

Chemical Analysis Report

SW-DIST-2016-09-29-01

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

Event Description: **RUN 10**
Request ID: **RQ-2016-09-26-08**
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: Stephen Clingerman

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-OCT-2016 14:23

A handwritten signature in black ink, appearing to read "Liang Lin", 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: LAKE THOMAS

Collection Date/Time: 09/28/2016 10:05

Field ID: G5SW0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836244	EPA 180.1 Rev. 2.0	Turbidity	2.1	A	NTU	P312161	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P312593	
		Sulfate	6.5		mg SO4/L	P312834	
	SM 2120 B	Color (true)	26		PCU	P312148	
	SM 2320 B-97	Total Alkalinity	2.8	A	mg CaCO3/L	P312748	
	SM 2540 C-97	TDS	81		mg/L	P312958	
	SM 2540 D-97	TSS	3	I	mg/L	P312925	
	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P312355	
1836251	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P312902	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P312783	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312622	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P313109	
	SM 5310 B-00	Organic Carbon	8.4		mg C/L	P312464	
1836258	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P312155	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LAKE THOMAS W

Collection Date/Time: 09/28/2016 10:15

Field ID: G5SW0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836245	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P312161	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P312593	
		Sulfate	6.5		mg SO4/L	P312834	
	SM 2120 B	Color (true)	27		PCU	P312148	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P312748	
	SM 2540 C-97	TDS	69		mg/L	P312958	
	SM 2540 D-97	TSS	3	I	mg/L	P312925	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P312355	
1836252	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P312902	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P312783	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312622	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P313109	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P312464	
1836259	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P312155	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BIG VIENNA LAKE N

Collection Date/Time: 09/28/2016 11:00

Field ID: G5SW0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836246	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P312161	

Field ID: G5SW0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836246	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P312591	
		Sulfate	10		mg SO4/L	P312588	
	SM 2120 B	Color (true)	42		PCU	P312148	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P312748	
	SM 2540 C-97	TDS	107		mg/L	P312958	
	SM 2540 D-97	TSS	3	I	mg/L	P312925	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P312355	
1836253	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P312902	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P312783	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312622	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P313109	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P312464	
1836260	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P312155	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BIG VIENNA LAKE S

Collection Date/Time: 09/28/2016 11:10

Field ID: G5SW0114

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836247	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P312161	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P312591	
		Sulfate	11		mg SO4/L	P312588	
	SM 2120 B	Color (true)	43		PCU	P312148	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P312748	
	SM 2540 C-97	TDS	102		mg/L	P312958	
	SM 2540 D-97	TSS	3	I	mg/L	P312925	
1836254	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P312355	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P313233	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P312783	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312622	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P313110	
1836261	SM 5310 B-00	Organic Carbon	11		mg C/L	P312464	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P312155	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: VIENNA LAKE N

Collection Date/Time: 09/28/2016 11:35

Field ID: G5SW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836248	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P312161	
	EPA 300.0 Rev. 2.1	Chloride	22	A	mg Cl/L	P312591	
		Sulfate	9.7	A	mg SO4/L	P312588	

Field ID: G5SW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836248	SM 2120 B	Color (true)	40		PCU	P312148	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P312748	
	SM 2540 C-97	TDS	116		mg/L	P312958	
	SM 2540 D-97	TSS	3	I	mg/L	P312925	
	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P312355	
1836255	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P312876	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P312783	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312622	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P313110	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P312464	
1836262	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P312155	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: VIENNA LAKE S

Collection Date/Time: 09/28/2016 11:45

Field ID: G5SW0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836249	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P312161	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P312591	
		Sulfate	9.7		mg SO4/L	P312588	
	SM 2120 B	Color (true)	43	A	PCU	P312148	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P312748	
	SM 2540 C-97	TDS	113		mg/L	P312958	
	SM 2540 D-97	TSS	3	I	mg/L	P312925	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P312355	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P312876	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P312783	
1836256	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312622	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P313110	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P312464	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P312156	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: KLOSTERMAN BAYOU N.

