

Chemical Analysis Report

NE-DIST-2017-08-22-02

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

Event Description: **LSJR SW**
Request ID: **RQ-2017-08-07-12**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256-7577
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 18-SEP-2017 15:11



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: St. Johns River @ Alpine Grove dock

Collection Date/Time: 08/21/2017 10:56

Field ID: G2NE1129 08212017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922827	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P330654	
	EPA 300.0 Rev. 2.1	Chloride	180		mg Cl/L	P330747	
		Sulfate	59		mg SO4/L	P330750	
	SM 2120 B	Color (true)	120		PCU	P330664	
	SM 2320 B-97	Total Alkalinity	67		mg CaCO3/L	P330798	
	SM 2540 C-97	TDS	518	A	mg/L	P330967	
	SM 2540 D-97	TSS	4	IA	mg/L	P330985	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P330800	
1922828	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P330758	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P330648	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.075		mg N/L	P330761	
	EPA 365.1 Rev. 2.0	Total-P	0.071		mg P/L	P330699	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P330863	
1922829	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P330641	
1922864	EPA 200.7 Rev. 4.4	Calcium	45.0		mg/L	P330710	
		Iron	150		ug/L	P330710	
		Magnesium	17.5		mg/L	P330710	
		Potassium	4.2		mg/L	P330710	
		Sodium	102		mg/L	P330710	
	EPA 200.8 Rev. 5.4	Zinc	5.9	I	ug/L	P330710	
		Arsenic	1.43		ug/L	P330710	
		Cadmium	0.020	U	ug/L	P330710	
		Chromium	0.40	U	ug/L	P330710	
		Copper	0.85		ug/L	P330710	
		Lead	0.26		ug/L	P330710	
		Nickel	0.35	I	ug/L	P330710	
		Silver	0.010	U	ug/L	P330710	

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: Unnamed Branch @ Brit Pl.

Collection Date/Time: 08/21/2017 09:30

Field ID: G2NE1140 08212017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922830	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P330654	
	EPA 300.0 Rev. 2.1	Chloride	7.5		mg Cl/L	P330747	
		Sulfate	8.4		mg SO4/L	P330750	
	SM 2120 B	Color (true)	320		PCU	P330664	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P330798	
	SM 2540 C-97	TDS	112		mg/L	P330967	
	SM 2540 D-97	TSS	3	I	mg/L	P330985	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P330800	
1922831	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.23		mg P/L	P330641	
	SM 4500 F-C-97 dissolved	Fluoride	0.11		mg F/L	P330799	RPD

Field ID: G2NE1140 08212017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922832	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P330830	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330761	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P330699	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P330863	

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: P330654

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P330710

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: P330710

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: P330747

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P330750

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P330758

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330758

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330648

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330830

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330761

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330699

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330641

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

Reference Method: SM 2120 B
Batch ID: P330664

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P330798

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P330967

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P330985

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P330800

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P330799

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P330863

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: P330710

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	108		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	95.7		P	85 - 115
Sodium	98.5		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P330710

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	97.4		P	85 - 115
Copper	99.5		P	85 - 115
Lead	99.5		P	85 - 115
Nickel	101		P	85 - 115
Silver	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330747

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.9		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330750

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330758

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330648

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330830

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: P330761

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330699

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330641

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

Reference Method: SM 2320 B-97
Batch ID: P330798

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

Reference Method: SM 4500 F-C-97
Batch ID: P330800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.2		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P330799

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P330863

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P330710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922957	Calcium	98.9		P	80 - 120
1922957	Iron	107		P	80 - 120
1922957	Magnesium	102		P	80 - 120
1922957	Potassium	98.0		P	80 - 120
1922957	Sodium	98.3		P	80 - 120
1922957	Zinc	101		P	80 - 120
1923027	Calcium	104		P	80 - 120
1923027	Iron	110	110	P/P	80 - 120
1923027	Magnesium	104		P	80 - 120
1923027	Potassium	94.6		P	80 - 120
1923027	Sodium	99.2		P	80 - 120
1923027	Zinc	102	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P330710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922957	Arsenic	108		P	80 - 120
1922957	Cadmium	104		P	80 - 120
1922957	Chromium	98.7		P	80 - 120
1922957	Copper	98.1		P	80 - 120
1922957	Lead	103		P	80 - 120
1922957	Nickel	100		P	80 - 120
1922957	Silver	107		P	80 - 120
1923027	Arsenic	106	107	P/P	80 - 120
1923027	Cadmium	104	105	P/P	80 - 120
1923027	Chromium	98.7	101	P/P	80 - 120
1923027	Copper	97.7	99.8	P/P	80 - 120
1923027	Lead	104	105	P/P	80 - 120
1923027	Nickel	100	102	P/P	80 - 120
1923027	Silver	105	106	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922835	Chloride	98.7		P	90 - 110
1922877	Chloride	92.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922835	Sulfate	98.4		P	90 - 110
1922877	Sulfate	93.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330758

