Chemical Analysis Report

CEN-DIST-2017-08-16-02

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

Event Description: **LVI 6 + D&B**
Request ID: **RQ-2017-08-14-50**
Customer: **CEN-DIST**
Project ID: **SMP**

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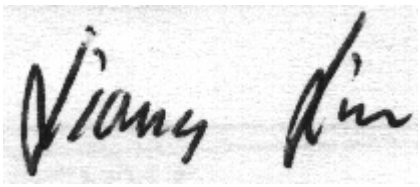
Certified by: Liang Lin, Environmental Administrator

Date Certified: 07-SEP-2017 15:37



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: G1CE0067 **Collection Date/Time: 08/15/2017 14:00**

Field ID: G1CE0067 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921707	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P330338	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P330469	
		Sulfate	24		mg SO4/L	P330467	
	SM 2120 B	Color (true)	17		PCU	P330350	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P330606	
	SM 2540 C-97	TDS	115		mg/L	P330693	
	SM 2540 D-97	TSS	3	I	mg/L	P330921	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P330609	
1921708	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P330514	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P330358	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330479	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P330419	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P330659	
1921709	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P330346	

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: G1CE0067_DUP **Collection Date/Time: 08/15/2017 14:01**

Field ID: G1CE0067_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921710	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P330338	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P330469	
		Sulfate	25		mg SO4/L	P330467	
	SM 2120 B	Color (true)	17		PCU	P330350	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P330606	
	SM 2540 C-97	TDS	123		mg/L	P330693	
	SM 2540 D-97	TSS	2	I	mg/L	P330921	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P330609	
1921712	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P330514	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P330358	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330479	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P330419	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P330659	
1921714	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P330346	

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: FieldBlank **Collection Date/Time: 08/15/2017 14:14**

Field ID: FieldBlank Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921711	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P330338	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P330470	
		Sulfate	0.20	U	mg SO4/L	P330468	

Field ID: FieldBlank Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921711	SM 2120 B	Color (true)	2.5	U	PCU	P330350	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P330606	
	SM 2540 C-97	TDS	15	U	mg/L	P330690	
	SM 2540 D-97	TSS	2	U	mg/L	P330918	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P330609	
1921713	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P330515	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P330358	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330479	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P330419	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P330659	
1921715	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P330346	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P330338

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330467

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330468

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330469

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330470

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330514

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: P330515

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330358

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330479

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330419

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330346

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

Reference Method: SM 2120 B
Batch ID: P330350

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P330606

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

Reference Method: SM 2540 C-97
Batch ID: P330690

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P330693

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P330918

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330921

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P330609

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P330659

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: P330467

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330469

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330470

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330514

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330514

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330515

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330479

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: P330419

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330346

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

Reference Method: SM 2320 B-97
Batch ID: P330606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P330609

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

Reference Method: SM 5310 B-00
Batch ID: P330659

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921642	Sulfate	97.8		P	90 - 110
1921643	Sulfate	92.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921834	Sulfate	95.4		P	90 - 110
1921879	Sulfate	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921642	Chloride	98.5		P	90 - 110
1921643	Chloride	93.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330470

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921834	Chloride	96.4		P	90 - 110
1921879	Chloride	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921679	Ammonia-N	100	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921695	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921704	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921703	Total-P	101	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330346

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330346

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921709	O-Phosphate-P	91.7	93.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P330609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921686	Fluoride	98.0	98.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P330659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921787	Organic Carbon	101		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P330338

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921716	Turbidity	10.4	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921642	Sulfate	4.98	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921834	Sulfate	1.79	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921642	Chloride	1.69	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921834	Chloride	0.0423	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921679	Ammonia-N	0.811	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921717	Ammonia-N	0.00179	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921695	Kjeldahl Nitrogen	1.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921704	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921703	Total-P	2.13	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921709	O-Phosphate-P	1.94	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P330350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921716	Color (true)	1.70	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P330606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921686	Total Alkalinity	0.213	Sample	P	0 - 4.8

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P330690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921465	TDS	0.952	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P330693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921702	TDS	6.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P330609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921686	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P330659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921787	Organic Carbon	1.09	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: A78421
Included Lab Sample IDs: 1921707, 1921710, 1921711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	100	P/P	90 - 110
Chloride	98.8	99.9	P/P	90 - 110
Sulfate	98.8	99.0	P/P	90 - 110
Sulfate	99.1	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A78439
Included Lab Sample IDs: 1921707, 1921710, 1921711

