Chemical Analysis Report

CEN-DIST-2017-11-30-02

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

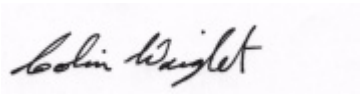
Event Description: **Long Branch+SCI**
Request ID: **RQ-2017-11-27-68**
Customer: **CEN-DIST**
Project ID: **BMAP**

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: Colin Wright, Program Administrator

Date Certified: 20-DEC-2017 12:20



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 groups are included in this report: Metals, Nutrients and Pesticides.

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: Long Branch @ 0.7 miles Downstream of CR13 Collection Date/Time: 11/29/2017 10:55

Field ID: G2CE0036 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949772	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P336149	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P336481	
		Sulfate	46		mg SO4/L	P336484	
	SM 2120 B	Color (true)	85		PCU	P336143	
	SM 2320 B-97	Total Alkalinity	63		mg CaCO3/L	P336617	
	SM 2540 C-97	TDS	206		mg/L	P336443	
	SM 2540 D-97	TSS	2	U	mg/L	P336304	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P336620	
1949773	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P336794	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P336569	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P336385	
	EPA 365.1 Rev. 2.0	Total-P	0.097		mg P/L	P336530	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P336445	
1949774	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.076		mg P/L	P336134	
1949788	EPA 200.7 Rev. 4.4	Calcium	41.0		mg/L	P336291	
		Iron	380		ug/L	P336291	
		Magnesium	2.68		mg/L	P336291	
		Potassium	2.2		mg/L	P336291	
		Sodium	15.1		mg/L	P336291	
		Zinc	5.0	U	ug/L	P336291	
	EPA 200.8 Rev. 5.4	Arsenic	0.78		ug/L	P336291	
		Cadmium	0.020	U	ug/L	P336291	
		Chromium	0.40	U	ug/L	P336291	
		Copper	0.35	I	ug/L	P336291	
		Lead	0.27		ug/L	P336291	
		Nickel	0.29	I	ug/L	P336291	
		Silver	0.010	U	ug/L	P336291	
1949791	EPA 8321B	Sucralose**	0.20		ug/L	P336107	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples 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: P336149

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336291

Component	Result	Code	Units
Calcium	0.075	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336291

Component	Result	Code	Units
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P336291

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336481

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336484

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336794

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336569

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336385

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336530

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336530

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

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

Reference Method: EPA 8321B
Batch ID: P336107

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P336143

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336617

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

Reference Method: SM 2540 C-97
Batch ID: P336443

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336304

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336445

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336291

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	98.9		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	106		P	85 - 115
Sodium	102		P	85 - 115
Zinc	98.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P336291

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	97.0		P	85 - 115
Copper	99.1		P	85 - 115
Lead	97.6		P	85 - 115
Nickel	101		P	85 - 115
Silver	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336481

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336484

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336794

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336569

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336385

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336530

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

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

Reference Method: EPA 8321B
Batch ID: P336107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	67.4		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P336617

