

Chemical Analysis Report

CEN-DIST-2017-08-03-01

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

Event Description: **Lk Blue Cove / Shady Brook + D&B**
Request ID: **RQ-2017-07-31-28**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 25-AUG-2017 14:29



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 Blue Cove @ 150m SW of Center

Collection Date/Time: 08/02/2017 11:15

Field ID: G4CE0022

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918753	EPA 180.1 Rev. 2.0	Turbidity	12	A	NTU	P329652	
	EPA 300.0 Rev. 2.1	Chloride	3.0	A	mg Cl/L	P329711	
		Sulfate	0.20	UA	mg SO4/L	P329715	
	SM 2120 B	Color (true)	6.0		PCU	P329663	
	SM 2320 B-97	Total Alkalinity	36		mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	54		mg/L	P330281	
	SM 2540 D-97	TSS	8	I	mg/L	P330063	
	SM 4500 F-C-97	Fluoride	0.30		mg F/L	P329766	
1918755	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P329805	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P330319	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329823	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P329724	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P329958	
1918757	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P329646	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 08/03/2017.

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2120 B: Batch relative percent difference is unavailable because of low 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.

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

Sample Location: Shady Brook @ 500m US of CR 35

Collection Date/Time: 08/02/2017 12:37

Field ID: G1CE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918754	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P329652	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P329711	
		Sulfate	8.6		mg SO4/L	P329715	
	SM 2120 B	Color (true)	310		PCU	P329662	
	SM 2320 B-97	Total Alkalinity	144		mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	282		mg/L	P330281	
	SM 2540 D-97	TSS	4	I	mg/L	P330063	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P329766	
1918756	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P329805	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P329818	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.071		mg N/L	P329823	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P329724	
	SM 5310 B-00	Organic Carbon	37		mg C/L	P329958	
1918758	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.094		mg P/L	P329646	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high 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 Blue Cove @ 150m SW of Center DUP

Collection Date/Time: 08/02/2017 11:17

Field ID: G4CE0022_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918759	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P329652	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P329711	
		Sulfate	0.20	U	mg SO4/L	P329715	
	SM 2120 B	Color (true)	5.8	IA	PCU	P329663	
	SM 2320 B-97	Total Alkalinity	36		mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	53		mg/L	P330281	
	SM 2540 D-97	TSS	8	I	mg/L	P330064	
	SM 4500 F-C-97	Fluoride	0.31		mg F/L	P329766	
1918761	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P329805	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P329818	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329823	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P329786	
	SM 5310 B-00	Organic Carbon	7.1		mg C/L	P329958	
1918763	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P329647	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 08/03/2017.

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2120 B: Batch relative percent difference is unavailable because of low 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.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high 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: Field Blank

Collection Date/Time: 08/02/2017 11:30

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918760	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P329652	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P329711	
		Sulfate	0.20	U	mg SO4/L	P329715	
	SM 2120 B	Color (true)	2.5	U	PCU	P329662	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	15	U	mg/L	P330282	
	SM 2540 D-97	TSS	2	U	mg/L	P330064	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329766	
1918762	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P329805	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P329818	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329823	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P329786	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P330166	
1918764	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329647	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329652

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329711

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329715

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329805

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329818

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330319

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329823

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329724

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329786

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329646

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329647

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

Reference Method: SM 2120 B
Batch ID: P329662

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P329663

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329762

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

Reference Method: SM 2540 C-97
Batch ID: P330281

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P330282

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330063

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330064

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
 Batch ID: P329766

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P329958

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

Reference Method: SM 5310 B-00
 Batch ID: P330166

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: P329711

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P329715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	107		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P329805

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P329818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P330319

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P329823

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P329823

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P329724

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P329786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P329646

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P329647

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

Reference Method: SM 2320 B-97
 Batch ID: P329762

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

Reference Method: SM 4500 F-C-97
 Batch ID: P329766

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P329958

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P330166

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918753	Chloride	101		P	90 - 110
1918779	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918753	Sulfate	102		P	90 - 110
1918779	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918737	Ammonia-N	95.4	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920448	Kjeldahl Nitrogen	93.6	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918782	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329724

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918738	Total-P	97.0	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918873	Total-P	95.7	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918721	O-Phosphate-P	94.7	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918787	O-Phosphate-P	97.6	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P329766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918188	Fluoride	100	99.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P330166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919047	Organic Carbon	98.6	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918753	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918753	Chloride	2.38	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918737	Ammonia-N	0.351	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918761	Kjeldahl Nitrogen	0.458	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920448	Kjeldahl Nitrogen	3.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918782	NO2NO3-N	0.443	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329724

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918738	Total-P	5.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918873	Total-P	1.35	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918721	O-Phosphate-P	0.527	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918787	O-Phosphate-P	3.42	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918775	Color (true)	2.14	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918188	Total Alkalinity	0.170	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P330281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918734	TDS	1.95	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P330282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918872	TDS	4.23	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P329766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918188	Fluoride	0.470	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P329958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918710	Organic Carbon	0.289	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P330166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919047	Organic Carbon	1.74	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: EPA 300.0 Rev. 2.1
Run ID: A78163
Included Lab Sample IDs: 1918753, 1918754, 1918759, 1918760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	96.8	P/P	90 - 110
Chloride	96.8	103	P/P	90 - 110
Sulfate	106	99.1	P/P	90 - 110
Sulfate	99.1	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78169
Included Lab Sample IDs: 1918757, 1918758, 1918763, 1918764

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	95.0	95.6	P/P	90 - 110
O-Phosphate-P	96.6	95.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A78170

