Chemical Analysis Report

NE-DIST-2018-09-28-02

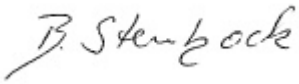
Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **LSJR SW**
Request ID: **RQ-2018-09-24-06**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 23-OCT-2018 12:53



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: Control Site at Mill log Cr. **Collection Date/Time: 09/27/2018 12:30**

Field ID: 20030572 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2029611	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P352507	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P352817	
		Sulfate	3.4		mg SO4/L	P352819	
	SM 2120 B	Color (true)	190		PCU	P352479	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P352911	
	SM 2540 C-97	TDS	121		mg/L	P352990	
	SM 2540 D-97	TSS	3	I	mg/L	P352923	
	SM 4500 F-C-97	Fluoride	0.090	I	mg F/L	P352725	
2029612	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P353031	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P352746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P352774	
	EPA 365.1 Rev. 2.0	Total-P	0.54		mg P/L	P352612	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P352734	
2029613	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.41		mg P/L	P352487	
2029616	EPA 200.7 Rev. 4.4	Calcium	11.8		mg/L	P352619	
		Iron	1.15E+03		ug/L	P352619	
		Magnesium	3.28		mg/L	P352619	
		Potassium	5.4		mg/L	P352619	
		Sodium	7.9		mg/L	P352619	
		Zinc	7.6	I	ug/L	P352619	
	EPA 200.8 Rev. 5.4	Arsenic	1.0		ug/L	P352619	
		Cadmium	0.020	U	ug/L	P352619	
		Chromium	0.72	I	ug/L	P352619	
		Copper	0.33	I	ug/L	P352619	
		Lead	0.30		ug/L	P352619	
		Nickel	0.55	I	ug/L	P352619	
		Silver	0.010	U	ug/L	P352619	

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: P352507

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352619

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: P352619

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: P352817

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353031

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352746

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352774

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352612

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352487

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

Reference Method: SM 2120 B
Batch ID: P352479

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P352911

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

Reference Method: SM 2540 C-97
Batch ID: P352990

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P352923

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352734

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: P352619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.5		P	85 - 115
Iron	100		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	108		P	85 - 115
Sodium	100		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.7		P	85 - 115
Cadmium	98.9		P	85 - 115
Chromium	97.4		P	85 - 115
Copper	98.2		P	85 - 115
Lead	92.8		P	85 - 115
Nickel	98.3		P	85 - 115
Silver	98.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352817

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353031

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: P352746

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: P352774

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	101		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352612

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352487

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

Reference Method: SM 2120 B
Batch ID: P352479

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

Reference Method: SM 2320 B-97
Batch ID: P352911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P352734

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029488	Calcium	99.1		P	80 - 120
2029488	Iron	102		P	80 - 120
2029488	Magnesium	108		P	80 - 120
2029488	Potassium	106		P	80 - 120
2029488	Sodium	98.2		P	80 - 120
2029488	Zinc	107		P	80 - 120
2029521	Calcium	94.5		P	80 - 120
2029521	Iron	99.7	101	P/P	80 - 120
2029521	Magnesium	103	106	P/P	80 - 120
2029521	Potassium	103	106	P/P	80 - 120
2029521	Sodium	94.3		P	80 - 120
2029521	Zinc	104	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029488	Arsenic	98.5		P	80 - 120
2029488	Cadmium	101		P	80 - 120
2029488	Chromium	98.0		P	80 - 120
2029488	Copper	96.0		P	80 - 120
2029488	Lead	94.0		P	80 - 120
2029488	Nickel	97.0		P	80 - 120
2029488	Silver	98.2		P	80 - 120
2029521	Arsenic	97.6	98.1	P/P	80 - 120
2029521	Cadmium	100	100	P/P	80 - 120
2029521	Chromium	97.4	95.2	P/P	80 - 120
2029521	Copper	96.6	95.7	P/P	80 - 120
2029521	Lead	92.6	93.9	P/P	80 - 120
2029521	Nickel	97.7	96.6	P/P	80 - 120
2029521	Silver	99.5	100	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029514	Chloride	98.0		P	90 - 110
2029713	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029514	Sulfate	97.2		P	90 - 110
2029713	Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353031

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029585	Ammonia-N	100	98.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352746

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029568	Kjeldahl Nitrogen	105	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352774

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029586	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029798	Total-P	99.0	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029533	O-Phosphate-P	97.9	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029525	Fluoride	101	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352734

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029496	Organic Carbon	96.6	95.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029543	Turbidity	1.51	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029521	Calcium	2.36	Spike	P	0 - 20
2029521	Iron	1.00	Spike	P	0 - 20
2029521	Magnesium	2.33	Spike	P	0 - 20
2029521	Potassium	1.98	Spike	P	0 - 20
2029521	Sodium	1.17	Spike	P	0 - 20
2029521	Zinc	1.22	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029521	Arsenic	0.468	Spike	P	0 - 20
2029521	Cadmium	0.250	Spike	P	0 - 20
2029521	Chromium	2.24	Spike	P	0 - 20
2029521	Copper	0.986	Spike	P	0 - 20
2029521	Lead	1.40	Spike	P	0 - 20
2029521	Nickel	1.10	Spike	P	0 - 20
2029521	Silver	0.511	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029514	Chloride	1.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029514	Sulfate	1.71	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029585	Ammonia-N	1.02	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029568	Kjeldahl Nitrogen	3.91	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352774

