

Chemical Analysis Report

SE-DIST-2016-10-27-01

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

Event Description: **blue cypress run**
Request ID: **RQ-2016-10-17-20**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 21-NOV-2016 10:59



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 and 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: BLUE CYPRESS LAKE DRAIN

Collection Date/Time: 10/26/2016 13:00

Field ID: G3SE0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845038	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P314064	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P314989	
		Sulfate	0.76		mg SO4/L	P314992	
	SM 2120 B	Color (true)	320		PCU	P314097	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P314176	
	SM 2540 C-97	TDS	112		mg/L	P314712	
	SM 2540 D-97	TSS	3	I	mg/L	P314673	
	SM 4500 F-C-97	Fluoride	0.074	I	mg F/L	P314181	
1845040	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P314906	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P315116	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.029		mg N/L	P314242	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P314880	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P314166	
1845042	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.094		mg P/L	P314069	
1845050	EPA 200.7 Rev. 4.4	Calcium	9.88		mg/L	P314210	
		Iron	290		ug/L	P314210	
		Magnesium	2.37		mg/L	P314210	
		Potassium	3.4		mg/L	P314210	
		Sodium	12.0		mg/L	P314210	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P314210	
		Arsenic	0.20		ug/L	P314210	
		Cadmium	0.020	U	ug/L	P314210	
		Chromium	0.22		ug/L	P314210	
		Copper	0.20	I	ug/L	P314210	
		Lead	0.13	I	ug/L	P314210	
		Nickel	0.066	I	ug/L	P314210	
		Silver	0.0050	U	ug/L	P314210	

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: PADGETT'S BRANCH (CLASS I)

Collection Date/Time: 10/26/2016 14:00

Field ID: G3SE0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845039	EPA 180.1 Rev. 2.0	Turbidity	3.1	A	NTU	P314065	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P314989	
		Sulfate	1.5		mg SO4/L	P314992	
	SM 2120 B	Color (true)	310		PCU	P314097	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P314176	
	SM 2540 C-97	TDS	134		mg/L	P314712	
	SM 2540 D-97	TSS	5	I	mg/L	P314673	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P314181	
1845041	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P314907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P315116	

Field ID: G3SE0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845041	EPA 353.2 Rev. 2.0	NO2NO3-N	0.038		mg N/L	P314242	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P314880	
	SM 5310 B-00	Organic Carbon	28		mg C/L	P314166	
1845043	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P314069	
1845051	EPA 200.7 Rev. 4.4	Calcium	16.7		mg/L	P314210	
		Iron	490		ug/L	P314210	
		Magnesium	3.24		mg/L	P314210	
		Potassium	1.3		mg/L	P314210	
		Sodium	11.4		mg/L	P314210	
		Zinc	5.3	I	ug/L	P314210	
	EPA 200.8 Rev. 5.4	Arsenic	0.35		ug/L	P314210	
		Cadmium	0.020	U	ug/L	P314210	
		Chromium	0.38		ug/L	P314210	
		Copper	0.41		ug/L	P314210	
		Lead	0.16	I	ug/L	P314210	
		Nickel	0.49		ug/L	P314210	
		Silver	0.0050	U	ug/L	P314210	

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: P314064

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P314065

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P314210

Component	Result	Code	Units
Calcium	0.075	U	mg/L
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: P314210

Component	Result	Code	Units
Arsenic	0.050	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P314210

Component	Result	Code	Units
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314989

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314992

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314906

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315116

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314242

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314880

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: P314069

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

Reference Method: SM 2120 B
Batch ID: P314097

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P314176

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

Reference Method: SM 2540 C-97
Batch ID: P314712

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314673

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P314181

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P314166

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: P314210

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	102		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	102		P	85 - 115
Sodium	100		P	85 - 115
Zinc	102		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P314210

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.4		P	85 - 115
Cadmium	99.5		P	85 - 115
Chromium	99.9		P	85 - 115
Copper	95.8		P	85 - 115
Lead	100		P	85 - 115
Nickel	97.7		P	85 - 115
Silver	95.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314989

