	1.4E+03	UJ	TSC/100 mL	P330107	LCS, RPD, SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	180	IJ	TSC/100 mL	P330107	LCS, MS
	SOP-PCR-1.4	BacR-purified-qPCR**	250	UJ	TSC/100 mL	P330107	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of PURHF marker. Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.2: No amplification of PURG2 marker. Quality control failure(s) observed. See QA report for details.

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

SOP-PCR-1.4: No amplification of PURBR marker. Quality control failure(s) observed. See QA report for details. Precision data unavailable.

Sample Location: Egan Creek @ Atlantic

Collection Date/Time: 08/08/2017 14:30

Field ID: 123456

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919950	Enterolert/QT	Enterococci-Quanti-Tray	110.0	Q	MPN/100 mL	P330367	
	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	3873.2	Q	MPN/100 mL	P330367	

Quality Assurance Report Method Blank Results

Reference Method: Enterolert/QT

Batch ID: P330367

Component	Result	Code	Units
Enterococci-Quanti-Tray	1.0	U	MPN/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 Quanti-Tray
Batch ID: P330367

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P329510

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

Reference Method: SOP-PCR-1.0
Batch ID: P330107

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

Reference Method: SOP-PCR-1.2
Batch ID: P330107

Component	Result	Code	Units
GULL2-purified-qPCR	2.8E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P330301

Component	Result	Code	Units
GULL2-purified-qPCR	2.8E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P330107

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

Reference Method: SOP-PCR-1.3
Batch ID: P330301

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

Reference Method: SOP-PCR-1.4
Batch ID: P330107

Component	Result	Code	Units
BacR-purified-qPCR	510	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P330301

Component	Result	Code	Units
BacR-purified-qPCR	510	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P329510

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.5	48.4	P/F	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P330107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	92.9	6.15	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P330107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-purified-qPCR	66.1	20.7	P/F	50 - 300

Reference Method: SOP-PCR-1.2
Batch ID: P330301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-purified-qPCR	66.1	29.7	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P330107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	103	19.6	P/F	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P330301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	103	15.1	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P330107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	134	1.06	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P330301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	134	3.15	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P329510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P329510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918016	HF183-qPCR	76.0		P	50 - 175
1918017	HF183-qPCR	82.7		P	50 - 175
1918018	HF183-qPCR	87.9	88.4	P/P	50 - 175
1918019	HF183-qPCR	76.4		P	50 - 175
1918020	HF183-qPCR	92.2		P	50 - 175
1918021	HF183-qPCR	102		P	50 - 175
1919315	HF183-qPCR	81.9		P	50 - 175
1919316	HF183-qPCR	90.8		P	50 - 175
1919955	HF183-qPCR	81.5		P	50 - 175
1920419	HF183-qPCR	77.2		P	50 - 175
1920474	HF183-qPCR	79.9		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P330107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918253	HF183-purified-qPCR	88.1		P	50 - 175
1919956	HF183-purified-qPCR	90.6		P	50 - 175
1920473	HF183-purified-qPCR	90.0	109	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P330107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919956	GULL2-purified-qPCR	66.5		P	50 - 175
1920942	GULL2-purified-qPCR	94.4		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P330301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919955	GULL2-purified-qPCR	56.9		P	50 - 300
1920943	GULL2-purified-qPCR	54.9	88.3	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P330107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919956	GFD-purified-qPCR	30.0		F	50 - 175
1920909	GFD-purified-qPCR	97.9	80.7	P/P	50 - 175
1920941	GFD-purified-qPCR	118		P	50 - 175
1920942	GFD-purified-qPCR	51.0		P	50 - 175
1921167	GFD-purified-qPCR	189		F	50 - 175
1921168	GFD-purified-qPCR	112		P	50 - 175
1921169	GFD-purified-qPCR	60.4		P	50 - 175
1921170	GFD-purified-qPCR	14.5		F	50 - 175
1921171	GFD-purified-qPCR	59.2		P	50 - 175
1921172	GFD-purified-qPCR	56.2		P	50 - 175
1921536	GFD-purified-qPCR	35.5		F	50 - 175
1921537	GFD-purified-qPCR	18.8		F	50 - 175
1921538	GFD-purified-qPCR	24.6		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P330301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911744	GFD-purified-qPCR	97.0		P	50 - 175
1919955	GFD-purified-qPCR	64.0		P	50 - 175
1921668	GFD-purified-qPCR	36.2		F	50 - 175
1921797	GFD-purified-qPCR	21.2		F	50 - 175
1921799	GFD-purified-qPCR	27.1	35.0	F/F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P330107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919956	BacR-purified-qPCR	140		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P330301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919955	BacR-purified-qPCR	145		P	50 - 175

