Chemical Analysis Report

SE-DIST-2016-06-08-01

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

Event Description: **SMP-With TREND**
Request ID: **RQ-2016-06-06-45**
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
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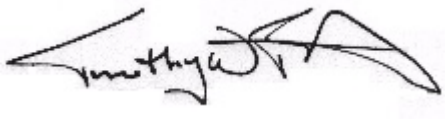
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 30-JUN-2016 14:33



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: C12 Headwater East of Structure **Collection Date/Time: 06/07/2016 11:15**

Field ID: G4SE0062 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1806417	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P305856	
	EPA 300.0 Rev. 2.1	Chloride	67		mg Cl/L	P306258	
		Sulfate	9.8		mg SO4/L	P306262	
	SM 2120 B	Color (true)	44		PCU	P305877	
	SM 2320 B-97	Total Alkalinity	174		mg CaCO3/L	P305980	
	SM 2540 C-97	TDS	337		mg/L	P306518	
	SM 2540 D-97	TSS	3	I	mg/L	P306444	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P305983	
1806418	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P306126	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P305958	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P305599	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P306149	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P306322	
1806419	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P305814	
1806421	EPA 200.7 Rev. 4.4	Calcium	59.3		mg/L	P305899	
		Iron	57	I	ug/L	P305899	
		Magnesium	11.3		mg/L	P305899	
		Potassium	3.9		mg/L	P305899	
		Sodium	45.6		mg/L	P305899	
		Zinc	5.0	U	ug/L	P305899	
	EPA 200.8 Rev. 5.4	Arsenic	1.21		ug/L	P305899	
		Cadmium	0.020	U	ug/L	P305899	
		Chromium	0.11	I	ug/L	P305899	
		Copper	4.04		ug/L	P305899	
		Lead	0.12	I	ug/L	P305899	
		Nickel	0.26		ug/L	P305899	
		Silver	0.0050	U	ug/L	P305899	

Ref. Method and Comment:
EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305856

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305899

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305899

Component	Result	Code	Units
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: P305899

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
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: P306258

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306126

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305958

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P3055991

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306149

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: P305814

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

Reference Method: SM 2120 B
Batch ID: P305877

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305980

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

Reference Method: SM 2540 C-97
Batch ID: P306518

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P306444

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306322

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: P305899

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	106		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	106		P	85 - 115
Sodium	104		P	85 - 115
Zinc	101		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P305899

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.2		P	85 - 115
Cadmium	95.2		P	85 - 115
Chromium	97.4		P	85 - 115
Copper	95.5		P	85 - 115
Lead	94.8		P	85 - 115
Nickel	97.3		P	85 - 115
Silver	95.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306258

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306126

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305958

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P3055991

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306149

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305814

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P305980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P306322

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305899

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806626	Calcium	108		P	80 - 120
1806626	Iron	108	108	P/P	80 - 120
1806626	Magnesium	110		P	80 - 120
1806626	Potassium	106		P	80 - 120
1806626	Sodium	102		P	80 - 120
1806626	Zinc	108	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P305899

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806626	Arsenic	99.5	101	P/P	80 - 120
1806626	Cadmium	98.2	100	P/P	80 - 120
1806626	Chromium	97.9	98.4	P/P	80 - 120
1806626	Copper	94.5	96.9	P/P	80 - 120
1806626	Lead	96.3	98.5	P/P	80 - 120
1806626	Nickel	94.7	95.7	P/P	80 - 120
1806626	Silver	95.6	96.7	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806407	Chloride	97.4	96.8	P/P	90 - 110
1807236	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806407	Sulfate	94.7	94.1	P/P	90 - 110
1807236	Sulfate	95.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P3055991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806386	NO2NO3-N	94.4	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806418	Total-P	99.5	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806390	O-Phosphate-P	97.4	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806401	Fluoride	101	98.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P306322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1804803	Organic Carbon	111	107	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806381	Turbidity	1.84	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806626	Calcium	0.223	Spike	P	0 - 20
1806626	Iron	0.160	Spike	P	0 - 20
1806626	Magnesium	0.514	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806626	Potassium	0.666	Spike	P	0 - 20
1806626	Sodium	0.465	Spike	P	0 - 20
1806626	Zinc	0.575	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P305899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806626	Arsenic	1.37	Spike	P	0 - 20
1806626	Cadmium	1.88	Spike	P	0 - 20
1806626	Chromium	0.455	Spike	P	0 - 20
1806626	Copper	2.40	Spike	P	0 - 20
1806626	Lead	2.23	Spike	P	0 - 20
1806626	Nickel	0.973	Spike	P	0 - 20
1806626	Silver	1.11	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806407	Chloride	0.400	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806407	Sulfate	0.380	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806385	Ammonia-N	0.572	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806402	Kjeldahl Nitrogen	4.23	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P3055991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806386	NO2NO3-N	1.54	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806418	Total-P	2.98	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806390	O-Phosphate-P	1.52	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806381	Color (true)	2.37	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	Total Alkalinity	1.81	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P306518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	TDS	5.76	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P306444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	TSS	3.85	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	Fluoride	1.92	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1804803	Organic Carbon	1.98	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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 365.1 Rev. 2.0 dissolved
Run ID: A69921
Included Lab Sample IDs: 1806419

