Chemical Analysis Report

NE-DIST-2018-04-25-02

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

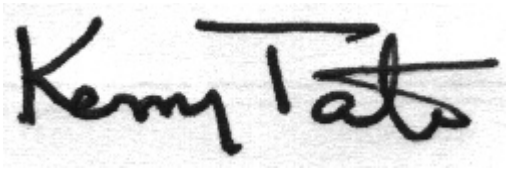
Event Description: **Interlachen_2018**
Request ID: **RQ-2018-03-19-18**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
NE ROC
8800 Baymeadows Way W
Suite 100
Jacksonville, FL 32256-7577
Attn: Nicole Frederick

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 14-MAY-2018 12:54



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: Smith Lake Center **Collection Date/Time: 04/24/2018 10:00**

Field ID: G2NE1156 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1987196	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P344064	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P344281	
		Sulfate	1.8		mg SO4/L	P344285	
	SM 2120 B	Color (true)	26		PCU	P344047	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P344830	
	SM 2540 C-97	TDS	26		mg/L	P344547	
	SM 2540 D-97	TSS	3	I	mg/L	P344677	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P344746	
1987202	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P344620	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344123	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P344138	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P344445	
1987208	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344051	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Clearwater Lake Center **Collection Date/Time: 04/24/2018 10:45**

Field ID: G1NE1131 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1987197	EPA 180.1 Rev. 2.0	Turbidity	2.1	A	NTU	P344064	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P344281	
		Sulfate	5.5		mg SO4/L	P344285	
	SM 2120 B	Color (true)	170		PCU	P344048	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P344830	
	SM 2540 C-97	TDS	35		mg/L	P344547	
	SM 2540 D-97	TSS	4	I	mg/L	P344677	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P344746	
1987203	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P344620	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344123	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P344138	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P344445	
1987209	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344051	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Mariner Lake Center **Collection Date/Time: 04/24/2018 11:10**

Field ID: G1NE0859 Matrix: W-SURF-FRH

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

Field ID: G1NE0859 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1987198	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P344064	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P344281	
		Sulfate	2.3		mg SO4/L	P344285	
	SM 2120 B	Color (true)	13		PCU	P344048	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P344830	
	SM 2540 C-97	TDS	21	I	mg/L	P344547	
	SM 2540 D-97	TSS	3	I	mg/L	P344677	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P344746	
1987204	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P344620	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344123	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P344138	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P344445	
1987210	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344051	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake IDA Center **Collection Date/Time: 04/24/2018 11:45**

Field ID: 20020116 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1987199	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P344064	
	EPA 300.0 Rev. 2.1	Chloride	8.5		mg Cl/L	P344281	
		Sulfate	2.5		mg SO4/L	P344285	
	SM 2120 B	Color (true)	310		PCU	P344048	
	SM 2320 B-97	Total Alkalinity	2.0	I	mg CaCO3/L	P344830	
	SM 2540 C-97	TDS	47		mg/L	P344547	
	SM 2540 D-97	TSS	3	I	mg/L	P344677	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P344746	
1987205	EPA 350.1 Rev. 2.0	Ammonia-N	0.070		mg N/L	P344620	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.062		mg N/L	P344123	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P344138	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P344445	
1987211	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P344051	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Church Lake Center **Collection Date/Time: 04/24/2018 12:10**

Field ID: G1NE0867 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1987200	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P344064	

Field ID: G1NE0867 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1987200	EPA 300.0 Rev. 2.1	Chloride	5.7	A	mg Cl/L	P344282	
		Sulfate	3.9	A	mg SO4/L	P344286	
	SM 2120 B	Color (true)	25	A	PCU	P344048	
	SM 2320 B-97	Total Alkalinity	4.5		mg CaCO3/L	P344830	
	SM 2540 C-97	TDS	25		mg/L	P344548	
	SM 2540 D-97	TSS	2	I	mg/L	P344678	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P344746	
1987206	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P344620	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344124	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P344138	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P344445	
1987212	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344051	

