

Chemical Analysis Report

SO-DIST-2018-03-14-01

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

Event Description: **Telegraph**
Request ID: **RQ-2018-03-12-38**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Maryann Dugan

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: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 24-APR-2018 14:04



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: Telegraph Swamp South

Collection Date/Time: 03/13/2018 09:30

Field ID: G3SD0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974500	EPA 180.1 Rev. 2.0	Turbidity	35	A	NTU	P341552	
	EPA 300.0 Rev. 2.1	Chloride	220		mg Cl/L	P341902	
		Sulfate	46		mg SO4/L	P341905	
	SM 2120 B	Color (true)	52	A	PCU	P341561	
	SM 2320 B-97	Total Alkalinity	130		mg CaCO3/L	P341929	
	SM 2540 C-97	TDS	542		mg/L	P342011	
	SM 2540 D-97	TSS	65		mg/L	P341864	
	SM 4500 F-C-97	Fluoride	0.41		mg F/L	P342153	
1974501	EPA 350.1 Rev. 2.0	Ammonia-N	0.26		mg N/L	P342073	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.8		mg N/L	P341753	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P341732	
	EPA 365.1 Rev. 2.0	Total-P	0.33		mg P/L	P341668	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P342180	
1974502	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P341577	
1974505	EPA 200.7 Rev. 4.4	Calcium	72.3		mg/L	P341685	
		Iron	1.55E+03		ug/L	P341685	
		Magnesium	21.0		mg/L	P341685	
		Potassium	6.0		mg/L	P341685	
		Sodium	105		mg/L	P341685	
	EPA 200.8 Rev. 5.4	Zinc	7.4	I	ug/L	P341685	
		Arsenic	1.60		ug/L	P341685	
		Cadmium	0.020	U	ug/L	P341685	
		Chromium	0.96	I	ug/L	P341685	
		Copper	1.23		ug/L	P341685	
		Lead	0.97		ug/L	P341685	
		Nickel	0.50	I	ug/L	P341685	
		Silver	0.010	U	ug/L	P341685	

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 calcium, magnesium, potassium, and sodium 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: P341552

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P341685

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P341685

Component	Result	Code	Units
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: P341685

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: P341902

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341905

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342073

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341753

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341732

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341668

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: P341577

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

Reference Method: SM 2120 B
Batch ID: P341561

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P341929

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

Reference Method: SM 2540 C-97
Batch ID: P342011

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P341864

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342153

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342180

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: P341685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	112		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	99.1		P	85 - 115
Sodium	101		P	85 - 115
Zinc	108		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P341685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	107		P	85 - 115
Chromium	104		P	85 - 115
Copper	103		P	85 - 115
Lead	103		P	85 - 115
Nickel	102		P	85 - 115
Silver	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P341902

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P341905

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P342073

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	90.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P341753

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P341732

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

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P341668

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P341577

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P341929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P342153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342180

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P341685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974672	Iron	106	107	P/P	80 - 120
1974672	Zinc	110	105	P/P	80 - 120
1974685	Calcium	104		P	80 - 120
1974685	Iron	112		P	80 - 120
1974685	Magnesium	114		P	80 - 120
1974685	Potassium	106		P	80 - 120
1974685	Sodium	104		P	80 - 120
1974685	Zinc	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974672	Arsenic	109	109	P/P	80 - 120
1974672	Cadmium	103	101	P/P	80 - 120
1974672	Chromium	97.0	97.2	P/P	80 - 120
1974672	Copper	95.0	95.3	P/P	80 - 120
1974672	Lead	108	107	P/P	80 - 120
1974672	Nickel	90.1	89.6	P/P	80 - 120
1974672	Silver	96.2	96.4	P/P	80 - 120
1974685	Arsenic	102		P	80 - 120
1974685	Cadmium	105		P	80 - 120
1974685	Chromium	99.0		P	80 - 120
1974685	Copper	94.3		P	80 - 120
1974685	Lead	103		P	80 - 120
1974685	Nickel	95.6		P	80 - 120
1974685	Silver	101		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974404	Chloride	101		P	90 - 110
1974574	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974404	Sulfate	104		P	90 - 110
1974574	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974635	Ammonia-N	92.2	91.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974583	Kjeldahl Nitrogen	97.7	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974635	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974481	Total-P	101	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974432	O-Phosphate-P	92.4	94.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P342153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974477	Fluoride	96.2	98.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342180

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974420	Organic Carbon	107	108	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974500	Turbidity	2.31	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P341685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974672	Calcium	3.25	Spike	P	0 - 20
1974672	Iron	0.134	Spike	P	0 - 20
1974672	Magnesium	3.01	Spike	P	0 - 20
1974672	Potassium	2.66	Spike	P	0 - 20
1974672	Sodium	4.00	Spike	P	0 - 20
1974672	Zinc	5.04	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974672	Arsenic	0.0524	Spike	P	0 - 20
1974672	Cadmium	2.26	Spike	P	0 - 20
1974672	Chromium	0.156	Spike	P	0 - 20
1974672	Copper	0.399	Spike	P	0 - 20
1974672	Lead	0.718	Spike	P	0 - 20
1974672	Nickel	0.555	Spike	P	0 - 20
1974672	Silver	0.145	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974404	Chloride	0.567	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974404	Sulfate	1.01	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974635	Ammonia-N	1.25	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974583	Kjeldahl Nitrogen	0.362	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974635	NO2NO3-N	0.484	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974481	Total-P	3.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974432	O-Phosphate-P	1.39	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P341561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974500	Color (true)	1.60	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P341929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974477	Total Alkalinity	0.129	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P342011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974588	TDS	2.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P342153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974477	Fluoride	1.91	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P342180

