

Chemical Analysis Report

SE-DIST-2016-05-10-01

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-2016-05-09-74**
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: Jordan Skaggs

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

Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 06-JUN-2016 14:53

A handwritten signature in black ink, appearing to read "Timothy W. Fitzpatrick", with a stylized flourish at the end.

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: C-12, East Side of Structure

Collection Date/Time: 05/09/2016 15:10

Field ID: G4SE0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1797067	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P303969	
	EPA 300.0 Rev. 2.1	Chloride	66		mg Cl/L	P304555	
		Sulfate	15		mg SO4/L	P304558	
	SM 2120 B	Color (true)	57	A	PCU	P304015	
	SM 2320 B-97	Total Alkalinity	155		mg CaCO3/L	P304482	
	SM 2540 C-97	TDS	305		mg/L	P304440	
	SM 2540 D-97	TSS	2	I	mg/L	P304396	
	SM 4500 F-C-97	Fluoride	0.28		mg F/L	P304484	
1797068	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P304312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P304627	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P304530	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P304768	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P304851	
1797069	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303962	
1797071	EPA 200.7 Rev. 4.4	Calcium	54.2		mg/L	P304180	
		Iron	44	I	ug/L	P304180	
		Magnesium	11.9		mg/L	P304180	
		Potassium	4.2		mg/L	P304180	
		Sodium	45.2		mg/L	P304180	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P304180	
		Arsenic	1.20		ug/L	P304180	
		Cadmium	0.020	U	ug/L	P304180	
		Chromium	0.10	I	ug/L	P304180	
		Copper	7.13		ug/L	P304180	
		Lead	0.090	I	ug/L	P304180	
		Nickel	0.24		ug/L	P304180	
		Silver	0.0050	U	ug/L	P304180	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: The calcium matrix spike recoveries are 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: P303969

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P304180

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: P304180

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: P304180

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: P304555

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304558

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304312

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304627

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304530

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304768

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: P303962

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

Reference Method: SM 2120 B
Batch ID: P304015

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P304482

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

Reference Method: SM 2540 C-97
Batch ID: P304440

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P304396

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P304484

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P304851

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: P304180

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	106		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	101		P	85 - 115
Sodium	105		P	85 - 115
Zinc	98.0		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P304180

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.5		P	85 - 115
Cadmium	94.3		P	85 - 115
Chromium	97.4		P	85 - 115
Copper	104		P	85 - 115
Lead	95.9		P	85 - 115
Nickel	97.7		P	85 - 115
Silver	91.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304555

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304312

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304627

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304530

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304768

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303962

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: P304482

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
 Batch ID: P304484

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P304851

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P304180

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797430	Iron	106	109	P/P	80 - 120
1797430	Magnesium	107		P	80 - 120
1797430	Potassium	102	105	P/P	80 - 120
1797430	Sodium	105		P	80 - 120
1797430	Zinc	103	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P304180

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797430	Arsenic	97.9	97.7	P/P	80 - 120
1797430	Cadmium	98.6	93.9	P/P	80 - 120
1797430	Chromium	98.8	99.0	P/P	80 - 120
1797430	Copper	96.9	93.8	P/P	80 - 120
1797430	Lead	98.3	97.9	P/P	80 - 120
1797430	Nickel	95.8	94.5	P/P	80 - 120
1797430	Silver	91.8	90.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P304555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797204	Chloride	97.5		P	90 - 110
1797327	Chloride	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P304558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797204	Sulfate	94.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797327	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797026	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797025	Kjeldahl Nitrogen	93.0	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797042	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797041	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797044	O-Phosphate-P	98.4	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P304484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1796790	Fluoride	99.8	99.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P304851

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1796925	Organic Carbon	99.2	101	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1796977	Turbidity	0.766	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P304180

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797430	Calcium	0.634	Spike	P	0 - 20
1797430	Iron	2.19	Spike	P	0 - 20
1797430	Magnesium	1.39	Spike	P	0 - 20
1797430	Potassium	2.00	Spike	P	0 - 20
1797430	Sodium	0.960	Spike	P	0 - 20
1797430	Zinc	2.54	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P304180

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797430	Arsenic	0.233	Spike	P	0 - 20
1797430	Cadmium	4.82	Spike	P	0 - 20
1797430	Chromium	0.159	Spike	P	0 - 20
1797430	Copper	3.31	Spike	P	0 - 20
1797430	Lead	0.455	Spike	P	0 - 20
1797430	Nickel	1.25	Spike	P	0 - 20
1797430	Silver	1.61	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797327	Chloride	0.556	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797327	Sulfate	5.61	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797026	Ammonia-N	0.537	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797025	Kjeldahl Nitrogen	4.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797042	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797041	Total-P	0.962	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797044	O-Phosphate-P	1.71	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P304015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797067	Color (true)	0.0489	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P304482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1796790	Total Alkalinity	0.239	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P304440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1796979	TDS	2.68	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P304484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1796790	Fluoride	0.473	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P304851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1796925	Organic Carbon	1.73	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A69384
Included Lab Sample IDs: 1797067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	99.2	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A69389
Included Lab Sample IDs: 1797069

