

Biological Analysis Report

WAS-SECT-2017-10-10-01

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

Event Description: **SWamp, Salem, Talavanna, Arrowhead, AJ, Harbinwood,
Meginnis, Godby, Central**
Request ID: **RQ-2017-10-09-23**
Customer: **WAS-SECT**
Project ID: **SMP**

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This Report replaces the previous Report Serial Number: 0100560

Report Comment: Removed I-qualifier on microbiology results reported at the MDL = PQL to assist with WIN database cleanup.

Revision certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 05-NOV-2020 16:51



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, 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 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: AJ Henry Park Pond Middle

Collection Date/Time: 10/10/2017 08:27

Field ID: G1WA0058_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935427	SM 10200 H (mod.)	Chlorophyll-a, Corrected	100		ug/L	P333374	
		Phaeophytin-a	5.1		ug/L	P333374	
		Chlorophyll-a, Uncorrected	110		ug/L	P333374	

Sample Location: Lake Arrowhead at Boat Dock at Turtle Crk Ln Near Outlet

Collection Date/Time: 10/10/2017 07:50

Field ID: G1WA0004_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935428	SM 10200 H (mod.)	Chlorophyll-a, Corrected	49		ug/L	P333374	
		Phaeophytin-a	3.1	I	ug/L	P333374	
		Chlorophyll-a, Uncorrected	52		ug/L	P333374	

Sample Location: Tallavanna Lake Middle

Collection Date/Time: 10/10/2017 09:30

Field ID: G1WA0045_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935429	SM 10200 H (mod.)	Chlorophyll-a, Corrected	69	A	ug/L	P333374	
		Phaeophytin-a	14	A	ug/L	P333374	
		Chlorophyll-a, Uncorrected	80	A	ug/L	P333374	

Sample Location: Tallavanna Lake Middle

Collection Date/Time: 10/10/2017 09:30

Field ID: G1WA0045_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935445	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	6.3		MPN/100 mL	P333668	

Sample Location: Swamp Creek upstream of Railroad

Collection Date/Time: 10/10/2017 10:40

Field ID: G1WA0052_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935430	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.66	I	ug/L	P333375	
		Phaeophytin-a	0.40	U	ug/L	P333375	
		Chlorophyll-a, Uncorrected	0.83	I	ug/L	P333375	

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: Swamp Creek upstream of Railroad

Collection Date/Time: 10/10/2017 10:40

Field ID: G1WA0052_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935446	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	435.2		MPN/100 mL	P333668	

Sample Location: Swamp Creek upstream of Railroad

Collection Date/Time: 10/10/2017 10:40

Field ID: G1WA0052_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935452	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P332706	LCS, MS
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P332706	
	SOP-PCR-1.3	GFD-purified-qPCR**	160	T	TSC/100 mL	P333940	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P332706	
	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-1.4: No amplification of BACR marker.

Sample Location: Salem Branch downstream of SR 159

Collection Date/Time: 10/10/2017 10:15

Field ID: G1WA0053_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935447	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	727.0		MPN/100 mL	P333668	

Sample Location: Salem Branch downstream of SR 159

Collection Date/Time: 10/10/2017 10:15

Field ID: G1WA0053_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935454	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P333957	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	9.4	T	TSC/100 mL	P333121	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	T	TSC/100 mL	P333957	
	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: Duplicate was analyzed and result is 170 U.

Sample Location: Harbinwood Estates Drain

Collection Date/Time: 10/10/2017 11:30

Field ID: G1WA0034_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935431	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.4	I	ug/L	P333375	
		Phaeophytin-a	1.7		ug/L	P333375	
		Chlorophyll-a, Uncorrected	2.4		ug/L	P333375	

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: Harbinwood Estates Drain

Collection Date/Time: 10/10/2017 11:30

Field ID: G1WA0034_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935448	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	10.0		MPN/100 mL	P333668	

Sample Location: Harbinwood Estates Drain

Collection Date/Time: 10/10/2017 11:30

Field ID: G1WA0034_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935456	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Meggnnis Arm Run Downstream of Sharer

Collection Date/Time: 10/10/2017 12:25

Field ID: G1WA0033_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935432	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.61	I	ug/L	P333375	
		Phaeophytin-a	0.40	U	ug/L	P333375	
		Chlorophyll-a, Uncorrected	0.69	I	ug/L	P333375	

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: Meggnnis Arm Run Downstream of Sharer

Collection Date/Time: 10/10/2017 12:25

Field ID: G1WA0033_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935449	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	866.4		MPN/100 mL	P333668	

Sample Location: Meggnnis Arm Run Downstream of Sharer

Collection Date/Time: 10/10/2017 12:25

Field ID: G1WA0033_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935457	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P333957	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P333957	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	6.4	T	TSC/100 mL	P334197	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P333957	
	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-1.4: No amplification of BACR marker.

