Chemical Analysis Report

NW-DIST-2021-07-28-01

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

Event Description: **Eglin West Run**
Request ID: **RQ-2021-07-26-13**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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160 Government Center
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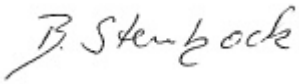
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 23-AUG-2021 14:03



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Juniper Creek abv Tenmile **Collection Date/Time: 07/27/2021 10:30**

Field ID: G3NW0170 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2265331	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P401655	
	EPA 300.0 Rev. 2.1	Chloride	2.4		mg Cl/L	P401934	
		Sulfate	0.72		mg SO4/L	P401935	
	SM 2120 B-2011	Color (true)	10		PCU	P401659	
	SM 2320 B-2011	Total Alkalinity	1.0	I	mg CaCO3/L	P401738	
	SM 2540 C-2011	TDS	15	U	mg/L	P402089	
	SM 2540 D-2011	TSS	2	I	mg/L	P401832	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P401740	
2265332	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P402123	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.096	I	mg N/L	P402523	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P401698	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P401761	
	SM 5310 B-2011	Organic Carbon	0.91	I	mg C/L	P402250	
2265333	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P401651	
2265339	EPA 200.7 Rev. 4.4	Barium	8.6		ug/L	P402262	
		Calcium	0.48		mg/L	P402262	
		Iron	31	I	ug/L	P402262	
		Magnesium	0.34		mg/L	P402262	
		Manganese	2.9	I	ug/L	P402262	
		Potassium	0.30	U	mg/L	P402262	
		Sodium	1.4	I	mg/L	P402262	
		Zinc	5.0	U	ug/L	P402262	
	EPA 200.8 Rev. 5.4	Aluminum	66		ug/L	P401702	
		Antimony	0.050	U	ug/L	P401702	
		Arsenic	0.050	U	ug/L	P401702	
		Beryllium	0.012	I	ug/L	P401702	
		Boron**	7.1	I	ug/L	P401702	
		Cadmium	0.020	U	ug/L	P401702	
		Chromium	0.40	U	ug/L	P401702	
		Copper	0.40	U	ug/L	P402262	
		Lead	0.24	I	ug/L	P401702	
		Nickel	0.50	U	ug/L	P401702	
		Selenium	0.20	U	ug/L	P401702	
		Silver	0.010	U	ug/L	P401702	
		Thallium	0.10	U	ug/L	P401702	
	SM 2340B	Hardness	2.6		mg/L	P402262	

Ref. Method and Comment:
SM 2540 D-2011: 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: P401655

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402262

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/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: P401702

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402262

Component	Result	Code	Units
Copper	0.40	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401934

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401935

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402123

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402523

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401761

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401651

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

Reference Method: SM 2120 B-2011
Batch ID: P401659

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P401738

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

Reference Method: SM 2540 C-2011
Batch ID: P402089

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P401832

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P402250

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: P402262

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	103		P	85 - 115
Calcium	95.4		P	85 - 115
Iron	97.0		P	85 - 115
Magnesium	98.5		P	85 - 115
Manganese	99.8		P	85 - 115
Potassium	96.4		P	85 - 115
Sodium	98.6		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401702

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.9		P	85 - 115
Antimony	96.9		P	85 - 115
Arsenic	98.5		P	85 - 115
Beryllium	100		P	85 - 115
Boron	97.6		P	85 - 115
Cadmium	93.5		P	85 - 115
Chromium	94.5		P	85 - 115
Lead	95.7		P	85 - 115
Nickel	97.9		P	85 - 115
Selenium	96.9		P	85 - 115
Silver	107		P	85 - 115
Thallium	97.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402262

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	93.0		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401934

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401935

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402123

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402523

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401761

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401651

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

Reference Method: SM 2120 B-2011
Batch ID: P401659

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

Reference Method: SM 2320 B-2011
Batch ID: P401738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P402250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265003	Barium	101		P	80 - 120
2265003	Calcium	91.2		P	80 - 120
2265003	Iron	94.8		P	80 - 120
2265003	Magnesium	96.2		P	80 - 120
2265003	Manganese	97.5		P	80 - 120
2265003	Potassium	102		P	80 - 120
2265003	Sodium	99.1		P	80 - 120
2265003	Zinc	95.5		P	80 - 120
2265339	Barium	98.8	99.7	P/P	80 - 120
2265339	Calcium	104		P	80 - 120
2265339	Iron	93.2	94.8	P/P	80 - 120
2265339	Magnesium	94.1	95.9	P/P	80 - 120
2265339	Manganese	96.4	97.4	P/P	80 - 120
2265339	Potassium	100	102	P/P	80 - 120
2265339	Sodium	100	103	P/P	80 - 120
2265339	Zinc	107	107	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401702

