Chemical Analysis Report

CEN-DIST-2017-08-08-01

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

Event Description: **Reedy Creek Below Lk Russell + D&B**
Request ID: **RQ-2017-08-07-32**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 30-AUG-2017 13:58

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: Reedy Creek @ 200m US of Confluence with Dead River **Collection Date/Time: 08/07/2017 11:36**

Field ID: G4CE0145 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919502	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P329894	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P329886	
		Sulfate	2.3		mg SO4/L	P329888	
	SM 2120 B	Color (true)	640		PCU	P329855	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P330089	
	SM 2540 C-97	TDS	175		mg/L	P330225	
	SM 2540 D-97	TSS	2	I	mg/L	P330233	
	SM 4500 F-C-97	Fluoride	0.087	I	mg F/L	P330091	
1919503	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P329983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P330014	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P330099	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P330027	
	SM 5310 B-00	Organic Carbon	51		mg C/L	P330164	
1919504	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P329846	

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: Reedy Creek @ 200m US of Confluence with Dead River **Collection Date/Time: 08/07/2017 11:37**

Field ID: G4CE0145_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919505	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P329894	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P329886	
		Sulfate	2.3		mg SO4/L	P329888	
	SM 2120 B	Color (true)	630		PCU	P329855	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P330089	
	SM 2540 C-97	TDS	184		mg/L	P330225	
	SM 2540 D-97	TSS	2	I	mg/L	P330233	
	SM 4500 F-C-97	Fluoride	0.089	I	mg F/L	P330091	
1919507	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P329983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P330014	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P330099	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P330027	
	SM 5310 B-00	Organic Carbon	50		mg C/L	P330164	
1919509	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P329846	

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: Reedy Creek @ 200m US of Confluence with Dead River **Collection Date/Time: 08/07/2017 12:46**

Field ID: BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919506	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P329894	

Field ID: BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919506	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P329886	
		Sulfate	0.20	U	mg SO4/L	P329888	
	SM 2120 B	Color (true)	2.5	U	PCU	P329855	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P330089	
	SM 2540 C-97	TDS	15	U	mg/L	P330221	
	SM 2540 D-97	TSS	2	U	mg/L	P330229	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P330091	
1919508	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P329983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P330014	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330100	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P330027	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P330164	
1919510	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329846	

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: P329894

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329886

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329888

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329983

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330014

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330099

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330027

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329846

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

Reference Method: SM 2120 B
Batch ID: P329855

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P330089

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

Reference Method: SM 2540 C-97
Batch ID: P330221

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P330225

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330229

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P330233

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P330091

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P330164

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: P329886

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329888

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329983

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330099

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330027

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	91.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329846

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

Reference Method: SM 2320 B-97
Batch ID: P330089

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

Reference Method: SM 4500 F-C-97
Batch ID: P330091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P330164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919109	Chloride	97.8		P	90 - 110
1919208	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919109	Sulfate	97.8		P	90 - 110
1919208	Sulfate	102		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919387	Ammonia-N	106	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919557	Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919016	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919542	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919374	Total-P	92.6	92.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919392	O-Phosphate-P	94.7	95.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P330091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919541	Fluoride	96.1	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P330164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919209	Organic Carbon	101		P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919475	Turbidity	0.160	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919109	Chloride	1.50	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919109	Sulfate	1.64	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919387	Ammonia-N	3.02	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919557	Kjeldahl Nitrogen	0.0407	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919016	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919542	NO2NO3-N	0.623	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919374	Total-P	0.166	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919392	O-Phosphate-P	0.870	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919384	Color (true)	2.32	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P330089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919541	Total Alkalinity	0.350	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P330221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918929	TDS	1.79	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P330225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919372	TDS	3.42	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P330091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919541	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P330164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919209	Organic Carbon	0.721	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: A78260
Included Lab Sample IDs: 1919504, 1919509, 1919510

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.3	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A78262
Included Lab Sample IDs: 1919502, 1919505, 1919506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.8	P/P	85 - 115
Color (true)	97.9	101	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A78270
Included Lab Sample IDs: 1919502, 1919505, 1919506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Chloride	106	101	P/P	90 - 110
Sulfate	100	99.8	P/P	90 - 110
Sulfate	103	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A78275
Included Lab Sample IDs: 1919502, 1919505, 1919506