Sample Location: Godby Drainage Ditch at Progress Dr

Collection Date/Time: 10/10/2017 13:00

Field ID: G1WA0061_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935433	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.67	I	ug/L	P333375	
		Phaeophytin-a	0.40	U	ug/L	P333375	
		Chlorophyll-a, Uncorrected	0.82	I	ug/L	P333375	

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: Godby Drainage Ditch at Progress Dr

Collection Date/Time: 10/10/2017 13:00

Field ID: G1WA0061_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935450	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	132.0		MPN/100 mL	P333668	

Sample Location: Godby Drainage Ditch at Progress Dr

Collection Date/Time: 10/10/2017 13:00

Field ID: G1WA0061_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G1WA0061_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935453	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P332706	
	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: Central Drainge Ditch downstream of Orange Ave Collection Date/Time: 10/10/2017 13:35

Field ID: G1WA0026_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935434	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.2		ug/L	P333375	
		Phaeophytin-a	0.81	I	ug/L	P333375	
		Chlorophyll-a, Uncorrected	2.8		ug/L	P333375	

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: Central Drainge Ditch downstream of Orange Ave Collection Date/Time: 10/10/2017 13:35

Field ID: G1WA0026_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935451	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	988.0		MPN/100 mL	P333668	

Sample Location: Central Drainge Ditch downstream of Orange Ave Collection Date/Time: 10/10/2017 13:35

Field ID: G1WA0026_10102017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935458	SOP-PCR-1.0	HF183-qPCR**	20	T	GEU/100 mL	P333957	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P333374

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

Reference Method: SM 10200 H (mod.)
Batch ID: P333375

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: SM 9223 Quanti-Tray
 Batch ID: P333668

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

Reference Method: SOP-PCR-1.0
 Batch ID: P332706

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

Reference Method: SOP-PCR-1.0
 Batch ID: P333957

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

Reference Method: SOP-PCR-1.2
 Batch ID: P332706

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

Reference Method: SOP-PCR-1.2
 Batch ID: P333957

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

Reference Method: SOP-PCR-1.3
 Batch ID: P333121

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

Reference Method: SOP-PCR-1.3
 Batch ID: P333940

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

Reference Method: SOP-PCR-1.3
 Batch ID: P334197

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

Reference Method: SOP-PCR-1.4
 Batch ID: P332706

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P333957

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL
BacR-qPCR	3.0E+03	U	TSC/100 mL
BacR-qPCR	3.0E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P333374

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	104		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P333375

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	103		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P332706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	107	104	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P333957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	109	96.6	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P332706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	96.4	87.8	P/P	50 - 300
GULL2-qPCR	121	62.6	P/P	50 - 300

Reference Method: SOP-PCR-1.2
Batch ID: P333957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	91.7	44.4	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P333121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	115	12.6	P/F	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
 Batch ID: P333940

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	117	27.2	P/F	50 - 175

Reference Method: SOP-PCR-1.3
 Batch ID: P334197

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	24.9	149	F/P	50 - 175
GFD-purified-qPCR	87.9	149	P/P	50 - 175
GFD-purified-qPCR	11.5	24.9	F/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P332706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	110	110	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P333957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	131	74.0	P/P	50 - 175
BacR-qPCR	95.3	113	P/P	50 - 175
BacR-qPCR	82.7	141	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P332706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926653	HF183-qPCR	81.1	89.0	P	50 - 175
1933846	HF183-qPCR	88.4		P/P	50 - 175
1934833	HF183-qPCR	94.0	89.0	P	50 - 175
1934834	HF183-qPCR	50.5		P	50 - 175
1935003	HF183-qPCR	85.4	89.0	P	50 - 175
1935005	HF183-qPCR	97.1		P	50 - 175
1935321	HF183-qPCR	72.7	89.0	P	50 - 175
1935452	HF183-qPCR	86.7		P	50 - 175
1935453	HF183-qPCR	87.5	89.0	P	50 - 175
1936163	HF183-qPCR	80.4		P	50 - 175
1936164	HF183-qPCR	79.1	89.0	P	50 - 175
1936165	HF183-qPCR	89.0		P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P333957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935454	HF183-qPCR	61.4	89.0	P	50 - 175
1935457	HF183-qPCR	80.4		P	50 - 175
1935458	HF183-qPCR	72.3	89.0	P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P333957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939495	HF183-qPCR	66.3		P	50 - 175
1939762	HF183-qPCR	60.4		P	50 - 175
1939857	HF183-qPCR	69.3		P	50 - 175
1939983	HF183-qPCR	50.4		P	50 - 175
1940011	HF183-qPCR	52.3		P	50 - 175
1940012	HF183-qPCR	77.1		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P332706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1933846	GULL2-qPCR	69.1	54.3	P/P	50 - 300
1935004	GULL2-qPCR	76.0		P	50 - 300
1935005	GULL2-qPCR	51.4		P	50 - 300
1935006	GULL2-qPCR	79.0		P	50 - 300
1935452	GULL2-qPCR	53.9		P	50 - 300

