

Chemical Analysis Report

WAS-SECT-2018-03-07-01

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

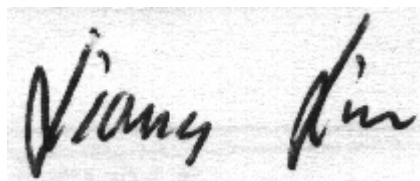
Event Description: **NE Tallahassee lakes**
Request ID: **RQ-2018-03-05-26**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 28-MAR-2018 16:56

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: Petty Gulf Lake Middle

Collection Date/Time: 03/07/2018 08:45

Field ID: G1WA0022

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972785	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P341136	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P341421	
		Sulfate	0.87		mg SO4/L	P341426	
	SM 2120 B	Color (true)	16		PCU	P341128	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P341522	
	SM 2540 C-97	TDS	28		mg/L	P341593	
	SM 2540 D-97	TSS	3	I	mg/L	P341610	
	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P341525	
1972790	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P341565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P341360	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P341287	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P341316	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P341579	
1972795	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341143	

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: Pine Hill Lake Middle

Collection Date/Time: 03/07/2018 08:20

Field ID: G1WA0054

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972786	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P341136	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P341421	
		Sulfate	1.2		mg SO4/L	P341426	
	SM 2120 B	Color (true)	13		PCU	P341128	
	SM 2320 B-97	Total Alkalinity	8.2		mg CaCO3/L	P341522	
	SM 2540 C-97	TDS	30		mg/L	P341593	
	SM 2540 D-97	TSS	3	I	mg/L	P341610	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P341525	
1972791	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P341565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P341360	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P341287	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P341316	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P341579	
1972796	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341143	

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: Lower Dianne Lake Middle

Collection Date/Time: 03/07/2018 09:30

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972787	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P341136	
	EPA 300.0 Rev. 2.1	Chloride	7.4		mg Cl/L	P341421	
		Sulfate	1.1		mg SO4/L	P341426	

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972787	SM 2120 B	Color (true)	9.4		PCU	P341128	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P341522	
	SM 2540 C-97	TDS	42		mg/L	P341593	
	SM 2540 D-97	TSS	2	I	mg/L	P341610	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P341525	
1972792	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P341565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P341360	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341287	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P341316	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P341579	
1972797	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341143	

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: Upper Dianne Lake Middle

Collection Date/Time: 03/07/2018 10:40

Field ID: G1WA0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972788	EPA 180.1 Rev. 2.0	Turbidity	3.2	A	NTU	P341137	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P341421	
		Sulfate	1.9		mg SO4/L	P341426	
	SM 2120 B	Color (true)	12		PCU	P341128	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P341522	
	SM 2540 C-97	TDS	40		mg/L	P341593	
	SM 2540 D-97	TSS	4	I	mg/L	P341610	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P341525	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P341565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P341360	
1972793	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341287	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P341316	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P341579	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341143	

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: Lake Monkey Business Middle

Collection Date/Time: 03/07/2018 11:05

Field ID: G1WA0036

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972789	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P341137	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P341421	
		Sulfate	1.3		mg SO4/L	P341426	
	SM 2120 B	Color (true)	20		PCU	P341128	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P341522	
	SM 2540 C-97	TDS	33		mg/L	P341593	
	SM 2540 D-97	TSS	4	I	mg/L	P341610	

Field ID: G1WA0036

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972789	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P341525	
1972794	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P341566	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P341360	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341287	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P341316	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P341579	
1972799	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341143	

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: P341136

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P341137

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341421

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341426

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P341565

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P341566

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P341360

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341287

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341316

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341143

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

Reference Method: SM 2120 B
Batch ID: P341128

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P341522

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

Reference Method: SM 2540 C-97
Batch ID: P341593

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P341610

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P341525

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P341579

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: P341421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341426

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341565

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341566

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341360

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341287

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341316

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: P341143

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.3		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P341522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P341525

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P341579

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972608	Chloride	103		P	90 - 110
1972611	Chloride	97.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972608	Sulfate	102		P	90 - 110
1972611	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341565

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972712	Ammonia-N	97.0	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972794	Ammonia-N	98.2	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972794	Kjeldahl Nitrogen	91.5	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341287

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972712	NO2NO3-N	104	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P341316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972712	Total-P	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P341143

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972795	O-Phosphate-P	95.5	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P341525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972878	Fluoride	93.3	95.4	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P341579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972591	Organic Carbon	98.0	99.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P341136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972711	Turbidity	1.09	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P341137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972788	Turbidity	0.316	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972608	Chloride	1.84	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972608	Sulfate	0.830	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972712	Ammonia-N	1.16	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972794	Ammonia-N	0.0948	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972794	Kjeldahl Nitrogen	4.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972712	NO2NO3-N	0.351	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972712	Total-P	1.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972795	O-Phosphate-P	1.46	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P341128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972674	Color (true)	0.0279	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P341522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972878	Total Alkalinity	0.748	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P341593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972817	TDS	4.58	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P341525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972878	Fluoride	1.95	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P341579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972591	Organic Carbon	0.708	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: A82485
Included Lab Sample IDs: 1972785, 1972786, 1972787, 1972788, 1972789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	100	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82487
Included Lab Sample IDs: 1972785, 1972786, 1972787, 1972788, 1972789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82489
Included Lab Sample IDs: 1972795, 1972796, 1972797, 1972798, 1972799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	102	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A82509
Included Lab Sample IDs: 1972785, 1972786, 1972787, 1972788, 1972789