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: Hardesty Lake Center **Collection Date/Time: 04/24/2018 12:40**

Field ID: G1NE0869 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1987201	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P344064	
	EPA 300.0 Rev. 2.1	Chloride	7.5		mg Cl/L	P344282	
		Sulfate	1.5		mg SO4/L	P344286	
	SM 2120 B	Color (true)	310		PCU	P344048	
	SM 2320 B-97	Total Alkalinity	0.99	I	mg CaCO3/L	P344830	
	SM 2540 C-97	TDS	46		mg/L	P344548	
	SM 2540 D-97	TSS	4	I	mg/L	P344678	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P344746	
1987207	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P344623	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344124	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P344138	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P344445	
1987213	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P344051	

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: P344064

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344281

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344282

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344285

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344286

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344620

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344623

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344123

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344124

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: P344138

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344051

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

Reference Method: SM 2120 B
Batch ID: P344047

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P344048

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P344830

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

Reference Method: SM 2540 C-97
Batch ID: P344547

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P344548

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P344677

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P344678

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P344746

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P344445

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: P344281

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344282

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344286

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344620

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: P344623

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344124

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344138

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344051

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

Reference Method: SM 2320 B-97
Batch ID: P344830

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

Reference Method: SM 4500 F-C-97
Batch ID: P344746

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

Reference Method: SM 5310 B-00
Batch ID: P344445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987142	Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987200	Chloride	98.9		P	90 - 110
1987533	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987017	Sulfate	94.0		P	90 - 110
1987142	Sulfate	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344286

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987200	Sulfate	98.9		P	90 - 110
1987533	Sulfate	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987147	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987207	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987202	Kjeldahl Nitrogen	98.6	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987147	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987206	NO2NO3-N	101	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987204	Total-P	101	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987154	O-Phosphate-P	98.8	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P344746

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987627	Fluoride	94.8	94.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P344445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987202	Organic Carbon	96.7	95.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P344064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987197	Turbidity	3.83	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987017	Chloride	0.798	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987200	Chloride	0.372	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987017	Sulfate	0.580	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344286

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987200	Sulfate	0.683	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987147	Ammonia-N	0.403	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987207	Ammonia-N	0.270	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987202	Kjeldahl Nitrogen	1.85	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987147	NO2NO3-N	1.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987206	NO2NO3-N	0.494	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987204	Total-P	4.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987154	O-Phosphate-P	0.303	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P344047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987084	Color (true)	2.84	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P344048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987200	Color (true)	0.534	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P344830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987627	Total Alkalinity	1.01	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P344547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987251	TDS	6.17	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P344548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987495	TDS	5.19	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P344746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987627	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P344445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987202	Organic Carbon	0.817	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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A83415
Included Lab Sample IDs: 1987196, 1987197, 1987198, 1987199, 1987200, 1987201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Chloride	102	103	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110
Sulfate	101	103	P/P	90 - 110
Sulfate	103	104	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A83456
Included Lab Sample IDs: 1987196, 1987197, 1987198, 1987199, 1987200, 1987201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.8	99.2	P/P	90 - 115
Color (true)	98.9	97.8	P/P	90 - 115
Color (true)	99.2	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83457
Included Lab Sample IDs: 1987208, 1987209, 1987210, 1987211, 1987212, 1987213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.5	P/P	90 - 110
O-Phosphate-P	98.9	98.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83461
Included Lab Sample IDs: 1987196, 1987197, 1987198, 1987199, 1987200, 1987201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83479
Included Lab Sample IDs: 1987202, 1987203, 1987204, 1987205, 1987206, 1987207

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83543
Included Lab Sample IDs: 1987202, 1987203, 1987204, 1987205, 1987206, 1987207

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	105	P/P	90 - 110
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A83590
Included Lab Sample IDs: 1987202, 1987203, 1987204, 1987205, 1987206, 1987207