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314906

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

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: P315116

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314880

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314069

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

Reference Method: SM 2320 B-97
Batch ID: P314176

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P314181

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P314166

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P314210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845011	Calcium	102		P	80 - 120
1845011	Iron	106		P	80 - 120
1845011	Magnesium	103		P	80 - 120
1845011	Potassium	101		P	80 - 120
1845011	Sodium	101		P	80 - 120
1845011	Zinc	97.9		P	80 - 120
1845048	Calcium	103		P	80 - 120
1845048	Iron	103		P	80 - 120
1845048	Magnesium	102		P	80 - 120
1845048	Potassium	102	99.9	P/P	80 - 120
1845048	Sodium	99.2		P	80 - 120
1845048	Zinc	101	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P314210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845011	Arsenic	98.0		P	80 - 120
1845011	Cadmium	100		P	80 - 120
1845011	Chromium	98.3		P	80 - 120
1845011	Copper	91.0		P	80 - 120
1845011	Lead	98.7		P	80 - 120
1845011	Nickel	92.7		P	80 - 120
1845011	Silver	94.8		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P314210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845048	Arsenic	96.8	96.4	P/P	80 - 120
1845048	Cadmium	98.8	100	P/P	80 - 120
1845048	Chromium	99.2	99.6	P/P	80 - 120
1845048	Copper	93.4	93.9	P/P	80 - 120
1845048	Lead	102	101	P/P	80 - 120
1845048	Nickel	93.0	95.1	P/P	80 - 120
1845048	Silver	94.0	93.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844798	Chloride	97.6		P	90 - 110
1845290	Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844798	Sulfate	94.6		P	90 - 110
1845290	Sulfate	93.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845004	Ammonia-N	93.9	91.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845079	Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844800	Kjeldahl Nitrogen	103	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845018	NO2NO3-N	94.5	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314880

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845241	Total-P	94.1	98.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845081	O-Phosphate-P	97.4	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P314181

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845002	Fluoride	97.8	99.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P314166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845018	Organic Carbon	91.7	92.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845016	Turbidity	4.06	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845039	Turbidity	1.92	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P314210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845048	Calcium	0.682	Spike	P	0 - 20
1845048	Iron	0.697	Spike	P	0 - 20
1845048	Magnesium	0.849	Spike	P	0 - 20
1845048	Potassium	1.33	Spike	P	0 - 20
1845048	Sodium	1.61	Spike	P	0 - 20
1845048	Zinc	1.07	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P314210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845048	Arsenic	0.342	Spike	P	0 - 20
1845048	Cadmium	1.40	Spike	P	0 - 20
1845048	Chromium	0.340	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P314210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845048	Copper	0.578	Spike	P	0 - 20
1845048	Lead	1.42	Spike	P	0 - 20
1845048	Nickel	2.18	Spike	P	0 - 20
1845048	Silver	0.789	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845290	Chloride	0.0504	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845290	Sulfate	1.85	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845004	Ammonia-N	2.07	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845079	Ammonia-N	0.114	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1844800	Kjeldahl Nitrogen	3.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845018	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845241	Total-P	4.64	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845081	O-Phosphate-P	0.920	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P314097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845077	Color (true)	7.73	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P314176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845002	Total Alkalinity	0.107	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P314712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845002	TDS	3.72	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P314181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845002	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P314166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845018	Organic Carbon	0.440	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 180.1 Rev. 2.0

Run ID: A72478

Included Lab Sample IDs: 1845038, 1845039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105
Turbidity	102	101	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A72479

Included Lab Sample IDs: 1845042, 1845043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.8	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A72485

Included Lab Sample IDs: 1845038, 1845039

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

Reference Method: SM 5310 B-00

Run ID: A72513

Included Lab Sample IDs: 1845040, 1845041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.1	97.3	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A72515

Included Lab Sample IDs: 1845038, 1845039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A72515

Included Lab Sample IDs: 1845038, 1845039

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72533

Included Lab Sample IDs: 1845040, 1845041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	95.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A72593

Included Lab Sample IDs: 1845050, 1845051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.1	96.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A72593

Included Lab Sample IDs: 1845050, 1845051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	98.4	98.9	P/P	90 - 110
Chromium	98.3	99.7	P/P	90 - 110
Copper	95.0	94.9	P/P	90 - 110
Nickel	96.3	95.1	P/P	90 - 110
Silver	95.7	95.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A72643

Included Lab Sample IDs: 1845050, 1845051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	102	101	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	98.9	100	P/P	90 - 110
Sodium	98.8	98.8	P/P	90 - 110
Zinc	101	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A72649

Included Lab Sample IDs: 1845050, 1845051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	97.9	97.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72715

Included Lab Sample IDs: 1845038, 1845039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	99.1	97.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72736

Included Lab Sample IDs: 1845040, 1845041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72756

