

Chemical Analysis Report

SO-DIST-2018-04-20-01

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

Event Description: **GOM : 8065, 8063, 3278U x 2**
Request ID: **RQ-2018-04-02-70**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 04-JUN-2018 16:49



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: Metals and Nutrients.

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: 8065-ENRE 6 @

Collection Date/Time: 04/19/2018 10:30

Field ID: G1SD0065

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986372	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P343842	
	SM 2320 B-97	Total Alkalinity	130		mg CaCO3/L	P344174	RPD
	SM 2540 D-97	TSS	8	I	mg/L	P344267	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P344178	
1986374	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P344429	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P34990	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344030	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P344039	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P344205	
1986376	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P343835	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Rookery Bay-Site 2

Collection Date/Time: 04/19/2018 11:10

Field ID: G1SD0068

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986363	EPA 180.1 Rev. 2.0	Turbidity	8.9		NTU	P343841	
	SM 2320 B-97	Total Alkalinity	132		mg CaCO3/L	P344174	RPD
	SM 2540 D-97	TSS	12		mg/L	P344267	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P344178	
1986366	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P344166	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34	I	mg N/L	P343888	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344030	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P344035	
	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P344205	
1986369	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P343835	
1986396	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P344068	
	EPA 200.8 Rev. 5.4	Arsenic	3.63		ug/L	P344068	
		Cadmium	0.20	U	ug/L	P344068	
		Chromium	1.6	U	ug/L	P344068	
		Copper	0.80	U	ug/L	P344068	
		Lead	1.0	U	ug/L	P344068	
		Nickel	0.80	U	ug/L	P344068	
		Silver	0.10	U	ug/L	P344068	
		Zinc	4.0	U	ug/L	P344068	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 05/01/2018.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Rookery Bay-Site 2

Collection Date/Time: 04/19/2018 11:15

Field ID: G1SD0068_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986364	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P343842	

Field ID: G1SD0068_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986364	SM 2320 B-97	Total Alkalinity	133		mg CaCO3/L	P344174	RPD
	SM 2540 D-97	TSS	13		mg/L	P344267	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P344178	
1986367	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P344275	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P343888	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344030	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P344035	
	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P344205	
1986370	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P343835	
1986397	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P344068	
	EPA 200.8 Rev. 5.4	Arsenic	3.68		ug/L	P344068	
		Cadmium	0.20	U	ug/L	P344068	
		Chromium	1.6	U	ug/L	P344068	
		Copper	0.80	U	ug/L	P344068	
		Lead	1.0	U	ug/L	P344068	
		Nickel	0.80	U	ug/L	P344068	
		Silver	0.10	U	ug/L	P344068	
		Zinc	4.0	U	ug/L	P344068	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 05/01/2018.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Rookery Bay-Site 1

Collection Date/Time: 04/19/2018 12:10

Field ID: G1SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986365	EPA 180.1 Rev. 2.0	Turbidity	9.6		NTU	P343842	
	SM 2320 B-97	Total Alkalinity	128		mg CaCO3/L	P344174	RPD
	SM 2540 D-97	TSS	12		mg/L	P344267	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P344178	
1986368	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P344429	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36	I	mg N/L	P343888	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344030	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P344039	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P344205	
1986371	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.010		mg P/L	P343835	
1986398	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P344068	
	EPA 200.8 Rev. 5.4	Arsenic	3.57		ug/L	P344068	
		Cadmium	0.20	U	ug/L	P344068	
		Chromium	1.6	U	ug/L	P344068	
		Copper	0.80	U	ug/L	P344068	
		Lead	1.0	U	ug/L	P344068	
		Nickel	0.80	U	ug/L	P344068	
		Silver	0.10	U	ug/L	P344068	
		Zinc	4.0	U	ug/L	P344068	

Field ID: G1SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: 8063-ENRE 2 @

Collection Date/Time: 04/19/2018 12:35

Field ID: G1SD0066

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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1986373	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P343842	
	SM 2320 B-97	Total Alkalinity	128		mg CaCO3/L	P344174	RPD
	SM 2540 D-97	TSS	8	I	mg/L	P344267	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P344178	
1986375	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P344429	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P34990	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344030	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P344039	
	SM 5310 B-00	Organic Carbon	1.0	U	mg C/L	P344205	
1986377	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P343835	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P343841