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A83590
Included Lab Sample IDs: 1987202, 1987203, 1987204, 1987205, 1987206, 1987207

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.7	98.0	P/P	90 - 110
Organic Carbon	98.0	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83607
Included Lab Sample IDs: 1987202, 1987203, 1987204, 1987205, 1987206, 1987207

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: A83650
Included Lab Sample IDs: 1987202, 1987203, 1987204, 1987205, 1987206, 1987207

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	102	P/P	90 - 110
Ammonia-N	104	103	P/P	90 - 110
Ammonia-N	104	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83684
Included Lab Sample IDs: 1987196, 1987197, 1987198, 1987199, 1987200, 1987201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.1	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A83721
Included Lab Sample IDs: 1987196, 1987197, 1987198, 1987199, 1987200, 1987201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.7	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.83	
EPA 300.0 Rev. 2.1	Chloride	100	98.0			0.798	
	Chloride	99.5	98.9	99.7		0.372	
	Sulfate	94.1	94.0	97.4		0.580	
	Sulfate	98.3	98.9	96.6		0.683	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	102			0.403
	Ammonia-N	103	103	103			0.270

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	98.6	102			1.85
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	102	104			1.46
	NO2NO3-N	100	101	102			0.494
EPA 365.1 Rev. 2.0	Total-P	101	101	105			4.23
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.8	99.1			0.303
SM 2120 B	Color (true)					2.84	
	Color (true)					0.534	
SM 2320 B-97	Total Alkalinity	101				1.01	
SM 2540 C-97	TDS					6.17	
	TDS					5.19	
SM 4500 F-C-97	Fluoride	95.3	94.8	94.8			0.0
SM 5310 B-00	Organic Carbon	95.1	96.7	95.5			0.817

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1987202, 1987203, 1987204, 1987205, 1987206, 1987207
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1987202, 1987203, 1987204, 1987205, 1987206, 1987207
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1987202, 1987203, 1987204, 1987205, 1987206, 1987207
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1987202, 1987203, 1987204, 1987205, 1987206, 1987207
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1987208, 1987209, 1987210, 1987211, 1987212, 1987213
SM 2120 B / E31780	True Color measured at 450 nm	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1987202, 1987203, 1987204, 1987205, 1987206, 1987207