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78309
Included Lab Sample IDs: 1919503, 1919507, 1919508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.7	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A78343
Included Lab Sample IDs: 1919502, 1919505, 1919506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A78343
Included Lab Sample IDs: 1919502, 1919505, 1919506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.1	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A78345
Included Lab Sample IDs: 1919503, 1919507

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.9	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A78348
Included Lab Sample IDs: 1919508

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78349
Included Lab Sample IDs: 1919503, 1919507, 1919508

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A78372
Included Lab Sample IDs: 1919503, 1919507, 1919508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A78375
Included Lab Sample IDs: 1919503, 1919507, 1919508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	102	P/P	90 - 110
Organic Carbon	99.2	102	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					0.160	
EPA 300.0 Rev. 2.1	Chloride	101	97.8	103		1.50	
	Sulfate	101	97.8	102		1.64	
EPA 350.1 Rev. 2.0	Ammonia-N	102	106	101			3.02
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.0	103	102			0.0407
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	105			0.0
	NO2NO3-N	106	100	102			0.623
EPA 365.1 Rev. 2.0	Total-P	91.0	92.6	92.4			0.166
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	94.7	95.7			0.870

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
SM 2120 B	Color (true)					2.32	
SM 2320 B-97	Total Alkalinity	102				0.350	
SM 2540 C-97	TDS					1.79	
	TDS					3.42	
SM 4500 F-C-97	Fluoride	95.9	96.1	96.1			0.0
SM 5310 B-00	Organic Carbon	98.5	101				0.721

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1919502, 1919505, 1919506
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1919502, 1919505, 1919506
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1919502, 1919505, 1919506
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1919503, 1919507, 1919508
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1919503, 1919507, 1919508
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1919503, 1919507, 1919508
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1919503, 1919507, 1919508
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1919504, 1919509, 1919510
SM 2120 B / E31780	True Color measured at 450 nm	1919502, 1919505, 1919506
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1919502, 1919505, 1919506
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1919502, 1919505, 1919506
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1919502, 1919505, 1919506
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1919502, 1919505, 1919506
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1919503, 1919507, 1919508

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	08/08/2017			08/08/2017 17:09	DeAsia Armster	1919502, 1919505, 1919506
EPA 300.0 Rev. 2.1	08/08/2017			08/09/2017	Julia Storbeck	1919502, 1919505, 1919506
EPA 350.1 Rev. 2.0	08/08/2017			08/09/2017	Sofia Elnemr	1919503, 1919507, 1919508
EPA 351.2 Rev. 2.0	08/08/2017	08/10/2017	Adrian Shelby	08/14/2017	Joseph Suarez	1919503, 1919507, 1919508
EPA 353.2 Rev. 2.0	08/08/2017			08/11/2017	Beverly Y. Sanders	1919503, 1919507, 1919508
EPA 365.1 Rev. 2.0	08/08/2017	08/10/2017	Sima Feizi	08/11/2017	Lipi Saha	1919503, 1919507, 1919508
EPA 365.1 Rev. 2.0 dissolved	08/08/2017			08/08/2017 15:04	Ping Hua	1919504
	08/08/2017			08/08/2017 15:05	Ping Hua	1919509, 1919510
SM 2120 B	08/08/2017			08/08/2017 14:24	Tanya Welborn	1919506
	08/08/2017			08/08/2017 14:42	Tanya Welborn	1919502
	08/08/2017			08/08/2017 14:43	Tanya Welborn	1919505
SM 2320 B-97	08/08/2017			08/10/2017	Dale L. Simmons	1919502, 1919505, 1919506
SM 2540 C-97	08/08/2017			08/09/2017	Yijie Li	1919502, 1919505, 1919506
SM 2540 D-97	08/08/2017			08/09/2017	Yijie Li	1919502, 1919505, 1919506
SM 4500 F-C-97	08/08/2017			08/10/2017	Dale L. Simmons	1919502, 1919505, 1919506
SM 5310 B-00	08/08/2017			08/11/2017	Sofia Elnemr	1919503, 1919507, 1919508