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P343842

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P344068

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P344068

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344068

Component	Result	Code	Units
Zinc	1.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344166

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344275

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344429

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343888

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34990

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344030

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344035

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344039

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343835

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2320 B-97
Batch ID: P344174

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 D-97
Batch ID: P344267

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P344178

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P344205

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	99.5		P	85 - 115
Chromium	97.3		P	85 - 115
Copper	94.7		P	85 - 115
Lead	95.5		P	85 - 115
Nickel	97.4		P	85 - 115
Silver	98.3		P	85 - 115
Zinc	97.8		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344166

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	107		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344429

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	101		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	101		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34990

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344035

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343835

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.6		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P344174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P344178

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P344205

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986497	Iron	104	105	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986497	Arsenic	104	105	P/P	70 - 130
1986497	Cadmium	84.3	86.9	P/P	70 - 130
1986497	Chromium	80.4	80.9	P/P	70 - 130
1986497	Copper	96.2	96.4	P/P	70 - 130
1986497	Lead	101	102	P/P	70 - 130
1986497	Nickel	102	103	P/P	70 - 130
1986497	Silver	86.7	87.4	P/P	70 - 130
1986497	Zinc	87.2	88.1	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985154	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986367	Ammonia-N	108	108	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986367	Ammonia-N	104	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986291	Kjeldahl Nitrogen	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34990

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986624	Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986368	NO2NO3-N	100	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986293	Total-P	99.7	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986624	Total-P	93.8	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343835

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986230	O-Phosphate-P	99.0	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P344178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986386	Fluoride	94.7	96.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P344205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986261	Organic Carbon	91.6	92.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P343841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986317	Turbidity	0.375	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P343842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986364	Turbidity	1.87	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986497	Iron	0.934	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986497	Arsenic	1.10	Spike	P	0 - 20
1986497	Cadmium	3.05	Spike	P	0 - 20
1986497	Chromium	0.641	Spike	P	0 - 20
1986497	Copper	0.273	Spike	P	0 - 20
1986497	Lead	0.986	Spike	P	0 - 20
1986497	Nickel	0.443	Spike	P	0 - 20
1986497	Silver	0.829	Spike	P	0 - 20
1986497	Zinc	1.11	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985154	Ammonia-N	0.742	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986367	Ammonia-N	0.179	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986367	Ammonia-N	0.945	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986291	Kjeldahl Nitrogen	0.246	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986624	Kjeldahl Nitrogen	0.0316	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986368	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986293	Total-P	0.998	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986624	Total-P	0.676	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343835

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986230	O-Phosphate-P	1.50	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P344174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986386	Total Alkalinity	1.95	Sample	F	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P344178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986386	Fluoride	0.953	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P344205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986261	Organic Carbon	0.391	Spike	P	0 - 20

* 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 Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83379
Included Lab Sample IDs: 1986369, 1986370, 1986371, 1986376, 1986377

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83380
Included Lab Sample IDs: 1986363, 1986364, 1986365, 1986372, 1986373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83453
Included Lab Sample IDs: 1986366, 1986367, 1986368, 1986374, 1986375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83458
Included Lab Sample IDs: 1986366, 1986367, 1986368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.4	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83467
Included Lab Sample IDs: 1986374, 1986375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.7	98.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A83489
Included Lab Sample IDs: 1986396, 1986397, 1986398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	99.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83491

Included Lab Sample IDs: 1986366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83492

Included Lab Sample IDs: 1986363, 1986364, 1986365, 1986372, 1986373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83492

Included Lab Sample IDs: 1986363, 1986364, 1986365, 1986372, 1986373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A83500

Included Lab Sample IDs: 1986366, 1986367, 1986368, 1986374, 1986375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83513

Included Lab Sample IDs: 1986366, 1986367, 1986368, 1986374, 1986375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.5	P/P	90 - 110
Total-P	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83528

Included Lab Sample IDs: 1986367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83584