Reference Method: SOP-PCR-1.2
Batch ID: P333957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935457	GULL2-qPCR	85.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P333121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1928362	GFD-purified-qPCR	139		P	50 - 175
1929672	GFD-purified-qPCR	85.4		P	50 - 175
1935454	GFD-purified-qPCR	57.2	51.2	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P333940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932386	GFD-purified-qPCR	54.7		P	50 - 175
1933151	GFD-purified-qPCR	140		P	50 - 175
1935452	GFD-purified-qPCR	137		P	50 - 175
1939413	GFD-purified-qPCR	204		F	50 - 175
1939415	GFD-purified-qPCR	122	126	P/P	50 - 175
1939416	GFD-purified-qPCR	87.0		P	50 - 175
1939983	GFD-purified-qPCR	55.0		P	50 - 175
1940025	GFD-purified-qPCR	120		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P334197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1934547	GFD-purified-qPCR	95.4		P	50 - 175
1935007	GFD-purified-qPCR	96.6		P	50 - 175
1935457	GFD-purified-qPCR	77.0		P	50 - 175
1938788	GFD-purified-qPCR	106	106	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
 Batch ID: P334197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1940825	GFD-purified-qPCR	102		P	50 - 175
1940826	GFD-purified-qPCR	13.6		F	50 - 175
1940827	GFD-purified-qPCR	142		P	50 - 175
1940858	GFD-purified-qPCR	81.1	88.9	P/P	50 - 175
1940860	GFD-purified-qPCR	36.5		F	50 - 175
1940861	GFD-purified-qPCR	108		P	50 - 175
1940862	GFD-purified-qPCR	52.2		P	50 - 175
1941076	GFD-purified-qPCR	115		P	50 - 175
1942583	GFD-purified-qPCR	126		P	50 - 175
1942883	GFD-purified-qPCR	124		P	50 - 175
1942884	GFD-purified-qPCR	118		P	50 - 175
1942953	GFD-purified-qPCR	135		P	50 - 175
1943019	GFD-purified-qPCR	123		P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P332706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1933846	BacR-qPCR	81.2	78.3	P/P	50 - 175
1935005	BacR-qPCR	85.6		P	50 - 175
1935452	BacR-qPCR	76.4		P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P333957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935006	BacR-qPCR	86.8		P	50 - 175
1935454	BacR-qPCR	65.2		P	50 - 175
1935457	BacR-qPCR	72.3		P	50 - 175
1940011	BacR-qPCR	63.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P333374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935429	Chlorophyll-a, Corrected	11.4	Sample	P	0 - 25
1935429	Chlorophyll-a, Uncorrected	8.71	Sample	P	0 - 25
1935429	Phaeophytin-a	14.0	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
 Batch ID: P333375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935535	Chlorophyll-a, Corrected	10.9	Sample	P	0 - 25
1935535	Chlorophyll-a, Uncorrected	10.7	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P333668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935174	Escherichia Coli-Quanti-Tray	56.1	Sample	P	0 - 80
1935422	Escherichia Coli-Quanti-Tray	9.28	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P332706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933846	HF183-qPCR	0.594	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P333957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939760	HF183-qPCR	20.9	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P332706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933151	GULL2-qPCR	24.3	Spike	P	0 - 25
1933846	GULL2-qPCR	24.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P333957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939415	GULL2-qPCR	12.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P333121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935454	GFD-purified-qPCR	11.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P333940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939415	GFD-purified-qPCR	3.28	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P334197

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: P334197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1940858	GFD-purified-qPCR	9.16	Spike	P	0 - 25
1946394	GFD-purified-qPCR	13.5	Sample	P	0 - 25
1946394	GFD-purified-qPCR	126	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P332706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933846	BacR-qPCR	3.60	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P333957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939984	BacR-qPCR	11.1	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 1935452
Field Sample ID: G1WA0052_10102017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	75.1	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	84.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	90.0	P	50 - 300