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974420	Organic Carbon	0.934	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: A82608
Included Lab Sample IDs: 1974500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82609
Included Lab Sample IDs: 1974500

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82614
Included Lab Sample IDs: 1974502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.3	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A82685
Included Lab Sample IDs: 1974501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.9	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82687
Included Lab Sample IDs: 1974501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A82709
Included Lab Sample IDs: 1974505

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A82709

Included Lab Sample IDs: 1974505

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	104	104	P/P	90 - 110
Potassium	99.9	101	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Zinc	106	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82750

Included Lab Sample IDs: 1974500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	98.9	P/P	90 - 110
Sulfate	98.4	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82757

Included Lab Sample IDs: 1974501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	90.9	97.1	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82760

Included Lab Sample IDs: 1974500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.8	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82797

Included Lab Sample IDs: 1974501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82826

Included Lab Sample IDs: 1974500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82841

Included Lab Sample IDs: 1974501

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A82987

Included Lab Sample IDs: 1974505

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	102	P/P	90 - 110
Chromium	99.6	98.1	P/P	90 - 110
Copper	101	99.2	P/P	90 - 110
Lead	102	101	P/P	90 - 110
Nickel	100	97.6	P/P	90 - 110
Silver	104	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83056

Included Lab Sample IDs: 1974505

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.31	
EPA 200.7 Rev. 4.4	Calcium	104	104					3.25
	Iron	112	106	107	112			0.134
	Magnesium	104	114					3.01
	Potassium	99.1	106					2.66
	Sodium	101	104					4.00
	Zinc	108	110	105	104			5.04
EPA 200.8 Rev. 5.4	Arsenic	104	109	109	102			0.0524
	Cadmium	107	103	101	105			2.26
	Chromium	104	97.0	97.2	99.0			0.156
	Copper	103	95.0	95.3	94.3			0.399
	Lead	103	108	107	103			0.718
	Nickel	102	90.1	89.6	95.6			0.555
	Silver	102	96.2	96.4	101			0.145
EPA 300.0 Rev. 2.1	Chloride	101	101	101			0.567	
	Sulfate	104	104	103			1.01	
EPA 350.1 Rev. 2.0	Ammonia-N	90.9	92.2	91.0				1.25
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	97.7	98.1				0.362
EPA 353.2 Rev. 2.0	NO2NO3-N	103	104	103				0.484
EPA 365.1 Rev. 2.0	Total-P	98.6	101	105				3.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	92.4	94.5				1.39
SM 2120 B	Color (true)						1.60	
SM 2320 B-97	Total Alkalinity	99.6					0.129	
SM 2540 C-97	TDS						2.90	
SM 4500 F-C-97	Fluoride	96.3	96.2	98.7				1.91
SM 5310 B-00	Organic Carbon	102	107	108				0.934

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1974500
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1974505
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1974505
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1974500
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1974500
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1974501
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1974501
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1974501
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1974501
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1974502
SM 2120 B / E31780	True Color measured at 450 nm	1974500
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1974500
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1974500
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1974500
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1974500
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1974501

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	03/14/2018			03/14/2018 16:12	DeAsia Armster	1974500
EPA 200.7 Rev. 4.4	03/14/2018	03/16/2018 13:00	Vijayalakshmi Reddy	03/19/2018 17:11	Betina Topolski	1974505
EPA 200.8 Rev. 5.4	03/14/2018	03/16/2018 13:00	Vijayalakshmi Reddy	03/30/2018 14:07	Robert K Palmer	1974505
	03/14/2018	03/16/2018 13:00	Vijayalakshmi Reddy	04/03/2018 16:15	Robert K Palmer	1974505
EPA 300.0 Rev. 2.1	03/14/2018			03/21/2018 07:56	Julia Storbeck	1974500
EPA 350.1 Rev. 2.0	03/14/2018			03/22/2018 11:54	Ping Hua	1974501
EPA 351.2 Rev. 2.0	03/14/2018	03/19/2018 15:30	Adrian Shelby	03/21/2018 09:26	Joseph Suarez	1974501
EPA 353.2 Rev. 2.0	03/14/2018			03/19/2018 09:52	Beverly Y. Sanders	1974501
EPA 365.1 Rev. 2.0	03/14/2018	03/15/2018 12:20	Lipi Saha	03/19/2018 11:47	Lipi Saha	1974501
EPA 365.1 Rev. 2.0 dissolved	03/14/2018			03/14/2018 16:14	Lipi Saha	1974502
SM 2120 B	03/14/2018			03/14/2018 16:19	Tanya Welborn	1974500
SM 2320 B-97	03/14/2018			03/21/2018 02:36	Dale L. Simmons	1974500
SM 2540 C-97	03/14/2018			03/17/2018 23:14	Yijie Li	1974500
SM 2540 D-97	03/14/2018			03/17/2018 23:14	Yijie Li	1974500
SM 4500 F-C-97	03/14/2018			03/24/2018 04:36	Dale L. Simmons	1974500
SM 5310 B-00	03/14/2018			03/24/2018 04:04	Julia Storbeck	1974501