

Chemical Analysis Report

CEN-DIST-2018-04-13-01

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

Event Description: **Grasshopper + D&B**
Request ID: **RQ-2018-04-09-49**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 03-MAY-2018 07:41

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Field Blank

Collection Date/Time: 04/12/2018 10:17

Field ID: BLANK_04122018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1984507	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P343395	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P343613	
		Sulfate	0.20	U	mg SO4/L	P343615	
	SM 2120 B	Color (true)	2.5	U	PCU	P343385	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P343950	
	SM 2540 C-97	TDS	15	U	mg/L	P343892	
	SM 2540 D-97	TSS	2	U	mg/L	P343875	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343953	
1984508	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P343692	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P343635	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343656	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P343664	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P343561	
1984509	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343382	

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: Grasshopper Lake South @ 325M SE of Boat Ramp

Collection Date/Time: 04/12/2018 10:21

Field ID: G2CE0070

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1984501	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P343394	
	EPA 300.0 Rev. 2.1	Chloride	9.1		mg Cl/L	P343613	
		Sulfate	3.4		mg SO4/L	P343615	
	SM 2120 B	Color (true)	86		PCU	P343385	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P343952	
	SM 2540 C-97	TDS	35		mg/L	P343893	
	SM 2540 D-97	TSS	2	I	mg/L	P343876	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343956	
1984502	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P343691	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P343635	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P343656	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P343664	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P343561	
1984503	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343382	

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: Grasshopper Lake South @ 325M SE of Boat Ramp

Collection Date/Time: 04/12/2018 10:23

Field ID: G2CE0070_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1984504	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P343394	

Field ID: G2CE0070_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1984504	EPA 300.0 Rev. 2.1	Chloride	9.0		mg Cl/L	P343613	
		Sulfate	3.4		mg SO4/L	P343615	
	SM 2120 B	Color (true)	86		PCU	P343385	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P343952	
	SM 2540 C-97	TDS	38		mg/L	P343893	
	SM 2540 D-97	TSS	2	I	mg/L	P343876	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343956	
1984505	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P343691	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P343635	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P343656	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P343664	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P343561	
1984506	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343382	

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: P343394

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P343395

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P343613

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P343615

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P343691

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: P343692

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343635

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343656

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343664

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343382

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

Reference Method: SM 2120 B
Batch ID: P343385

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P343950

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

Reference Method: SM 2320 B-97
Batch ID: P343952

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

Reference Method: SM 2540 C-97
Batch ID: P343892

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P343893

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P343875

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P343876

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P343953

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P343956

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343561

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: P343613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343691

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343692

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343635

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343656

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: P343664

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343382

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

Reference Method: SM 2320 B-97
Batch ID: P343950

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

Reference Method: SM 2320 B-97
Batch ID: P343952

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

Reference Method: SM 4500 F-C-97
Batch ID: P343953

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P343956

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343561

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984415	Chloride	94.7		P	90 - 110
1984524	Chloride	95.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984415	Sulfate	94.0		P	90 - 110
1984524	Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984371	Ammonia-N	97.2	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984513	Ammonia-N	99.4	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984513	Kjeldahl Nitrogen	90.1	92.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984422	NO2NO3-N	103	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P343664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984513	Total-P	95.8	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P343382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984423	O-Phosphate-P	99.9	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P343953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984545	Fluoride	97.2	97.2	P/P	91 - 105

Reference Method: SM 4500 F-C-97
 Batch ID: P343956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984236	Fluoride	95.2	95.7	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P343561

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984426	Organic Carbon	94.4	95.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P343394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984406	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P343395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984512	Turbidity	1.04	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P343613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984415	Chloride	0.00689	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984415	Sulfate	0.137	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984371	Ammonia-N	0.334	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984513	Ammonia-N	0.980	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984513	Kjeldahl Nitrogen	1.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984422	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984513	Total-P	0.438	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984423	O-Phosphate-P	0.200	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P343385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984512	Color (true)	3.69	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P343950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984545	Total Alkalinity	0.310	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P343952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984236	Total Alkalinity	0.123	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P343892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984407	TDS	5.59	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P343893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984512	TDS	6.78	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P343953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984545	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P343956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984236	Fluoride	0.514	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984426	Organic Carbon	0.453	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 365.1 Rev. 2.0 dissolved

Run ID: A83231

Included Lab Sample IDs: 1984503, 1984506, 1984509

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

Reference Method: SM 2120 B

Run ID: A83232

Included Lab Sample IDs: 1984501, 1984504, 1984507

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A83235

Included Lab Sample IDs: 1984501, 1984504, 1984507

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	98.5	P/P	95 - 105
Turbidity	98.5	99.5	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A83267

Included Lab Sample IDs: 1984501, 1984504, 1984507

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.6	99.8	P/P	90 - 110
Sulfate	99.1	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A83286

Included Lab Sample IDs: 1984502, 1984505, 1984508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A83321

Included Lab Sample IDs: 1984502, 1984505, 1984508

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83326

Included Lab Sample IDs: 1984502, 1984505, 1984508

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83334

Included Lab Sample IDs: 1984502, 1984505, 1984508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83407

Included Lab Sample IDs: 1984502, 1984505, 1984508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83420

