

Chemical Analysis Report

SW-DIST-2016-10-04-01

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

Event Description: **RUN 1**
Request ID: **RQ-2016-10-03-39**
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
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 31-OCT-2016 11:00

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: 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: Cockroach Creek Hills. County

Collection Date/Time: 10/03/2016 13:00

Field ID: G1SW0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1837729	EPA 180.1 Rev. 2.0	Turbidity	9.3		NTU	P312459	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P313185	
		Sulfate	170		mg SO4/L	P313009	
	SM 2120 B	Color (true)	110	A	PCU	P312425	
	SM 2320 B-97	Total Alkalinity	72		mg CaCO3/L	P312949	
	SM 2540 C-97	TDS	436		mg/L	P312931	
	SM 2540 D-97	TSS	22		mg/L	P312857	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P312950	
1837733	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P312997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P313089	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P312629	
	EPA 365.1 Rev. 2.0	Total-P	0.61		mg P/L	P313326	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P312579	
1837737	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.49		mg P/L	P312439	

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: Delany Creek Hills. County

Collection Date/Time: 10/03/2016 14:35

Field ID: G1SW0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1837730	EPA 180.1 Rev. 2.0	Turbidity	8.1		NTU	P312459	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P313006	
		Sulfate	14		mg SO4/L	P313009	
	SM 2120 B	Color (true)	62		PCU	P312425	
	SM 2320 B-97	Total Alkalinity	90		mg CaCO3/L	P312764	
	SM 2540 C-97	TDS	174		mg/L	P312931	
	SM 2540 D-97	TSS	11		mg/L	P312857	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P312768	
1837734	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P312997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P313089	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P312629	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P313326	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P312579	
1837738	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P312439	

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: Delany Creek Duplicate G1SW0046

Collection Date/Time: 10/03/2016 14:40

Field ID: DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1837731	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P312459	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P313006	
		Sulfate	14		mg SO4/L	P313009	

Field ID: DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1837731	SM 2120 B	Color (true)	63		PCU	P312425	
	SM 2320 B-97	Total Alkalinity	91		mg CaCO3/L	P312764	
	SM 2540 C-97	TDS	177	A	mg/L	P312931	
	SM 2540 D-97	TSS	10	I	mg/L	P312857	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P312768	
1837735	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P312997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P313089	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P312629	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P313326	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P312579	
1837739	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P312439	

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: FIELD BLANK

Collection Date/Time: 10/03/2016 14:45

Field ID: BLANK

Matrix: DI-WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1837732	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P312459	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P313007	
		Sulfate	0.20	U	mg SO4/L	P313010	
		Color (true)	2.5	U	PCU	P312425	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P312764	
	SM 2540 C-97	TDS	15	U	mg/L	P312928	
	SM 2540 D-97	TSS	2	U	mg/L	P312854	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P312768	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P312997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P313635	
1837736	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312629	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P313326	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P312579	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P312439	

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: P312459

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P313006

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313006

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313007

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313009

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313010

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313185

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312997

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313089

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313635

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312629

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313326

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312439

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

Reference Method: SM 2120 B
Batch ID: P312425

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P312764

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

Reference Method: SM 2320 B-97
Batch ID: P312949

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

Reference Method: SM 2540 C-97
Batch ID: P312928

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P312931

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312854

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312857

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P312768

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P312579

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313006

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313007

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313009

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	91.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313010

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313185

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312997

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312997

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	106		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313089

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312629

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313326

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312439

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

Reference Method: SM 2320 B-97
Batch ID: P312764

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P312949

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P312768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P312579

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837866	Chloride	98.3		P	90 - 110
1837867	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313007

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1838152	Chloride	101		P	90 - 110
1838288	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313009

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837866	Sulfate	95.2		P	90 - 110
1837867	Sulfate	96.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313010

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1838152	Sulfate	97.0		P	90 - 110
1838288	Sulfate	96.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839905	Chloride	101		P	90 - 110
1839906	Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837675	Ammonia-N	103	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313089

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837674	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839912	Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837672	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837670	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312439

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837679	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P312768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1838147	Fluoride	99.0	100	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1838791	Fluoride	99.1	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P312579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1837669	Organic Carbon	96.2	96.4	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P312459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837683	Turbidity	1.38	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837866	Chloride	0.127	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838288	Chloride	0.0971	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313009

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837866	Sulfate	0.711	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313010

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838288	Sulfate	0.218	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839905	Chloride	0.181	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837675	Ammonia-N	0.274	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837674	Kjeldahl Nitrogen	0.305	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839912	Kjeldahl Nitrogen	1.99	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837672	NO2NO3-N	1.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837670	Total-P	0.516	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312439

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837679	O-Phosphate-P	1.18	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P312425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837729	Color (true)	1.34	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P312764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838147	Total Alkalinity	0.0857	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P312949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838791	Total Alkalinity	0.0488	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P312928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837221	TDS	4.03	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P312931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837731	TDS	6.78	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P312768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838147	Fluoride	0.998	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838791	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P312579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837669	Organic Carbon	0.200	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: SM 2120 B
Run ID: A72005
Included Lab Sample IDs: 1837729, 1837730, 1837731, 1837732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72014
Included Lab Sample IDs: 1837737, 1837738, 1837739, 1837740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	97.9	P/P	90 - 110
O-Phosphate-P	99.2	99.0	P/P	90 - 110
O-Phosphate-P	99.8	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72017
Included Lab Sample IDs: 1837729, 1837730, 1837731, 1837732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A72017

Included Lab Sample IDs: 1837729, 1837730, 1837731, 1837732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A72048