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69393
Included Lab Sample IDs: 1797067

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A69475
Included Lab Sample IDs: 1797068

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A69510
Included Lab Sample IDs: 1797071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.9	95.9	P/P	90 - 110
Cadmium	95.5	94.2	P/P	90 - 110
Copper	101	98.1	P/P	90 - 110
Lead	95.2	93.6	P/P	90 - 110
Nickel	100	97.2	P/P	90 - 110
Silver	94.4	92.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A69532

Included Lab Sample IDs: 1797071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	101	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	102	103	P/P	90 - 110
Potassium	101	99.7	P/P	90 - 110
Sodium	102	100	P/P	90 - 110
Zinc	100	99.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69535

Included Lab Sample IDs: 1797067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69535

Included Lab Sample IDs: 1797067

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69550

Included Lab Sample IDs: 1797068

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69555

Included Lab Sample IDs: 1797067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	99.5	97.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A69570

Included Lab Sample IDs: 1797071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	99.6	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69612

Included Lab Sample IDs: 1797068

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00
 Run ID: A69642
 Included Lab Sample IDs: 1797068

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

Reference Method: EPA 365.1 Rev. 2.0
 Run ID: A69663
 Included Lab Sample IDs: 1797068

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	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				0.766	
EPA 200.7 Rev. 4.4	Calcium	105				0.634
	Iron	106	106	109		2.19
	Magnesium	104	107			1.39
	Potassium	101	102	105		2.00
	Sodium	105	105			0.960
	Zinc	98.0	103	106		2.54
EPA 200.8 Rev. 5.4	Arsenic	95.5	97.9	97.7		0.233
	Cadmium	94.3	98.6	93.9		4.82
	Chromium	97.4	98.8	99.0		0.159
	Copper	104	96.9	93.8		3.31
	Lead	95.9	98.3	97.9		0.455
	Nickel	97.7	95.8	94.5		1.25
	Silver	91.7	91.8	90.3		1.61
EPA 300.0 Rev. 2.1	Chloride	99.2	97.3	97.5	0.556	
	Sulfate	97.4	96.5	94.8	5.61	
EPA 350.1 Rev. 2.0	Ammonia-N	97.6	103	102		0.537
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	93.0	98.2		4.41
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	103	104		1.45
EPA 365.1 Rev. 2.0	Total-P	106	106	107		0.962
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.4	100		1.71
SM 2120 B	Color (true)				0.0489	
SM 2320 B-97	Total Alkalinity	101			0.239	
SM 2540 C-97	TDS				2.68	
SM 4500 F-C-97	Fluoride	98.8	99.8	99.0		0.473
SM 5310 B-00	Organic Carbon	100	99.2	101		1.73

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	1797067
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1797071
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1797071
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1797067
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1797067
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1797068
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1797068
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1797068
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1797068
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1797069
SM 2120 B / E31780	True Color measured at 450 nm	1797067
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1797067
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1797067
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1797067
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1797067
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1797068

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	05/10/2016			05/10/2016 15:26	Sima Feizi	1797067
EPA 200.7 Rev. 4.4	05/10/2016	05/12/2016	Elliott D. Healy	05/17/2016	Joshua Ayres	1797071
EPA 200.8 Rev. 5.4	05/10/2016	05/12/2016	Elliott D. Healy	05/16/2016	Charles J. Peterson	1797071
	05/10/2016	05/12/2016	Elliott D. Healy	05/18/2016	Charles J. Peterson	1797071
EPA 300.0 Rev. 2.1	05/10/2016			05/18/2016	Elisa J Lutz	1797067
EPA 350.1 Rev. 2.0	05/10/2016			05/13/2016	Diana M. Turner	1797068
EPA 351.2 Rev. 2.0	05/10/2016	05/19/2016	Sofia Elnemr	05/23/2016	Christopher Armour	1797068
EPA 353.2 Rev. 2.0	05/10/2016			05/18/2016	Peter D. Kaus	1797068
EPA 365.1 Rev. 2.0	05/10/2016	05/23/2016	Vijayalakshmi Reddy	05/24/2016	Lipi Saha	1797068
EPA 365.1 Rev. 2.0 dissolved	05/10/2016			05/10/2016 15:19	Julia Storbeck	1797069
SM 2120 B	05/10/2016			05/10/2016 14:37	Rochelle Y Jackson	1797067
SM 2320 B-97	05/10/2016			05/18/2016	Dale L. Simmons	1797067
SM 2540 C-97	05/10/2016			05/11/2016	Yijie Li	1797067
SM 2540 D-97	05/10/2016			05/11/2016	Yijie Li	1797067
SM 4500 F-C-97	05/10/2016			05/18/2016	Dale L. Simmons	1797067
SM 5310 B-00	05/10/2016			05/24/2016	Diana M. Turner	1797068