Quality Assurance Report Precision

Reference Method: Enterolert/QT

Batch ID: P330367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919971	Enterococci-Quanti-Tray	19.3	Sample	P	0 - 80
1920509	Enterococci-Quanti-Tray	55.8	Sample	P	0 - 80

Reference Method: SM 9223 Quanti-Tray

Batch ID: P330367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919971	Escherichia Coli-Quanti-Tray	31.4	Sample	P	0 - 80
1920407	Escherichia Coli-Quanti-Tray	22.9	Sample	P	0 - 80
1920509	Escherichia Coli-Quanti-Tray	5.66	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0

Batch ID: P329510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918018	HF183-qPCR	0.586	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P330107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920473	HF183-purified-qPCR	18.9	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
 Batch ID: P330107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920943	GULL2-purified-qPCR	46.5	Spike	F	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P330301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920943	GULL2-purified-qPCR	46.5	Spike	F	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P330107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920909	GFD-purified-qPCR	19.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P330301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921799	GFD-purified-qPCR	25.3	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: 1919955
 Field Sample ID: 123456

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	95.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	6.84	F	30 - 300
SOP-PCR-1.4	SKETA-qPCR	5.63	F	30 - 300

Lab Sample ID: 1919956
 Field Sample ID: 123456

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	5.96	F	30 - 300
SOP-PCR-1.2	SKETA-qPCR	6.49	F	30 - 300
SOP-PCR-1.4	SKETA-qPCR	5.83	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision
				LCS SMP MS

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision		MS
								SMP		
Enterolert/QT SM 9223 Quanti-Tray	Enterococci-Quanti-Tray							19.3	55.8	
	Escherichia Coli-Quanti-Tray							31.4	22.9	
SOP-PCR-1.0	HF183-purified-qPCR	6.15	92.9	88.1	90.6	90.0		5.66		18.9
	HF183-qPCR	48.4	94.5	76.0	82.7	87.9				0.586
SOP-PCR-1.2	GULL2-purified-qPCR	20.7	66.1	66.5	94.4					46.5
	GULL2-purified-qPCR	29.7	66.1	56.9	54.9	88.3				46.5
SOP-PCR-1.3	GFD-purified-qPCR	19.6	103	97.9	80.7	118				19.2
	GFD-purified-qPCR	15.1	103	36.2	21.2	27.1				25.3
SOP-PCR-1.4	BacR-purified-qPCR	1.06	134	140						
	BacR-purified-qPCR	3.15	134	145						

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E31780	Enterococci by Enterolert Quanti-Tray method - non-chlorinated water systems	1919949, 1919950
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1919949, 1919950
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1919955
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1919956
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1919955, 1919956
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1919955, 1919956
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1919955, 1919956
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1919955, 1919956

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	08/09/2017	08/09/2017 14:10	Morgan Lane	08/10/2017 14:15	Morgan Lane	1919949, 1919950
SM 9223 Quanti-Tray	08/09/2017	08/09/2017 14:10	Morgan Lane	08/10/2017 11:25	Carina A. Tull	1919949, 1919950
SOP-PCR-1.0	08/09/2017	08/09/2017 14:00	Avril Wood	08/11/2017	Puja Jasrotia	1919955
SOP-PCR-1.2	08/09/2017	08/09/2017 14:00	Puja Jasrotia	08/16/2017	Sarah Menz	1919956
	08/09/2017	08/09/2017 14:00	Avril Wood	08/25/2017	Sarah Menz	1919955
	08/09/2017	08/09/2017 14:00	Puja Jasrotia	08/25/2017	Sarah Menz	1919956
SOP-PCR-1.3	08/09/2017	08/09/2017 14:00	Avril Wood	08/18/2017	Sarah Menz	1919955
	08/09/2017	08/09/2017 14:00	Puja Jasrotia	08/18/2017	Sarah Menz	1919956
SOP-PCR-1.4	08/09/2017	08/09/2017 14:00	Avril Wood	08/25/2017	Sarah Menz	1919955
	08/09/2017	08/09/2017 14:00	Puja Jasrotia	08/25/2017	Sarah Menz	1919956
SOP-PCR-4.0	08/09/2017	08/09/2017 14:00	Avril Wood	09/05/2017	Puja Jasrotia	1919955, 1919956