Lab Sample ID: 1935453
Field Sample ID: G1WA0061_10102017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.6	P	50 - 300

Lab Sample ID: 1935454
Field Sample ID: G1WA0053_10102017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	52.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	70.7	P	50 - 300

Lab Sample ID: 1935457
Field Sample ID: G1WA0033_10102017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	79.1	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 1935457
 Field Sample ID: G1WA0033_10102017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	89.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	76.9	P	50 - 300

Lab Sample ID: 1935458
 Field Sample ID: G1WA0026_10102017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	76.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	104							11.4	
	Chlorophyll-a, Corrected	103							10.9	
	Chlorophyll-a, Uncorrected								8.71	
	Chlorophyll-a, Uncorrected								10.7	
	Phaeophytin-a								14.0	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray								56.1 9.28	
SOP-PCR-1.0	HF183-qPCR	104	107		88.4	89.0	50.5			0.594
					85.4					
	HF183-qPCR	96.6	109		69.3	80.4	72.3			20.9
					66.3					
SOP-PCR-1.2	GULL2-qPCR	96.4	62.6	121	69.1	54.3	76.0			24.1 24.3
		87.8			79.0					
	GULL2-qPCR	44.4	91.7		85.6					12.7
SOP-PCR-1.3	GFD-purified-qPCR	12.6	115		57.2	51.2	139			11.1
					85.4					
	GFD-purified-qPCR	27.2	117		54.7	140	137			3.28
					204					
	GFD-purified-qPCR	24.9	149	24.9	106	106	102		13.5	126 9.16
		149			13.6					
SOP-PCR-1.4	BacR-qPCR	110	110		81.2	78.3	85.6			3.60
					76.4					
	BacR-qPCR	131	74.0	141	65.2	72.3	63.4			11.1
		113			86.8					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1935427, 1935428, 1935429, 1935430, 1935431, 1935432, 1935433, 1935434
SM 9223 Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1935445, 1935446, 1935447, 1935448, 1935449, 1935450, 1935451
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1935452, 1935453, 1935454, 1935457, 1935458
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1935452, 1935457
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1935452, 1935454, 1935457
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1935452, 1935454, 1935457

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-4.0	Preparation of Samples by Filtration and held for qPCR Analysis	1935452, 1935453, 1935454, 1935456, 1935457, 1935458

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	10/10/2017	10/10/2017 15:32	Cathy Sherrer	10/12/2017 14:00	Kim M. Spencer	1935427, 1935428, 1935429
	10/10/2017	10/10/2017 15:32	Cathy Sherrer	10/12/2017 14:40	Kim M. Spencer	1935430, 1935431, 1935432, 1935433, 1935434
SM 9223 Quanti-Tray	10/10/2017	10/10/2017 16:30	Carina A. Tull	10/11/2017 10:40	Carina A. Tull	1935445, 1935446, 1935447, 1935448, 1935449, 1935450, 1935451
SOP-PCR-1.0	10/10/2017	10/11/2017 08:30	Avril Wood-McGrath	10/12/2017 13:22	Sarah Menz	1935452, 1935453
	10/10/2017	10/11/2017 08:30	Avril Wood-McGrath	10/30/2017 11:35	Sarah Menz	1935454, 1935457, 1935458
SOP-PCR-1.2	10/10/2017	10/11/2017 08:30	Avril Wood-McGrath	10/25/2017 14:17	Sarah Menz	1935452
	10/10/2017	10/11/2017 08:30	Avril Wood-McGrath	11/02/2017 09:22	Sarah Menz	1935457
SOP-PCR-1.3	10/10/2017	10/11/2017 08:30	Avril Wood-McGrath	11/03/2017 10:01	Sarah Menz	1935452
	10/10/2017	10/11/2017 08:30	Sarah Menz	10/18/2017 09:03	Sarah Menz	1935454
	10/10/2017	10/11/2017 08:30	Sarah Menz	11/13/2017 09:27	Sarah Menz	1935457
SOP-PCR-1.4	10/10/2017	10/11/2017 08:30	Avril Wood-McGrath	10/25/2017 10:08	Sarah Menz	1935452
	10/10/2017	10/11/2017 08:30	Avril Wood-McGrath	11/01/2017 10:23	Sarah Menz	1935454, 1935457
SOP-PCR-4.0	10/10/2017	10/11/2017 08:30	Sarah Menz	10/24/2017 11:25	Puja Jasrotia	1935452, 1935453, 1935454, 1935456, 1935457, 1935458