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78443
Included Lab Sample IDs: 1921709, 1921714, 1921715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.8	P/P	90 - 110
O-Phosphate-P	99.6	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A78444
Included Lab Sample IDs: 1921707, 1921710, 1921711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78496
Included Lab Sample IDs: 1921708, 1921712, 1921713

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A78507
Included Lab Sample IDs: 1921708, 1921712, 1921713

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78513
Included Lab Sample IDs: 1921708, 1921712, 1921713

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A78532
Included Lab Sample IDs: 1921708, 1921712, 1921713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	107	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A78552
Included Lab Sample IDs: 1921707, 1921710, 1921711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110
Total Alkalinity	99.8	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A78552
Included Lab Sample IDs: 1921707, 1921710, 1921711

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A78552
Included Lab Sample IDs: 1921707, 1921710, 1921711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	99.5	P/P	90 - 110
Fluoride	98.5	97.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A78572
Included Lab Sample IDs: 1921708, 1921712, 1921713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	97.8	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					10.4	
EPA 300.0 Rev. 2.1	Chloride	95.7	98.5	93.4		1.69	
	Chloride	97.5	96.4	98.2		0.0423	
	Sulfate	94.8	97.8	92.9		4.98	
	Sulfate	96.6	95.4	97.5		1.79	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	100	99.4			0.811
	Ammonia-N	99.4					0.0017
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.7	101	103			1.04
EPA 353.2 Rev. 2.0	NO2NO3-N	105	106	106			0.471
EPA 365.1 Rev. 2.0	Total-P	100	101	98.5			2.13
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	91.7	93.5			1.94
SM 2120 B	Color (true)					1.70	
SM 2320 B-97	Total Alkalinity	102				0.213	
SM 2540 C-97	TDS					0.952	
	TDS					6.11	
SM 4500 F-C-97	Fluoride	95.3	98.0	98.0			0.0
SM 5310 B-00	Organic Carbon	96.0	101				1.09

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1921707, 1921710, 1921711
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1921707, 1921710, 1921711
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1921707, 1921710, 1921711
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1921708, 1921712, 1921713
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1921708, 1921712, 1921713

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1921708, 1921712, 1921713
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1921708, 1921712, 1921713
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1921709, 1921714, 1921715
SM 2120 B / E31780	True Color measured at 450 nm	1921707, 1921710, 1921711
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1921707, 1921710, 1921711
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1921707, 1921710, 1921711
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1921707, 1921710, 1921711
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1921707, 1921710, 1921711
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1921708, 1921712, 1921713

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	08/16/2017			08/16/2017 15:34	DeAsia Armster	1921707, 1921710, 1921711
EPA 300.0 Rev. 2.1	08/16/2017			08/16/2017	Julia Storbeck	1921707, 1921710
	08/16/2017			08/17/2017	Julia Storbeck	1921711
EPA 350.1 Rev. 2.0	08/16/2017			08/17/2017	Sofia Elnemr	1921708, 1921712, 1921713
EPA 351.2 Rev. 2.0	08/16/2017	08/17/2017	Adrian Shelby	08/21/2017	Joseph Suarez	1921708, 1921712, 1921713
EPA 353.2 Rev. 2.0	08/16/2017			08/18/2017	Beverly Y. Sanders	1921708, 1921712, 1921713
EPA 365.1 Rev. 2.0	08/16/2017	08/17/2017	Sima Feizi	08/18/2017	Lipi Saha	1921708, 1921712, 1921713
EPA 365.1 Rev. 2.0 dissolved	08/16/2017			08/16/2017 14:40	Megan Treadwell	1921709
	08/16/2017			08/16/2017 15:12	Megan Treadwell	1921714
	08/16/2017			08/16/2017 15:13	Megan Treadwell	1921715
SM 2120 B	08/16/2017			08/16/2017 16:35	Tanya Welborn	1921707, 1921710
	08/16/2017			08/16/2017 16:36	Tanya Welborn	1921711
SM 2320 B-97	08/16/2017			08/18/2017	Dale L. Simmons	1921707, 1921710, 1921711
SM 2540 C-97	08/16/2017			08/18/2017	Yijie Li	1921707, 1921710, 1921711
SM 2540 D-97	08/16/2017			08/18/2017	Yijie Li	1921707, 1921710, 1921711
SM 4500 F-C-97	08/16/2017			08/18/2017	Dale L. Simmons	1921707, 1921710, 1921711
SM 5310 B-00	08/16/2017			08/22/2017	Ping Hua	1921708, 1921712, 1921713