Included Lab Sample IDs: 1918753, 1918754, 1918759, 1918760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A78173

Included Lab Sample IDs: 1918753, 1918754, 1918759, 1918760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115
Color (true)	102	104	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78218

Included Lab Sample IDs: 1918755, 1918756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.4	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78219

Included Lab Sample IDs: 1918753, 1918754, 1918759, 1918760

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

Reference Method: SM 4500 F-C-97

Run ID: A78219

Included Lab Sample IDs: 1918753, 1918754, 1918759, 1918760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	99.0	P/P	90 - 110
Fluoride	99.0	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78241

Included Lab Sample IDs: 1918755, 1918756, 1918761, 1918762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	102	P/P	90 - 110
Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78242

Included Lab Sample IDs: 1918761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.6	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78248

Included Lab Sample IDs: 1918762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78249

Included Lab Sample IDs: 1918755, 1918756, 1918761, 1918762

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

Reference Method: SM 5310 B-00

Run ID: A78301

Included Lab Sample IDs: 1918755, 1918756, 1918761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78306

Included Lab Sample IDs: 1918756, 1918761, 1918762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	98.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A78375

Included Lab Sample IDs: 1918762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78462

Included Lab Sample IDs: 1918755

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.9	107	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	
EPA 300.0 Rev. 2.1	Chloride	104	101	101	2.38	
	Sulfate	107	102	103		
EPA 350.1 Rev. 2.0	Ammonia-N	100	95.4	95.7		0.351

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.4					0.458
	Kjeldahl Nitrogen	98.2	93.6	98.8			3.15
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	105	104	104			0.443
EPA 365.1 Rev. 2.0	Total-P	98.8	97.0	103			5.03
	Total-P	93.2	95.7	97.8			1.35
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.4	94.7	95.2			0.527
	O-Phosphate-P	101	97.6	101			3.42
SM 2120 B	Color (true)					2.14	
SM 2320 B-97	Total Alkalinity	103				0.170	
SM 2540 C-97	TDS					1.95	
	TDS					4.23	
SM 4500 F-C-97	Fluoride	98.8	100	99.6			0.470
SM 5310 B-00	Organic Carbon	96.8					0.289
	Organic Carbon	101	98.6	101			1.74

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1918753, 1918754, 1918759, 1918760
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1918753, 1918754, 1918759, 1918760
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1918753, 1918754, 1918759, 1918760
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1918755, 1918756, 1918761, 1918762
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1918755, 1918756, 1918761, 1918762
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1918755, 1918756, 1918761, 1918762
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1918755, 1918756, 1918761, 1918762
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1918757, 1918758, 1918763, 1918764
SM 2120 B / E31780	True Color measured at 450 nm	1918753, 1918754, 1918759, 1918760
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1918753, 1918754, 1918759, 1918760
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1918753, 1918754, 1918759, 1918760
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1918753, 1918754, 1918759, 1918760
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1918753, 1918754, 1918759, 1918760
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1918755, 1918756, 1918761, 1918762

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	08/03/2017			08/03/2017 16:20	DeAsia Armster	1918753, 1918754, 1918759, 1918760
EPA 300.0 Rev. 2.1	08/03/2017			08/04/2017	Julia Storbeck	1918753, 1918754, 1918759, 1918760
EPA 350.1 Rev. 2.0	08/03/2017			08/07/2017	Sofia Elnemr	1918755, 1918756, 1918761, 1918762
EPA 351.2 Rev. 2.0	08/03/2017	08/08/2017	Adrian Shelby	08/09/2017	Joseph Suarez	1918756, 1918761, 1918762
	08/03/2017	08/16/2017	Adrian Shelby	08/17/2017	Joseph Suarez	1918755
EPA 353.2 Rev. 2.0	08/03/2017			08/08/2017	Beverly Y. Sanders	1918755, 1918756, 1918761, 1918762
EPA 365.1 Rev. 2.0	08/03/2017	08/04/2017	Sima Feizi	08/07/2017	Lipi Saha	1918755, 1918756
	08/03/2017	08/07/2017	Sima Feizi	08/08/2017	Lipi Saha	1918761, 1918762
EPA 365.1 Rev. 2.0 dissolved	08/03/2017			08/03/2017 15:09	Ping Hua	1918757
	08/03/2017			08/03/2017 15:10	Ping Hua	1918758
	08/03/2017			08/03/2017 15:11	Ping Hua	1918763
	08/03/2017			08/03/2017 15:16	Ping Hua	1918764
SM 2120 B	08/03/2017			08/03/2017 15:25	Tanya Welborn	1918760
	08/03/2017			08/03/2017 15:36	Tanya Welborn	1918754
	08/03/2017			08/03/2017 15:37	Tanya Welborn	1918759
	08/03/2017			08/03/2017 15:38	Tanya Welborn	1918753
SM 2320 B-97	08/03/2017			08/05/2017	Dale L. Simmons	1918753, 1918754, 1918759, 1918760
SM 2540 C-97	08/03/2017			08/07/2017	DeAsia Armster	1918753, 1918754, 1918759, 1918760
SM 2540 D-97	08/03/2017			08/07/2017	DeAsia Armster	1918753, 1918754, 1918759, 1918760
SM 4500 F-C-97	08/03/2017			08/05/2017	Dale L. Simmons	1918753, 1918754, 1918759, 1918760
SM 5310 B-00	08/03/2017			08/08/2017	Ping Hua	1918755, 1918756, 1918761
	08/03/2017			08/12/2017	Sofia Elnemr	1918762