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/25/2018			04/25/2018 16:22	William L. Brown IV	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
EPA 300.0 Rev. 2.1	04/25/2018			04/28/2018 00:48	Lipi Saha	1987196
	04/25/2018			04/28/2018 01:24	Lipi Saha	1987197
	04/25/2018			04/28/2018 01:36	Lipi Saha	1987198
	04/25/2018			04/28/2018 01:48	Lipi Saha	1987199
	04/25/2018			04/28/2018 03:11	Lipi Saha	1987200
	04/25/2018			04/28/2018 03:59	Lipi Saha	1987201
EPA 350.1 Rev. 2.0	04/25/2018			05/03/2018 12:00	Ping Hua	1987205
	04/25/2018			05/03/2018 12:01	Ping Hua	1987206
	04/25/2018			05/03/2018 12:15	Ping Hua	1987202
	04/25/2018			05/03/2018 12:16	Ping Hua	1987203
	04/25/2018			05/03/2018 12:18	Ping Hua	1987204
	04/25/2018			05/03/2018 13:22	Ping Hua	1987207
EPA 351.2 Rev. 2.0	04/25/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:07	Joseph Suarez	1987202
	04/25/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:15	Joseph Suarez	1987203
	04/25/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:17	Joseph Suarez	1987204
	04/25/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:18	Joseph Suarez	1987205
	04/25/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:20	Joseph Suarez	1987206
	04/25/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:21	Joseph Suarez	1987207
EPA 353.2 Rev. 2.0	04/25/2018			04/26/2018 12:49	Lauren Bottorf	1987202
	04/25/2018			04/26/2018 12:50	Lauren Bottorf	1987203
	04/25/2018			04/26/2018 12:52	Lauren Bottorf	1987204
	04/25/2018			04/26/2018 12:53	Lauren Bottorf	1987205
	04/25/2018			04/26/2018 13:00	Lauren Bottorf	1987206
	04/25/2018			04/26/2018 13:06	Lauren Bottorf	1987207
EPA 365.1 Rev. 2.0	04/25/2018	04/26/2018 12:50	Sima Feizi	05/01/2018 13:25	Beverly Y. Sanders	1987202
	04/25/2018	04/26/2018 12:50	Sima Feizi	05/01/2018 13:26	Beverly Y. Sanders	1987203
	04/25/2018	04/26/2018 12:50	Sima Feizi	05/01/2018 13:27	Beverly Y. Sanders	1987204
	04/25/2018	04/26/2018 12:50	Sima Feizi	05/01/2018 13:35	Beverly Y. Sanders	1987205
	04/25/2018	04/26/2018 12:50	Sima Feizi	05/01/2018 13:36	Beverly Y. Sanders	1987206
	04/25/2018	04/26/2018 12:50	Sima Feizi	05/01/2018 13:37	Beverly Y. Sanders	1987207
EPA 365.1 Rev. 2.0 dissolved	04/25/2018			04/25/2018 15:08	Megan Treadwell	1987208
	04/25/2018			04/25/2018 15:09	Megan Treadwell	1987209
	04/25/2018			04/25/2018 15:14	Megan Treadwell	1987210
	04/25/2018			04/25/2018 15:15	Megan Treadwell	1987211, 1987212
	04/25/2018			04/25/2018 15:16	Megan Treadwell	1987213
SM 2120 B	04/25/2018			04/25/2018 14:31	Tanya Welborn	1987196
	04/25/2018			04/25/2018 14:35	Tanya Welborn	1987198
	04/25/2018			04/25/2018 14:37	Tanya Welborn	1987200

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	04/25/2018			04/25/2018 14:49	Tanya Welborn	1987197
	04/25/2018			04/25/2018 14:50	Tanya Welborn	1987199
	04/25/2018			04/25/2018 14:51	Tanya Welborn	1987201
SM 2320 B-97	04/25/2018			05/07/2018 15:44	Dale L. Simmons	1987196
	04/25/2018			05/07/2018 15:50	Dale L. Simmons	1987197
	04/25/2018			05/07/2018 15:58	Dale L. Simmons	1987198
	04/25/2018			05/07/2018 16:06	Dale L. Simmons	1987199
	04/25/2018			05/07/2018 16:14	Dale L. Simmons	1987200
	04/25/2018			05/07/2018 16:20	Dale L. Simmons	1987201
SM 2540 C-97	04/25/2018			04/27/2018 16:08	Yijie Li	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
SM 2540 D-97	04/25/2018			04/27/2018 16:08	Yijie Li	1987196, 1987197, 1987198, 1987199, 1987200, 1987201
SM 4500 F-C-97	04/25/2018			05/03/2018 23:24	Dale L. Simmons	1987196
	04/25/2018			05/03/2018 23:32	Dale L. Simmons	1987197
	04/25/2018			05/03/2018 23:44	Dale L. Simmons	1987198
	04/25/2018			05/03/2018 23:53	Dale L. Simmons	1987199
	04/25/2018			05/04/2018 00:05	Dale L. Simmons	1987200
	04/25/2018			05/04/2018 00:14	Dale L. Simmons	1987201
SM 5310 B-00	04/25/2018			04/30/2018 23:55	Megan Treadwell	1987202
	04/25/2018			05/01/2018 01:30	Megan Treadwell	1987203
	04/25/2018			05/01/2018 01:45	Megan Treadwell	1987204
	04/25/2018			05/01/2018 02:02	Megan Treadwell	1987205
	04/25/2018			05/01/2018 02:17	Megan Treadwell	1987206
	04/25/2018			05/01/2018 02:34	Megan Treadwell	1987207