Included Lab Sample IDs: 1845040, 1845041

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72832
Included Lab Sample IDs: 1845040, 1845041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	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				4.06	
	Turbidity				1.92	
EPA 200.7 Rev. 4.4	Calcium	104	102 103			0.682
	Iron	102	106 103			0.697
	Magnesium	102	103 102			0.849
	Potassium	102	101 102 99.9			1.33
	Sodium	100	101 99.2			1.61
	Zinc	102	97.9 101 100			1.07
EPA 200.8 Rev. 5.4	Arsenic	98.4	98.0 96.8 96.4			0.342
	Cadmium	99.5	100 98.8 100			1.40
	Chromium	99.9	98.3 99.2 99.6			0.340
	Copper	95.8	91.0 93.4 93.9			0.578
	Lead	100	98.7 102 101			1.42
	Nickel	97.7	92.7 93.0 95.1			2.18
	Silver	95.6	94.8 94.0 93.3			0.789
EPA 300.0 Rev. 2.1	Chloride	98.4	96.6 97.6		0.0504	
	Sulfate	94.3	93.8 94.6		1.85	
EPA 350.1 Rev. 2.0	Ammonia-N	101	93.9 91.9			2.07
	Ammonia-N	102	99.8 100			0.114
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	103 98.9			3.04
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	94.5 94.5			0.0
EPA 365.1 Rev. 2.0	Total-P	95.8	94.1 98.8			4.64
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	97.4 98.6			0.920
SM 2120 B	Color (true)				7.73	
SM 2320 B-97	Total Alkalinity	104			0.107	
SM 2540 C-97	TDS				3.72	
SM 4500 F-C-97	Fluoride	101	97.8 99.2			0.946
SM 5310 B-00	Organic Carbon	97.0	91.7 92.4			0.440

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1845038, 1845039
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1845050, 1845051
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1845050, 1845051

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1845038, 1845039
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1845038, 1845039
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1845040, 1845041
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1845040, 1845041
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1845040, 1845041
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1845040, 1845041
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1845042, 1845043
SM 2120 B / E31780	True Color measured at 450 nm	1845038, 1845039
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1845038, 1845039
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1845038, 1845039
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1845038, 1845039
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1845038, 1845039
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1845040, 1845041

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	10/27/2016			10/27/2016 15:34	Sima Feizi	1845038, 1845039
EPA 200.7 Rev. 4.4	10/27/2016	10/31/2016	Elliott D. Healy	11/04/2016	Betina Topolski	1845050, 1845051
EPA 200.8 Rev. 5.4	10/27/2016	10/31/2016	Elliott D. Healy	11/02/2016	Charles J. Peterson	1845050, 1845051
	10/27/2016	10/31/2016	Elliott D. Healy	11/05/2016	Charles J. Peterson	1845050, 1845051
EPA 300.0 Rev. 2.1	10/27/2016			11/10/2016	Ping Hua	1845038, 1845039
EPA 350.1 Rev. 2.0	10/27/2016			11/09/2016	Sofia Elnemr	1845040, 1845041
EPA 351.2 Rev. 2.0	10/27/2016	11/15/2016	Adrian Shelby	11/16/2016	Joseph Suarez	1845040, 1845041
EPA 353.2 Rev. 2.0	10/27/2016			10/31/2016	Beverly Y. Sanders	1845040, 1845041
EPA 365.1 Rev. 2.0	10/27/2016	11/09/2016	Adrian Shelby	11/10/2016	Lipi Saha	1845040, 1845041
EPA 365.1 Rev. 2.0 dissolved	10/27/2016			10/27/2016 15:54	Julia Storbeck	1845042
	10/27/2016			10/27/2016 15:55	Julia Storbeck	1845043
SM 2120 B	10/27/2016			10/27/2016 15:53	Julie Michelle Frank	1845038
	10/27/2016			10/27/2016 15:54	Julie Michelle Frank	1845039
SM 2320 B-97	10/27/2016			10/29/2016	Dale L. Simmons	1845038, 1845039
SM 2540 C-97	10/27/2016			11/01/2016	Yijie Li	1845038, 1845039
SM 2540 D-97	10/27/2016			11/01/2016	Yijie Li	1845038, 1845039
SM 4500 F-C-97	10/27/2016			10/29/2016	Dale L. Simmons	1845038, 1845039
SM 5310 B-00	10/27/2016			10/29/2016	Julie Michelle Frank	1845040, 1845041