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82509

Included Lab Sample IDs: 1972785, 1972786, 1972787, 1972788, 1972789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	94.7	96.6	P/P	90 - 110
Chloride	96.6	94.7	P/P	90 - 110
Sulfate	96.2	97.9	P/P	90 - 110
Sulfate	97.9	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82523

Included Lab Sample IDs: 1972790, 1972791, 1972792, 1972793, 1972794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82550

Included Lab Sample IDs: 1972790, 1972791, 1972792, 1972793, 1972794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82603

Included Lab Sample IDs: 1972790, 1972791, 1972792, 1972793, 1972794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	102	P/P	90 - 110
Kjeldahl Nitrogen	99.2	105	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82604

Included Lab Sample IDs: 1972785, 1972786, 1972787, 1972788, 1972789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82604

Included Lab Sample IDs: 1972785, 1972786, 1972787, 1972788, 1972789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	98.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82613

Included Lab Sample IDs: 1972790, 1972791, 1972792, 1972793, 1972794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	101	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A82620

Included Lab Sample IDs: 1972790, 1972791, 1972792, 1972793, 1972794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.7	98.6	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				1.09	
	Turbidity				0.316	
EPA 300.0 Rev. 2.1	Chloride	97.2	103 97.0		1.84	
	Sulfate	99.2	102 98.2		0.830	
EPA 350.1 Rev. 2.0	Ammonia-N	97.9	97.0 98.4			1.16
	Ammonia-N	98.3	98.2 98.3			0.0948
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	91.5 98.3			4.52
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104 103			0.351
EPA 365.1 Rev. 2.0	Total-P	105	103 105			1.65
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	95.5 96.9			1.46
SM 2120 B	Color (true)				0.0279	
SM 2320 B-97	Total Alkalinity	98.8			0.748	
SM 2540 C-97	TDS				4.58	
SM 4500 F-C-97	Fluoride	95.3	93.3 95.4			1.95
SM 5310 B-00	Organic Carbon	98.0	98.0 99.2			0.708

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1972785, 1972786, 1972787, 1972788, 1972789
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1972785, 1972786, 1972787, 1972788, 1972789
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1972785, 1972786, 1972787, 1972788, 1972789
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1972790, 1972791, 1972792, 1972793, 1972794
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1972790, 1972791, 1972792, 1972793, 1972794
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1972790, 1972791, 1972792, 1972793, 1972794
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1972790, 1972791, 1972792, 1972793, 1972794
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1972795, 1972796, 1972797, 1972798, 1972799
SM 2120 B / E31780	True Color measured at 450 nm	1972785, 1972786, 1972787, 1972788, 1972789
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1972785, 1972786, 1972787, 1972788, 1972789
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1972785, 1972786, 1972787, 1972788, 1972789

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1972785, 1972786, 1972787, 1972788, 1972789
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1972785, 1972786, 1972787, 1972788, 1972789
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1972790, 1972791, 1972792, 1972793, 1972794

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	03/07/2018			03/07/2018 15:18	DeAsia Armster	1972785, 1972786, 1972787, 1972788, 1972789
EPA 300.0 Rev. 2.1	03/07/2018			03/09/2018	Julia Storbeck	1972785, 1972786, 1972787, 1972788, 1972789
EPA 350.1 Rev. 2.0	03/07/2018			03/13/2018	Ping Hua	1972790, 1972791, 1972792, 1972793, 1972794
EPA 351.2 Rev. 2.0	03/07/2018	03/12/2018	Adrian Shelby	03/14/2018	Joseph Suarez	1972790, 1972791, 1972792, 1972793, 1972794
EPA 353.2 Rev. 2.0	03/07/2018			03/09/2018	Beverly Y. Sanders	1972790, 1972791, 1972792, 1972793, 1972794
EPA 365.1 Rev. 2.0	03/07/2018	03/09/2018	Sima Feizi	03/12/2018	Beverly Y. Sanders	1972790, 1972791, 1972792, 1972793, 1972794
EPA 365.1 Rev. 2.0 dissolved	03/07/2018			03/07/2018 17:12	Megan Treadwell	1972795
	03/07/2018			03/07/2018 17:51	Megan Treadwell	1972796, 1972797
	03/07/2018			03/07/2018 17:52	Megan Treadwell	1972798
	03/07/2018			03/07/2018 17:53	Megan Treadwell	1972799
SM 2120 B	03/07/2018			03/07/2018 15:54	Tanya Welborn	1972785, 1972786
	03/07/2018			03/07/2018 15:55	Tanya Welborn	1972787
	03/07/2018			03/07/2018 15:56	Tanya Welborn	1972788
	03/07/2018			03/07/2018 15:57	Tanya Welborn	1972789
SM 2320 B-97	03/07/2018			03/14/2018	Dale L. Simmons	1972785, 1972786, 1972787, 1972788, 1972789
SM 2540 C-97	03/07/2018			03/10/2018	Yijie Li	1972785, 1972786, 1972787, 1972788, 1972789
SM 2540 D-97	03/07/2018			03/10/2018	Yijie Li	1972785, 1972786, 1972787, 1972788, 1972789
SM 4500 F-C-97	03/07/2018			03/14/2018	Dale L. Simmons	1972785, 1972786, 1972787, 1972788, 1972789
SM 5310 B-00	03/07/2018			03/12/2018	Megan Treadwell	1972790
	03/07/2018			03/13/2018	Megan Treadwell	1972791, 1972792, 1972793, 1972794