Included Lab Sample IDs: 1986396, 1986397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	102	102	P/P	90 - 110
Cadmium	97.9	97.3	P/P	90 - 110
Chromium	95.7	94.2	P/P	90 - 110
Copper	101	98.0	P/P	90 - 110
Nickel	101	98.6	P/P	90 - 110
Silver	99.1	98.5	P/P	90 - 110
Zinc	101	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83587

Included Lab Sample IDs: 1986368, 1986374, 1986375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83643

Included Lab Sample IDs: 1986396, 1986397, 1986398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	101	P/P	90 - 110
Cadmium	97.7	98.2	P/P	90 - 110
Chromium	96.1	96.5	P/P	90 - 110
Lead	97.0	97.5	P/P	90 - 110
Nickel	100	100	P/P	90 - 110
Silver	98.8	99.1	P/P	90 - 110
Zinc	99.6	99.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83713

Included Lab Sample IDs: 1986398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	99.5	97.4	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.375	
	Turbidity				1.87	
EPA 200.7 Rev. 4.4	Iron	103	104 105			0.934
EPA 200.8 Rev. 5.4	Arsenic	100	104 105			1.10
	Cadmium	99.5	84.3 86.9			3.05
	Chromium	97.3	80.4 80.9			0.641
	Copper	94.7	96.2 96.4			0.273
	Lead	95.5	101 102			0.986
	Nickel	97.4	102 103			0.443
	Silver	98.3	86.7 87.4			0.829
	Zinc	97.8	87.2 88.1			1.11
EPA 350.1 Rev. 2.0	Ammonia-N	100	103 104			0.742
	Ammonia-N	107	108 108			0.179
	Ammonia-N	101	104 105			0.945
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	102 102			0.246
	Kjeldahl Nitrogen	98.6	103 103			0.0316
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	100 99.0			1.01
EPA 365.1 Rev. 2.0	Total-P	101	99.7 101			0.998

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 365.1 Rev. 2.0	Total-P	105	93.8 94.6			0.676
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.6	99.0 100			1.50
SM 2320 B-97	Total Alkalinity	101			1.95	
SM 4500 F-C-97	Fluoride	95.3	94.7 96.2			0.953
SM 5310 B-00	Organic Carbon	95.6	91.6 92.1			0.391

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1986363, 1986364, 1986365, 1986372, 1986373
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1986396, 1986397, 1986398
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1986396, 1986397, 1986398
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1986366, 1986367, 1986368, 1986374, 1986375
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1986366, 1986367, 1986368, 1986374, 1986375
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1986366, 1986367, 1986368, 1986374, 1986375
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1986366, 1986367, 1986368, 1986374, 1986375
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1986369, 1986370, 1986371, 1986376, 1986377
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1986363, 1986364, 1986365, 1986372, 1986373
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1986363, 1986364, 1986365, 1986372, 1986373
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1986363, 1986364, 1986365, 1986372, 1986373
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1986366, 1986367, 1986368, 1986374, 1986375