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922828	Ammonia-N	98.0	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922828	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922926	Kjeldahl Nitrogen	104	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922800	NO2NO3-N	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330699

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922838	Total-P	96.8	92.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922841	O-Phosphate-P	90.3	92.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P330800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922707	Fluoride	97.5	98.2	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P330799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922549	Fluoride	94.8	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P330863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922820	Organic Carbon	102		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P330654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922799	Turbidity	1.11	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P330710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923027	Calcium	0.0484	Spike	P	0 - 20
1923027	Iron	0.316	Spike	P	0 - 20
1923027	Magnesium	0.0659	Spike	P	0 - 20
1923027	Potassium	0.00705	Spike	P	0 - 20
1923027	Sodium	0.278	Spike	P	0 - 20
1923027	Zinc	0.746	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P330710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923027	Arsenic	1.37	Spike	P	0 - 20
1923027	Cadmium	1.13	Spike	P	0 - 20
1923027	Chromium	1.91	Spike	P	0 - 20
1923027	Copper	2.04	Spike	P	0 - 20
1923027	Lead	0.962	Spike	P	0 - 20
1923027	Nickel	1.56	Spike	P	0 - 20
1923027	Silver	1.40	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922835	Chloride	1.87	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922835	Sulfate	1.64	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330758

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922828	Ammonia-N	0.0245	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922828	Kjeldahl Nitrogen	0.250	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922926	Kjeldahl Nitrogen	2.92	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922800	NO2NO3-N	0.299	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330699

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922838	Total-P	4.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922841	O-Phosphate-P	2.30	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P330664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922799	Color (true)	1.31	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P330798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922707	Total Alkalinity	0.206	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P330967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922827	TDS	5.21	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P330800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922707	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P330799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922549	Fluoride	7.05	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P330863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922820	Organic Carbon	0.977	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: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78568
Included Lab Sample IDs: 1922829, 1922831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A78571
Included Lab Sample IDs: 1922827, 1922830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A78573

Included Lab Sample IDs: 1922827, 1922830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.8	P/P	85 - 115
Color (true)	99.3	99.6	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A78584

Included Lab Sample IDs: 1922827, 1922830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	98.5	P/P	90 - 110
Sulfate	100	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78593

Included Lab Sample IDs: 1922828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78594

Included Lab Sample IDs: 1922828, 1922832

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78597

Included Lab Sample IDs: 1922828, 1922832

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78599

Included Lab Sample IDs: 1922828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78604

Included Lab Sample IDs: 1922827, 1922830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A78604

Included Lab Sample IDs: 1922827, 1922830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97 dissolved

Run ID: A78604

Included Lab Sample IDs: 1922831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A78619

Included Lab Sample IDs: 1922828, 1922832

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78648

Included Lab Sample IDs: 1922832

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.9	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A78662

Included Lab Sample IDs: 1922864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	104	101	P/P	90 - 110
Cadmium	98.2	99.6	P/P	90 - 110
Chromium	98.5	99.8	P/P	90 - 110
Copper	103	100	P/P	90 - 110
Lead	99.5	100	P/P	90 - 110
Nickel	102	98.8	P/P	90 - 110
Silver	96.3	96.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A78665