Collection Date/Time: 09/28/2016 13:30

Field ID: G5SW0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836250	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P312161	
	EPA 300.0 Rev. 2.1	Chloride	89		mg Cl/L	P312591	
		Sulfate	35		mg SO4/L	P312588	
	SM 2120 B	Color (true)	110		PCU	P312148	
	SM 2320 B-97	Total Alkalinity	94		mg CaCO3/L	P312748	

Field ID: G5SW0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836250	SM 2540 C-97	TDS	313		mg/L	P312959	
	SM 2540 D-97	TSS	7	I	mg/L	P312926	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P312355	
1836257	EPA 350.1 Rev. 2.0	Ammonia-N	0.079		mg N/L	P312876	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P312783	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.70		mg N/L	P312622	
	EPA 365.1 Rev. 2.0	Total-P	0.47		mg P/L	P313110	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P312464	
1836264	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.35		mg P/L	P312156	

Ref. Method and Comment:

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P312161

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312588

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312591

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312593

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312834

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P312876

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P313233

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312783

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312622

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313109

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313110

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312156

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

Reference Method: SM 2120 B
Batch ID: P312148

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P312748

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P312958

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P312959

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312925

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312926

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P312464

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: P312588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312591

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312591

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312593

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312876

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P313233

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312783

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	91.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312622

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313109

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.3		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313110

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312156

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

Reference Method: SM 2320 B-97
Batch ID: P312748

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

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P312464

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836246	Sulfate	94.5		P	90 - 110
1836248	Sulfate	94.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836246	Chloride	99.0		P	90 - 110
1836248	Chloride	98.9		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836244	Chloride	96.6	99.2	P/P	90 - 110
1836245	Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836244	Sulfate	93.5	93.3	P/P	90 - 110
1836245	Sulfate	94.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836255	Ammonia-N	97.4	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836159	Ammonia-N	98.5	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P313233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836136	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312783

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836251	Kjeldahl Nitrogen	97.1	93.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312622

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836188	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836159	Total-P	99.7	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836254	Total-P	94.4	97.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836259	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312156

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836263	O-Phosphate-P	98.6	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836244	Fluoride	98.7	98.7	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P312161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836244	Turbidity	4.83	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836248	Sulfate	0.218	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836248	Chloride	0.198	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836244	Chloride	1.55	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836244	Sulfate	0.167	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836255	Ammonia-N	1.93	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836159	Ammonia-N	0.0676	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P313233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836136	Ammonia-N	0.499	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312783

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836251	Kjeldahl Nitrogen	2.47	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836188	NO2NO3-N	1.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836159	Total-P	3.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836254	Total-P	3.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836259	O-Phosphate-P	0.681	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312156

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836263	O-Phosphate-P	0.607	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P312148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836249	Color (true)	3.29	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P312748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836244	Total Alkalinity	0.724	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P312958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836191	TDS	1.22	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P312959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836283	TDS	4.60	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P312926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836283	TSS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836244	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P312464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836188	Organic Carbon	0.0336	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A71923

Included Lab Sample IDs: 1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	99.6	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A71924

Included Lab Sample IDs: 1836258, 1836259, 1836260, 1836261, 1836262, 1836263, 1836264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	100	P/P	90 - 110
O-Phosphate-P	98.2	98.4	P/P	90 - 110
O-Phosphate-P	98.3	98.2	P/P	90 - 110
O-Phosphate-P	98.4	98.0	P/P	90 - 110
O-Phosphate-P	99.0	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A71925

Included Lab Sample IDs: 1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71988

Included Lab Sample IDs: 1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.4	98.7	P/P	90 - 110
Chloride	97.5	98.7	P/P	90 - 110
Chloride	98.7	97.2	P/P	90 - 110
Sulfate	94.3	96.2	P/P	90 - 110
Sulfate	96.2	94.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71991

Included Lab Sample IDs: 1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250

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

Reference Method: SM 5310 B-00

Run ID: A72021

Included Lab Sample IDs: 1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257

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

Reference Method: SM 5310 B-00

Run ID: A72021

Included Lab Sample IDs: 1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72059

Included Lab Sample IDs: 1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257

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

Reference Method: SM 2320 B-97

Run ID: A72099

Included Lab Sample IDs: 1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72131

Included Lab Sample IDs: 1836244, 1836245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	101	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72149

Included Lab Sample IDs: 1836255, 1836256, 1836257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72156

Included Lab Sample IDs: 1836251, 1836252, 1836253

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72189

Included Lab Sample IDs: 1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.6	98.2	P/P	90 - 110
Kjeldahl Nitrogen	96.2	99.0	P/P	90 - 110
Kjeldahl Nitrogen	98.2	96.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72232