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

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P336445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949568	Calcium	97.8		P	80 - 120
1949568	Iron	98.5		P	80 - 120
1949568	Magnesium	98.3		P	80 - 120
1949568	Sodium	101		P	80 - 120
1949568	Zinc	96.5		P	80 - 120
1949904	Calcium	96.5	95.5	P/P	80 - 120
1949904	Iron	94.8	95.9	P/P	80 - 120
1949904	Magnesium	100	102	P/P	80 - 120
1949904	Potassium	104	101	P/P	80 - 120
1949904	Sodium	97.3		P	80 - 120
1949904	Zinc	98.2	97.6	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P336291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949568	Arsenic	104		P	80 - 120
1949568	Cadmium	100		P	80 - 120
1949568	Chromium	94.4		P	80 - 120
1949568	Copper	96.4		P	80 - 120
1949568	Lead	98.5		P	80 - 120
1949568	Nickel	97.7		P	80 - 120
1949568	Silver	101		P	80 - 120
1949904	Arsenic	98.7	99.1	P/P	80 - 120
1949904	Cadmium	97.2	99.1	P/P	80 - 120
1949904	Chromium	93.9	94.3	P/P	80 - 120
1949904	Copper	96.6	97.2	P/P	80 - 120
1949904	Lead	97.2	97.6	P/P	80 - 120
1949904	Nickel	97.8	97.9	P/P	80 - 120
1949904	Silver	98.6	99.6	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949769	Chloride	95.2		P	90 - 110
1949897	Chloride	95.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949769	Sulfate	97.2		P	90 - 110
1949897	Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949773	Ammonia-N	102	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949918	Kjeldahl Nitrogen	96.5	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949724	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949909	Total-P	97.8	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949470	O-Phosphate-P	98.4	98.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P336107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949632	Sucralose	76.2	82.2	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949722	Fluoride	98.2	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949724	Organic Carbon	95.1	95.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949722	Turbidity	13.3	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949904	Calcium	0.567	Spike	P	0 - 20
1949904	Iron	1.20	Spike	P	0 - 20
1949904	Magnesium	1.37	Spike	P	0 - 20
1949904	Potassium	2.14	Spike	P	0 - 20
1949904	Sodium	0.284	Spike	P	0 - 20
1949904	Zinc	0.646	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P336291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949904	Arsenic	0.413	Spike	P	0 - 20
1949904	Cadmium	1.93	Spike	P	0 - 20
1949904	Chromium	0.476	Spike	P	0 - 20
1949904	Copper	0.534	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P336291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949904	Lead	0.437	Spike	P	0 - 20
1949904	Nickel	0.114	Spike	P	0 - 20
1949904	Silver	1.09	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949769	Chloride	0.468	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949769	Sulfate	0.213	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949773	Ammonia-N	2.26	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949918	Kjeldahl Nitrogen	4.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949724	NO2NO3-N	1.91	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949909	Total-P	4.27	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949470	O-Phosphate-P	0.203	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P336107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949632	Sucralose	2.51	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P336143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949757	Color (true)	7.47	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949722	Total Alkalinity	1.19	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949649	TDS	0.567	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949722	Fluoride	0.474	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949724	Organic Carbon	0.0825	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
Surrogates

Quality Assurance Report
Surrogates

Lab Sample ID: 1949791
Field Sample ID: G2CE0036

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	77.4	P	40 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A80568
Included Lab Sample IDs: 1949791

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	107	72.7	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A80611
Included Lab Sample IDs: 1949774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A80612
Included Lab Sample IDs: 1949772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80613
Included Lab Sample IDs: 1949772

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A80702
Included Lab Sample IDs: 1949773

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A80712
Included Lab Sample IDs: 1949788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	101	P/P	90 - 110
Cadmium	97.8	97.0	P/P	90 - 110
Chromium	97.5	94.6	P/P	90 - 110
Copper	101	102	P/P	90 - 110
Lead	98.2	97.2	P/P	90 - 110
Nickel	101	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A80712
Included Lab Sample IDs: 1949788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	98.1	97.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A80723
Included Lab Sample IDs: 1949773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	96.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A80735
Included Lab Sample IDs: 1949772

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A80748
Included Lab Sample IDs: 1949788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	95.6	94.8	P/P	90 - 110
Iron	94.1	90.8	P/P	90 - 110
Magnesium	95.9	93.6	P/P	90 - 110
Potassium	101	99.3	P/P	90 - 110
Sodium	98.2	95.9	P/P	90 - 110
Zinc	97.8	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A80757
Included Lab Sample IDs: 1949773