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029586	NO2NO3-N	0.309	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029798	Total-P	1.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029533	O-Phosphate-P	0.611	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P352479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029713	Color (true)	2.30	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P352911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029525	Total Alkalinity	0.466	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P352990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029527	TDS	3.70	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029525	Fluoride	1.93	Spike	P	0 - 3.0

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P352734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029496	Organic Carbon	0.649	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: A86788
Included Lab Sample IDs: 2029611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.6	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86789
Included Lab Sample IDs: 2029613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86805
Included Lab Sample IDs: 2029611

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86839
Included Lab Sample IDs: 2029611

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86871
Included Lab Sample IDs: 2029612

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A86888
Included Lab Sample IDs: 2029616

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.7	97.7	P/P	90 - 110
Iron	95.5	95.9	P/P	90 - 110
Magnesium	98.4	99.2	P/P	90 - 110
Potassium	102	101	P/P	90 - 110
Sodium	100	98.9	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A86892
Included Lab Sample IDs: 2029611

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A86895
Included Lab Sample IDs: 2029612

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	94.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86915
Included Lab Sample IDs: 2029612

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86929
Included Lab Sample IDs: 2029616

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.1	94.1	P/P	90 - 110
Cadmium	97.6	97.1	P/P	90 - 110
Copper	96.0	96.5	P/P	90 - 110
Lead	95.4	95.6	P/P	90 - 110
Nickel	96.3	97.3	P/P	90 - 110
Silver	92.8	92.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86930
Included Lab Sample IDs: 2029612

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	97.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86957
Included Lab Sample IDs: 2029616

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

Reference Method: SM 2320 B-97
Run ID: A86962
Included Lab Sample IDs: 2029611

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87014
Included Lab Sample IDs: 2029612

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	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						1.51	
EPA 200.7 Rev. 4.4	Calcium	99.5	99.1	94.5				2.36
	Iron	100	102	99.7	101			1.00
	Magnesium	108	108	103	106			2.33
	Potassium	108	106	103	106			1.98
	Sodium	100	98.2	94.3				1.17
	Zinc	102	107	104	106			1.22
EPA 200.8 Rev. 5.4	Arsenic	99.7	98.5	97.6	98.1			0.468
	Cadmium	98.9	101	100	100			0.250
	Chromium	97.4	98.0	97.4	95.2			2.24
	Copper	98.2	96.0	96.6	95.7			0.986
	Lead	92.8	94.0	92.6	93.9			1.40
	Nickel	98.3	97.0	97.7	96.6			1.10
	Silver	98.2	98.2	99.5	100			0.511
EPA 300.0 Rev. 2.1	Chloride	99.3	98.0	100			1.17	
	Sulfate	97.6	97.2	98.1			1.71	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	98.9				1.02
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	105	98.6				3.91
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100	100				0.309
EPA 365.1 Rev. 2.0	Total-P	103	99.0	101				1.39
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.9	98.5				0.611
SM 2120 B	Color (true)	100					2.30	
SM 2320 B-97	Total Alkalinity	104					0.466	
SM 2540 C-97	TDS						3.70	
SM 4500 F-C-97	Fluoride	102	101	99.1				1.93
SM 5310 B-00	Organic Carbon	94.0	96.6	95.8				0.649

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2029611
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2029616
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2029616
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2029611
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2029611
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2029612
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2029612
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2029612
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2029612
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2029613
SM 2120 B / E31780	True Color measured at 450 nm	2029611
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2029611
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2029611
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2029611
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2029611

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2029612

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	09/28/2018			09/28/2018 16:35	Megan Treadwell	2029611
EPA 200.7 Rev. 4.4	09/28/2018	10/02/2018 18:00	Elliott D. Healy	10/03/2018 14:00	Betina Topolski	2029616
EPA 200.8 Rev. 5.4	09/28/2018	10/02/2018 18:00	Elliott D. Healy	10/04/2018 18:42	Robert K Palmer	2029616
	09/28/2018	10/02/2018 18:00	Elliott D. Healy	10/06/2018 17:34	Robert K Palmer	2029616
EPA 300.0 Rev. 2.1	09/28/2018			10/05/2018 02:16	Lipi Saha	2029611
EPA 350.1 Rev. 2.0	09/28/2018			10/04/2018 12:29	Ping Hua	2029612
EPA 351.2 Rev. 2.0	09/28/2018	10/04/2018 11:30	Adrian Shelby	10/05/2018 09:04	Joseph Suarez	2029612
EPA 353.2 Rev. 2.0	09/28/2018			10/04/2018 13:07	Lauren Bottorf	2029612
EPA 365.1 Rev. 2.0	09/28/2018	10/02/2018 12:37	Sima Feizi	10/03/2018 10:02	Beverly Y. Sanders	2029612
EPA 365.1 Rev. 2.0 dissolved	09/28/2018			09/28/2018 16:20	Julia Storbeck	2029613
SM 2120 B	09/28/2018			09/28/2018 15:40	Chelsea Hernandez	2029611
SM 2320 B-97	09/28/2018			10/08/2018 08:10	Dale L. Simmons	2029611
SM 2540 C-97	09/28/2018			10/03/2018 15:02	Yijie Li	2029611
SM 2540 D-97	09/28/2018			10/03/2018 15:02	Yijie Li	2029611
SM 4500 F-C-97	09/28/2018			10/03/2018 15:33	Dale L. Simmons	2029611
SM 5310 B-00	09/28/2018			10/03/2018 12:06	Megan Treadwell	2029612