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69934
Included Lab Sample IDs: 1806417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	99.5	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A69940
Included Lab Sample IDs: 1806417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	102	P/P	90 - 115

Reference Method: SM 2320 B-97
Run ID: A69968
Included Lab Sample IDs: 1806417

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

Reference Method: SM 4500 F-C-97
Run ID: A69968
Included Lab Sample IDs: 1806417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A69997
Included Lab Sample IDs: 1806421

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70000
Included Lab Sample IDs: 1806418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70003
Included Lab Sample IDs: 1806418

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70016
Included Lab Sample IDs: 1806418

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70045
Included Lab Sample IDs: 1806417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.8	P/P	90 - 110
Sulfate	96.7	98.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A70046
Included Lab Sample IDs: 1806421

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.2	99.0	P/P	90 - 110
Cadmium	96.9	96.2	P/P	90 - 110
Chromium	97.6	98.1	P/P	90 - 110
Copper	97.8	98.1	P/P	90 - 110
Lead	93.3	92.9	P/P	90 - 110
Nickel	97.5	98.7	P/P	90 - 110
Silver	94.7	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70061
Included Lab Sample IDs: 1806418

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

Reference Method: SM 5310 B-00
Run ID: A70079
Included Lab Sample IDs: 1806418

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

Quality Assurance Report
Calibration Verification

* 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					1.84	
EPA 200.7 Rev. 4.4	Calcium	105	108				0.223
	Iron	106	108	108			0.160
	Magnesium	105	110				0.514
	Potassium	106	106				0.666
	Sodium	104	102				0.465
	Zinc	101	108	108			0.575
EPA 200.8 Rev. 5.4	Arsenic	98.2	99.5	101			1.37
	Cadmium	95.2	98.2	100			1.88
	Chromium	97.4	97.9	98.4			0.455
	Copper	95.5	94.5	96.9			2.40
	Lead	94.8	96.3	98.5			2.23
	Nickel	97.3	94.7	95.7			0.973
	Silver	95.6	95.6	96.7			1.11
EPA 300.0 Rev. 2.1	Chloride	98.5	97.4	96.8	98.4		0.400
	Sulfate	96.4	94.7	94.1	95.0		0.380
EPA 350.1 Rev. 2.0	Ammonia-N	99.9					0.572
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108					4.23
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	94.4	96.4			1.54
EPA 365.1 Rev. 2.0	Total-P	98.2	99.5	96.4			2.98
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.4	99.0			1.52
SM 2120 B	Color (true)					2.37	
SM 2320 B-97	Total Alkalinity	103				1.81	
SM 2540 C-97	TDS					5.76	
SM 2540 D-97	TSS					3.85	
SM 4500 F-C-97	Fluoride	100	101	98.6			1.92
SM 5310 B-00	Organic Carbon	105	111	107			1.98

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1806417
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1806421
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1806421
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1806417
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1806417
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1806418
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1806418
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1806418

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1806418
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1806419
SM 2120 B / E31780	True Color measured at 450 nm	1806417
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1806417
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1806417
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1806417
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1806417
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1806418

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	06/08/2016			06/08/2016 17:59	Rochelle Y Jackson	1806417
EPA 200.7 Rev. 4.4	06/08/2016	06/09/2016	Elliott D. Healy	06/13/2016	Joshua Ayres	1806421
EPA 200.8 Rev. 5.4	06/08/2016	06/09/2016	Elliott D. Healy	06/14/2016	Charles J. Peterson	1806421
EPA 300.0 Rev. 2.1	06/08/2016			06/14/2016	Elisa J Lutz	1806417
EPA 350.1 Rev. 2.0	06/08/2016			06/13/2016	Diana M. Turner	1806418
EPA 351.2 Rev. 2.0	06/08/2016	06/10/2016	Sofia Elnemr	06/13/2016	Christopher Armour	1806418
EPA 353.2 Rev. 2.0	06/08/2016			06/10/2016	Beverly Y. Sanders	1806418
EPA 365.1 Rev. 2.0	06/08/2016	06/14/2016	Vijayalakshmi Reddy	06/15/2016	Lipi Saha	1806418
EPA 365.1 Rev. 2.0 dissolved	06/08/2016			06/08/2016 14:32	Julia Storbeck	1806419
SM 2120 B	06/08/2016			06/08/2016 16:59	Chrisoulla Rakowski	1806417
SM 2320 B-97	06/08/2016			06/10/2016	Dale L. Simmons	1806417
SM 2540 C-97	06/08/2016			06/10/2016	Yijie Li	1806417
SM 2540 D-97	06/08/2016			06/10/2016	Yijie Li	1806417
SM 4500 F-C-97	06/08/2016			06/10/2016	Dale L. Simmons	1806417
SM 5310 B-00	06/08/2016			06/15/2016	Sofia Elnemr	1806418