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

Reference Method: SM 2320 B-97
Run ID: A80770
Included Lab Sample IDs: 1949772

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

Reference Method: SM 4500 F-C-97
Run ID: A80770
Included Lab Sample IDs: 1949772

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A80797
Included Lab Sample IDs: 1949773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A80825
Included Lab Sample IDs: 1949773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	104	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						13.3	
EPA 200.7 Rev. 4.4	Calcium	101	97.8	96.5	95.5			0.567
	Iron	98.9	98.5	94.8	95.9			1.20
	Magnesium	105	98.3	100	102			1.37
	Potassium	106	104	101				2.14
	Sodium	102	101	97.3				0.284
	Zinc	98.9	96.5	98.2	97.6			0.646
EPA 200.8 Rev. 5.4	Arsenic	102	104	98.7	99.1			0.413
	Cadmium	98.4	100	97.2	99.1			1.93
	Chromium	97.0	94.4	93.9	94.3			0.476
	Copper	99.1	96.4	96.6	97.2			0.534
	Lead	97.6	98.5	97.2	97.6			0.437
	Nickel	101	97.7	97.8	97.9			0.114
	Silver	100	101	98.6	99.6			1.09
EPA 300.0 Rev. 2.1	Chloride	97.0	95.2	95.8			0.468	
	Sulfate	98.0	97.2	97.8			0.213	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	98.2				2.26
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.8	96.5	102				4.05
EPA 353.2 Rev. 2.0	NO2NO3-N	100	106	104				1.91
EPA 365.1 Rev. 2.0	Total-P	103	97.8	102				4.27
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.6	98.4	98.2				0.203
EPA 8321B	Sucralose	67.4	76.2	82.2				2.51
SM 2120 B	Color (true)						7.47	
SM 2320 B-97	Total Alkalinity	103					1.19	
SM 2540 C-97	TDS						0.567	
SM 4500 F-C-97	Fluoride	98.2	98.2	97.6				0.474
SM 5310 B-00	Organic Carbon	99.4	95.1	95.0				0.0825

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1949772
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1949788
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1949788
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1949772
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1949772
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1949773
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1949773
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1949773
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1949773
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1949774
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1949791
SM 2120 B / E31780	True Color measured at 450 nm	1949772
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1949772
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1949772
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1949772
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1949772
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1949773

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	11/30/2017			11/30/2017 17:11	Tanya Welborn	1949772
EPA 200.7 Rev. 4.4	11/30/2017	12/04/2017	Elliott D. Healy	12/06/2017	Martin Acosta	1949788
EPA 200.8 Rev. 5.4	11/30/2017	12/04/2017	Elliott D. Healy	12/05/2017	Nadine Brooks	1949788
EPA 300.0 Rev. 2.1	11/30/2017			12/05/2017	Julia Storbeck	1949772
EPA 350.1 Rev. 2.0	11/30/2017			12/08/2017	Sofia Elnemr	1949773
EPA 351.2 Rev. 2.0	11/30/2017	12/07/2017	Adrian Shelby	12/08/2017	Joseph Suarez	1949773
EPA 353.2 Rev. 2.0	11/30/2017			12/05/2017	Lauren Bottorf	1949773
EPA 365.1 Rev. 2.0	11/30/2017	12/06/2017	Sima Feizi	12/07/2017	Lipi Saha	1949773
EPA 365.1 Rev. 2.0 dissolved	11/30/2017			11/30/2017 14:25	Megan Treadwell	1949774
EPA 8321B	11/30/2017	11/30/2017	Juyoung Kim	11/30/2017	Juyoung Kim	1949791
SM 2120 B	11/30/2017			11/30/2017 14:40	Tanya Welborn	1949772
SM 2320 B-97	11/30/2017			12/07/2017	Dale L. Simmons	1949772
SM 2540 C-97	11/30/2017			12/01/2017	DeAsia Armster	1949772
SM 2540 D-97	11/30/2017			12/01/2017	DeAsia Armster	1949772
SM 4500 F-C-97	11/30/2017			12/07/2017	Dale L. Simmons	1949772
SM 5310 B-00	11/30/2017			12/05/2017	Ping Hua	1949773