Included Lab Sample IDs: 1984501, 1984504, 1984507

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.1	P/P	90 - 110
Total Alkalinity	98.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83420

Included Lab Sample IDs: 1984501, 1984504, 1984507

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.5	P/P	90 - 110
Fluoride	99.1	99.5	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.0	
	Turbidity				1.04	
EPA 300.0 Rev. 2.1	Chloride	94.8	94.7 95.3		0.0068	
	Sulfate	96.3	94.0 96.4		0.137	
EPA 350.1 Rev. 2.0	Ammonia-N	96.7	97.2 96.8			0.334
	Ammonia-N	98.2	99.4 98.0			0.980
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	90.1 92.1			1.35
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103 102			0.487
EPA 365.1 Rev. 2.0	Total-P	104	95.8 95.2			0.438
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.9 99.7			0.200
SM 2120 B	Color (true)				3.69	
SM 2320 B-97	Total Alkalinity	101			0.310	
	Total Alkalinity	101			0.123	
SM 2540 C-97	TDS				5.59	
	TDS				6.78	
SM 4500 F-C-97	Fluoride	95.4	97.2 97.2			0.0

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 4500 F-C-97	Fluoride	96.3	95.2	95.7		0.514
SM 5310 B-00	Organic Carbon	96.4	94.4	95.0		0.453

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1984501, 1984504, 1984507
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1984501, 1984504, 1984507
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1984501, 1984504, 1984507
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1984502, 1984505, 1984508
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1984502, 1984505, 1984508
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1984502, 1984505, 1984508
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1984502, 1984505, 1984508
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1984503, 1984506, 1984509
SM 2120 B / E31780	True Color measured at 450 nm	1984501, 1984504, 1984507
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1984501, 1984504, 1984507
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1984501, 1984504, 1984507
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1984501, 1984504, 1984507
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1984501, 1984504, 1984507
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1984502, 1984505, 1984508

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	04/13/2018			04/13/2018 15:33	Tanya Welborn	1984501, 1984504, 1984507
EPA 300.0 Rev. 2.1	04/13/2018			04/17/2018 15:57	Lipi Saha	1984501
	04/13/2018			04/17/2018 16:09	Lipi Saha	1984504
	04/13/2018			04/17/2018 16:21	Lipi Saha	1984507
EPA 350.1 Rev. 2.0	04/13/2018			04/17/2018 13:09	Ping Hua	1984502
	04/13/2018			04/17/2018 13:10	Ping Hua	1984505
	04/13/2018			04/17/2018 13:31	Ping Hua	1984508
EPA 351.2 Rev. 2.0	04/13/2018	04/18/2018 10:10	Adrian Shelby	04/19/2018 09:17	Joseph Suarez	1984502
	04/13/2018	04/18/2018 10:10	Adrian Shelby	04/19/2018 09:19	Joseph Suarez	1984505
	04/13/2018	04/18/2018 10:10	Adrian Shelby	04/19/2018 09:20	Joseph Suarez	1984508
EPA 353.2 Rev. 2.0	04/13/2018			04/18/2018 13:22	Lauren Bottorf	1984508
	04/13/2018			04/18/2018 13:23	Lauren Bottorf	1984502
	04/13/2018			04/18/2018 13:24	Lauren Bottorf	1984505
EPA 365.1 Rev. 2.0	04/13/2018	04/18/2018 14:25	Sima Feizi	04/23/2018 17:44	Beverly Y. Sanders	1984502
	04/13/2018	04/18/2018 14:25	Sima Feizi	04/23/2018 17:45	Beverly Y. Sanders	1984505
	04/13/2018	04/18/2018 14:25	Sima Feizi	04/23/2018 17:46	Beverly Y. Sanders	1984508
EPA 365.1 Rev. 2.0 dissolved	04/13/2018			04/13/2018 14:38	Megan Treadwell	1984503
	04/13/2018			04/13/2018 14:39	Megan Treadwell	1984506
	04/13/2018			04/13/2018 14:40	Megan Treadwell	1984509
SM 2120 B	04/13/2018			04/13/2018 15:12	Tanya Welborn	1984501
	04/13/2018			04/13/2018 15:13	Tanya Welborn	1984504
	04/13/2018			04/13/2018 15:14	Tanya Welborn	1984507
SM 2320 B-97	04/13/2018			04/24/2018 01:10	Dale L. Simmons	1984507
	04/13/2018			04/24/2018 08:57	Dale L. Simmons	1984501
	04/13/2018			04/24/2018 09:05	Dale L. Simmons	1984504
SM 2540 C-97	04/13/2018			04/18/2018 16:03	Yijie Li	1984501, 1984504, 1984507
SM 2540 D-97	04/13/2018			04/18/2018 16:03	Yijie Li	1984501, 1984504, 1984507
SM 4500 F-C-97	04/13/2018			04/24/2018 01:10	Dale L. Simmons	1984507
	04/13/2018			04/24/2018 08:57	Dale L. Simmons	1984501
	04/13/2018			04/24/2018 09:05	Dale L. Simmons	1984504
SM 5310 B-00	04/13/2018			04/17/2018 00:38	Megan Treadwell	1984502
	04/13/2018			04/17/2018 00:53	Megan Treadwell	1984505
	04/13/2018			04/17/2018 01:07	Megan Treadwell	1984508