Included Lab Sample IDs: 1836257

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72233

Included Lab Sample IDs: 1836251, 1836252, 1836253, 1836254, 1836255, 1836256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	99.8	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72241

Included Lab Sample IDs: 1836254

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.8	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					4.83	
EPA 300.0 Rev. 2.1	Chloride	97.9	98.9	99.0		0.198	
	Chloride	97.3	96.6	99.2	99.8		1.55
	Sulfate	94.6	94.7	94.5		0.218	
	Sulfate	95.7	93.5	93.3	94.6		0.167
EPA 350.1 Rev. 2.0	Ammonia-N	104	97.4	99.6			1.93
	Ammonia-N	103	98.5	98.6			0.0676
	Ammonia-N	102	101	100			0.499
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	91.0	97.1	93.3			2.47
EPA 353.2 Rev. 2.0	NO2NO3-N	107	106	104			1.37
EPA 365.1 Rev. 2.0	Total-P	98.3	99.7	96.0			3.50
	Total-P	97.3	94.4	97.8			3.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	103			0.681
	O-Phosphate-P	98.8	98.6	99.2			0.607
SM 2120 B	Color (true)					3.29	
SM 2320 B-97	Total Alkalinity	103				0.724	
SM 2540 C-97	TDS					1.22	
	TDS					4.60	
SM 2540 D-97	TSS					0.0	
SM 4500 F-C-97	Fluoride	99.3	98.7	98.7			0.0
SM 5310 B-00	Organic Carbon	98.8					0.0336

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1836258, 1836259, 1836260, 1836261, 1836262, 1836263, 1836264
SM 2120 B / E31780	True Color measured at 450 nm	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257

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	09/29/2016			09/29/2016 15:56	Sima Feizi	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
EPA 300.0 Rev. 2.1	09/29/2016			10/05/2016	Ping Hua	1836244, 1836245
	09/29/2016			10/06/2016	Ping Hua	1836246, 1836247, 1836248, 1836249, 1836250
	09/29/2016			10/10/2016	Ping Hua	1836244, 1836245
EPA 350.1 Rev. 2.0	09/29/2016			10/07/2016	Sofia Elnemr	1836251, 1836252, 1836253, 1836255, 1836256, 1836257
	09/29/2016			10/13/2016	Sofia Elnemr	1836254
EPA 351.2 Rev. 2.0	09/29/2016	10/10/2016	Adrian Shelby	10/12/2016	Joseph Suarez	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257
EPA 353.2 Rev. 2.0	09/29/2016			10/06/2016	Beverly Y. Sanders	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257
EPA 365.1 Rev. 2.0	09/29/2016	10/13/2016	Vijayalakshmi Reddy	10/14/2016	Lipi Saha	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257
EPA 365.1 Rev. 2.0 dissolved	09/29/2016			09/29/2016 15:06	Julia Storbeck	1836259
	09/29/2016			09/29/2016 15:14	Julia Storbeck	1836263
	09/29/2016			09/29/2016 15:58	Julia Storbeck	1836258
	09/29/2016			09/29/2016 16:04	Julia Storbeck	1836260, 1836261
	09/29/2016			09/29/2016 16:05	Julia Storbeck	1836262
	09/29/2016			09/29/2016 16:24	Julia Storbeck	1836264
SM 2120 B	09/29/2016			09/29/2016 15:08	Julie Michelle Frank	1836244
	09/29/2016			09/29/2016 15:09	Julie Michelle Frank	1836245
	09/29/2016			09/29/2016 15:10	Julie Michelle Frank	1836246, 1836247
	09/29/2016			09/29/2016 15:11	Julie Michelle Frank	1836248
	09/29/2016			09/29/2016 15:13	Julie Michelle Frank	1836249, 1836250
SM 2320 B-97	09/29/2016			10/08/2016	Dale L. Simmons	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 2540 C-97	09/29/2016			10/03/2016	Sima Feizi	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 2540 D-97	09/29/2016			10/03/2016	Sima Feizi	1836244, 1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 4500 F-C-97	09/29/2016			10/03/2016	Dale L. Simmons	1836244
	09/29/2016			10/04/2016	Dale L. Simmons	1836245, 1836246, 1836247, 1836248, 1836249, 1836250
SM 5310 B-00	09/29/2016			10/04/2016	Julie Michelle Frank	1836251, 1836252, 1836253, 1836254, 1836255, 1836256, 1836257