Included Lab Sample IDs: 1837733, 1837734, 1837735, 1837736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72060

Included Lab Sample IDs: 1837733, 1837734, 1837735, 1837736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A72105

Included Lab Sample IDs: 1837730, 1837731, 1837732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A72105

Included Lab Sample IDs: 1837730, 1837731, 1837732

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72131

Included Lab Sample IDs: 1837730, 1837731, 1837732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	98.9	P/P	90 - 110
Chloride	98.9	97.9	P/P	90 - 110
Sulfate	97.6	93.3	P/P	90 - 110
Sulfate	97.9	97.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A72166

Included Lab Sample IDs: 1837729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A72166

Included Lab Sample IDs: 1837729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72180

Included Lab Sample IDs: 1837733, 1837734, 1837735, 1837736

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72200

Included Lab Sample IDs: 1837729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	101	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72284

Included Lab Sample IDs: 1837736

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72285

Included Lab Sample IDs: 1837733, 1837734, 1837735

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72297

Included Lab Sample IDs: 1837733, 1837734, 1837735

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72456

Included Lab Sample IDs: 1837736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	101	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		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				1.38	
EPA 300.0 Rev. 2.1	Chloride	97.7	98.3	99.5	0.127	
	Chloride	99.7	100	101	0.0971	
	Chloride	97.7	101	101	0.181	
	Sulfate	91.5	95.2	96.5	0.711	
	Sulfate	96.8	96.0	97.0	0.218	
EPA 350.1 Rev. 2.0	Ammonia-N	106	103	103		0.274
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.8	104	104		0.305
	Kjeldahl Nitrogen	109	104	101		1.99
EPA 353.2 Rev. 2.0	NO2NO3-N	106	104	105		1.33
EPA 365.1 Rev. 2.0	Total-P	100	100	101		0.516
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	101	102		1.18
SM 2120 B	Color (true)				1.34	
SM 2320 B-97	Total Alkalinity	103			0.0857	
	Total Alkalinity	103			0.0488	
SM 2540 C-97	TDS				4.03	
	TDS				6.78	
SM 4500 F-C-97	Fluoride	99.4	99.0	100		0.998
	Fluoride	96.1	99.1	99.1		0.0
SM 5310 B-00	Organic Carbon	98.2	96.2	96.4		0.200

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1837729, 1837730, 1837731, 1837732
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1837729, 1837730, 1837731, 1837732
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1837729, 1837730, 1837731, 1837732
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1837733, 1837734, 1837735, 1837736
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1837733, 1837734, 1837735, 1837736
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1837733, 1837734, 1837735, 1837736
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1837733, 1837734, 1837735, 1837736
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1837737, 1837738, 1837739, 1837740
SM 2120 B / E31780	True Color measured at 450 nm	1837729, 1837730, 1837731, 1837732
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1837729, 1837730, 1837731, 1837732
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1837729, 1837730, 1837731, 1837732
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1837729, 1837730, 1837731, 1837732
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1837729, 1837730, 1837731, 1837732
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1837733, 1837734, 1837735, 1837736

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	10/04/2016			10/04/2016 15:32	Sima Feizi	1837729, 1837730, 1837731, 1837732
EPA 300.0 Rev. 2.1	10/04/2016			10/12/2016	Ping Hua	1837730, 1837731, 1837732
	10/04/2016			10/14/2016	Ping Hua	1837729
EPA 350.1 Rev. 2.0	10/04/2016			10/11/2016	Sofia Elnemr	1837733, 1837734, 1837735, 1837736
EPA 351.2 Rev. 2.0	10/04/2016	10/13/2016	Adrian Shelby	10/18/2016	Joseph Suarez	1837733, 1837734, 1837735
	10/04/2016	10/21/2016	Adrian Shelby	10/27/2016	Christopher Armour	1837736
EPA 353.2 Rev. 2.0	10/04/2016			10/06/2016	Peter D. Kaus	1837733, 1837734, 1837735, 1837736
EPA 365.1 Rev. 2.0	10/04/2016	10/17/2016	Vijayalakshmi Reddy	10/18/2016	Lipi Saha	1837733, 1837734, 1837735, 1837736
EPA 365.1 Rev. 2.0 dissolved	10/04/2016			10/04/2016 16:05	Julia Storbeck	1837740
	10/04/2016			10/04/2016 17:09	Julia Storbeck	1837738
	10/04/2016			10/04/2016 17:10	Julia Storbeck	1837739
	10/04/2016			10/04/2016 17:17	Julia Storbeck	1837737
SM 2120 B	10/04/2016			10/04/2016 19:03	Julie Michelle Frank	1837729, 1837730
	10/04/2016			10/04/2016 19:04	Julie Michelle Frank	1837731
	10/04/2016			10/04/2016 19:05	Julie Michelle Frank	1837732
SM 2320 B-97	10/04/2016			10/09/2016	Dale L. Simmons	1837730, 1837731, 1837732
	10/04/2016			10/11/2016	Dale L. Simmons	1837729
SM 2540 C-97	10/04/2016			10/06/2016	Yijie Li	1837729, 1837730, 1837731, 1837732
SM 2540 D-97	10/04/2016			10/06/2016	Yijie Li	1837729, 1837730, 1837731, 1837732
SM 4500 F-C-97	10/04/2016			10/09/2016	Dale L. Simmons	1837730, 1837731, 1837732
	10/04/2016			10/11/2016	Dale L. Simmons	1837729
SM 5310 B-00	10/04/2016			10/05/2016	Julie Michelle Frank	1837733, 1837734, 1837735, 1837736