Included Lab Sample IDs: 1922864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	96.5	96.6	P/P	90 - 110
Sodium	98.3	98.3	P/P	90 - 110
Zinc	104	103	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					1.11	
EPA 200.7 Rev. 4.4	Calcium	101	98.9	104			0.0484
	Iron	108	107	110	110		0.316
	Magnesium	101	102	104			0.0659
	Potassium	95.7	98.0	94.6			0.0070
	Sodium	98.5	98.3	99.2			0.278
	Zinc	102	101	102	103		0.746
EPA 200.8 Rev. 5.4	Arsenic	104	108	106	107		1.37
	Cadmium	98.4	104	104	105		1.13
	Chromium	97.4	98.7	98.7	101		1.91
	Copper	99.5	98.1	97.7	99.8		2.04
	Lead	99.5	103	104	105		0.962
	Nickel	101	100	100	102		1.56
	Silver	103	107	105	106		1.40
EPA 300.0 Rev. 2.1	Chloride	96.9	98.7	92.9		1.87	
	Sulfate	97.5	98.4	93.3		1.64	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.0	98.1			0.0245
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	101	101			0.250
	Kjeldahl Nitrogen	104	104	108			2.92
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	106	107	106			0.299
EPA 365.1 Rev. 2.0	Total-P	96.9	96.8	92.8			4.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.4	90.3	92.4			2.30
SM 2120 B	Color (true)					1.31	
SM 2320 B-97	Total Alkalinity	103				0.206	
SM 2540 C-97	TDS					5.21	
SM 4500 F-C-97	Fluoride	96.2	97.5	98.2			0.473
SM 4500 F-C-97 dissolved	Fluoride	96.2	94.8	103			7.05
SM 5310 B-00	Organic Carbon	101	102				0.977

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1922827, 1922830
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1922864
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1922864
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1922827, 1922830
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1922827, 1922830
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1922828
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1922828, 1922832
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1922828, 1922832
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1922828, 1922832
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1922829, 1922831
SM 2120 B / E31780	True Color measured at 450 nm	1922827, 1922830
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1922827, 1922830
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1922827, 1922830

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1922827, 1922830
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1922827, 1922830
SM 4500 F-C-97 dissolved / E31780	Fluoride, dissolved, in filtered aqueous matrices, without distillation (not valid for NPDES monitoring)	1922831
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1922828, 1922832

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	08/22/2017			08/22/2017 17:11	Tanya Welborn	1922827, 1922830
EPA 200.7 Rev. 4.4	08/22/2017	08/23/2017	Elliott D. Healy	08/28/2017	Betina Topolski	1922864
EPA 200.8 Rev. 5.4	08/22/2017	08/23/2017	Elliott D. Healy	08/28/2017	Nadine Brooks	1922864
EPA 300.0 Rev. 2.1	08/22/2017			08/23/2017	Julia Storbeck	1922827, 1922830
EPA 350.1 Rev. 2.0	08/22/2017			08/23/2017	Sofia Elnemr	1922828
EPA 351.2 Rev. 2.0	08/22/2017	08/23/2017	Adrian Shelby	08/24/2017	Joseph Suarez	1922828
	08/22/2017	08/25/2017	Adrian Shelby	08/28/2017	Joseph Suarez	1922832
EPA 353.2 Rev. 2.0	08/22/2017			08/24/2017	Beverly Y. Sanders	1922828, 1922832
EPA 365.1 Rev. 2.0	08/22/2017	08/23/2017	Sima Feizi	08/24/2017	Lipi Saha	1922828, 1922832
EPA 365.1 Rev. 2.0 dissolved	08/22/2017			08/22/2017 15:39	Megan Treadwell	1922829
	08/22/2017			08/22/2017 15:40	Megan Treadwell	1922831
SM 2120 B	08/22/2017			08/22/2017 15:19	Tanya Welborn	1922827
	08/22/2017			08/22/2017 15:55	Tanya Welborn	1922830
SM 2320 B-97	08/22/2017			08/24/2017	Dale L. Simmons	1922827, 1922830
SM 2540 C-97	08/22/2017			08/23/2017	Yijie Li	1922827, 1922830
SM 2540 D-97	08/22/2017			08/23/2017	Yijie Li	1922827, 1922830
SM 4500 F-C-97	08/22/2017			08/24/2017	Dale L. Simmons	1922827, 1922830
SM 4500 F-C-97 dissolved	08/22/2017			08/23/2017	Dale L. Simmons	1922831
SM 5310 B-00	08/22/2017			08/24/2017	Ping Hua	1922828, 1922832