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/20/2018			04/20/2018 16:58	Tanya Welborn	1986363, 1986364, 1986365, 1986372, 1986373
EPA 200.7 Rev. 4.4	04/20/2018	04/25/2018 17:50	Elliott D. Healy	04/26/2018 15:18	Betina Topolski	1986396
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	04/26/2018 15:29	Betina Topolski	1986397
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	04/26/2018 15:39	Betina Topolski	1986398
EPA 200.8 Rev. 5.4	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/01/2018 21:10	Nadine Brooks	1986396
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/01/2018 21:19	Nadine Brooks	1986397
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/01/2018 22:54	Nadine Brooks	1986396
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/01/2018 23:04	Nadine Brooks	1986397
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/03/2018 14:30	Nadine Brooks	1986396
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/03/2018 14:39	Nadine Brooks	1986397
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/03/2018 14:49	Nadine Brooks	1986398
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/03/2018 15:56	Nadine Brooks	1986398
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/03/2018 18:01	Nadine Brooks	1986398
	04/20/2018	04/25/2018 17:50	Elliott D. Healy	05/08/2018 02:02	Nadine Brooks	1986398
EPA 350.1 Rev. 2.0	04/20/2018			04/24/2018 12:47	Ping Hua	1986366
	04/20/2018			04/27/2018 12:22	Ping Hua	1986367
	04/20/2018			04/30/2018 13:06	Ping Hua	1986368
	04/20/2018			04/30/2018 13:08	Ping Hua	1986374
	04/20/2018			04/30/2018 13:15	Ping Hua	1986375
EPA 351.2 Rev. 2.0	04/20/2018	04/23/2018 16:00	Adrian Shelby	04/25/2018 11:37	Tanya Welborn	1986366
	04/20/2018	04/23/2018 16:00	Adrian Shelby	04/25/2018 11:38	Tanya Welborn	1986367
	04/20/2018	04/23/2018 16:00	Adrian Shelby	04/25/2018 11:40	Tanya Welborn	1986368
	04/20/2018	04/25/2018 10:20	Adrian Shelby	04/25/2018 16:31	Tanya Welborn	1986374
	04/20/2018	04/25/2018 10:20	Adrian Shelby	04/25/2018 16:32	Tanya Welborn	1986375
EPA 353.2 Rev. 2.0	04/20/2018			04/25/2018 12:01	Lauren Bottorf	1986366
	04/20/2018			04/25/2018 12:02	Lauren Bottorf	1986367
	04/20/2018			04/25/2018 12:03	Lauren Bottorf	1986368
	04/20/2018			04/25/2018 12:04	Lauren Bottorf	1986374
	04/20/2018			04/25/2018 12:05	Lauren Bottorf	1986375
EPA 365.1 Rev. 2.0	04/20/2018	04/25/2018 13:20	Sima Feizi	04/27/2018 12:43	Beverly Y. Sanders	1986366
	04/20/2018	04/25/2018 13:20	Sima Feizi	04/27/2018 12:50	Beverly Y. Sanders	1986367
	04/20/2018	04/25/2018 13:20	Sima Feizi	04/27/2018 12:52	Beverly Y. Sanders	1986368
	04/20/2018	04/25/2018 13:20	Sima Feizi	04/27/2018 12:53	Beverly Y. Sanders	1986374
	04/20/2018	04/25/2018 13:20	Sima Feizi	04/27/2018 12:54	Beverly Y. Sanders	1986375
EPA 365.1 Rev. 2.0 dissolved	04/20/2018			04/20/2018 15:30	Megan Treadwell	1986369
	04/20/2018			04/20/2018 15:31	Megan Treadwell	1986370
	04/20/2018			04/20/2018 15:32	Megan Treadwell	1986371
	04/20/2018			04/20/2018 15:33	Megan Treadwell	1986376
	04/20/2018			04/20/2018 15:34	Megan Treadwell	1986377

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	04/20/2018			04/27/2018 01:13	Dale L. Simmons	1986363
	04/20/2018			04/27/2018 01:22	Dale L. Simmons	1986364
	04/20/2018			04/27/2018 01:32	Dale L. Simmons	1986365
	04/20/2018			04/27/2018 01:42	Dale L. Simmons	1986372
	04/20/2018			04/27/2018 01:52	Dale L. Simmons	1986373
SM 2540 D-97	04/20/2018			04/24/2018 15:21	Yijie Li	1986363, 1986364, 1986365, 1986372, 1986373
SM 4500 F-C-97	04/20/2018			04/26/2018 22:45	Dale L. Simmons	1986363
	04/20/2018			04/26/2018 22:48	Dale L. Simmons	1986364
	04/20/2018			04/26/2018 22:52	Dale L. Simmons	1986365
	04/20/2018			04/26/2018 22:56	Dale L. Simmons	1986372
	04/20/2018			04/26/2018 22:59	Dale L. Simmons	1986373
SM 5310 B-00	04/20/2018			04/26/2018 08:53	Megan Treadwell	1986366
	04/20/2018			04/26/2018 09:07	Megan Treadwell	1986367
	04/20/2018			04/26/2018 09:39	Megan Treadwell	1986368
	04/20/2018			04/26/2018 09:55	Megan Treadwell	1986374
	04/20/2018			04/26/2018 10:11	Megan Treadwell	1986375