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265145	Aluminum	95.6		P	80 - 120
2265145	Antimony	96.5		P	80 - 120
2265145	Arsenic	98.1		P	80 - 120
2265145	Beryllium	102		P	80 - 120
2265145	Boron	99.4		P	80 - 120
2265145	Cadmium	94.6		P	80 - 120
2265145	Chromium	95.2		P	80 - 120
2265145	Lead	95.7		P	80 - 120
2265145	Nickel	95.6		P	80 - 120
2265145	Selenium	97.5		P	80 - 120
2265145	Silver	106		P	80 - 120
2265145	Thallium	102		P	80 - 120
2265293	Aluminum	96.5	94.7	P/P	80 - 120
2265293	Antimony	97.0	94.9	P/P	80 - 120
2265293	Arsenic	98.8	96.8	P/P	80 - 120
2265293	Beryllium	98.2	97.6	P/P	80 - 120
2265293	Boron	97.3	95.3	P/P	80 - 120
2265293	Cadmium	94.8	91.2	P/P	80 - 120
2265293	Chromium	95.2	92.6	P/P	80 - 120
2265293	Lead	94.6	93.2	P/P	80 - 120
2265293	Nickel	101	96.4	P/P	80 - 120
2265293	Selenium	96.9	95.7	P/P	80 - 120
2265293	Silver	107	106	P/P	80 - 120
2265293	Thallium	100	99.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265003	Copper	91.6		P	80 - 120
2265339	Copper	111	94.2	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265297	Chloride	98.5		P	90 - 110
2265476	Chloride	95.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265297	Sulfate	99.5		P	90 - 110
2265476	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265153	Ammonia-N	98.8	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265365	Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265332	NO2NO3-N	99.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265289	Total-P	108	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265333	O-Phosphate-P	99.9	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265297	Fluoride	101	98.6	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P402250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265289	Organic Carbon	97.0	97.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P401655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265263	Turbidity	3.16	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265339	Barium	0.874	Spike	P	0 - 20
2265339	Calcium	1.27	Spike	P	0 - 20
2265339	Iron	1.74	Spike	P	0 - 20
2265339	Magnesium	1.76	Spike	P	0 - 20
2265339	Manganese	1.03	Spike	P	0 - 20
2265339	Potassium	2.20	Spike	P	0 - 20
2265339	Sodium	2.03	Spike	P	0 - 20
2265339	Zinc	0.315	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265293	Aluminum	1.77	Spike	P	0 - 20
2265293	Antimony	2.13	Spike	P	0 - 20
2265293	Arsenic	2.06	Spike	P	0 - 20
2265293	Beryllium	0.610	Spike	P	0 - 20
2265293	Boron	1.86	Spike	P	0 - 20
2265293	Cadmium	3.84	Spike	P	0 - 20
2265293	Chromium	2.71	Spike	P	0 - 20
2265293	Lead	1.44	Spike	P	0 - 20
2265293	Nickel	4.47	Spike	P	0 - 20
2265293	Selenium	1.22	Spike	P	0 - 20
2265293	Silver	1.02	Spike	P	0 - 20
2265293	Thallium	0.435	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265339	Copper	16.8	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Chloride	0.710	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Sulfate	1.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265153	Ammonia-N	0.300	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265365	Kjeldahl Nitrogen	1.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265332	NO2NO3-N	0.916	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265289	Total-P	0.163	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265333	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P401659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265364	Color (true)	5.30	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P401738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Total Alkalinity	0.188	Sample	P	0 - 5.2

Quality Assurance Report
Precision

Reference Method: SM 2540 C-2011
Batch ID: P402089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265381	TDS	2.33	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Fluoride	1.88	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P402250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265289	Organic Carbon	0.458	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A106883
Included Lab Sample IDs: 2265333

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A106884
Included Lab Sample IDs: 2265331

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

Reference Method: SM 2120 B-2011
Run ID: A106885
Included Lab Sample IDs: 2265331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A106916
Included Lab Sample IDs: 2265332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A106931
Included Lab Sample IDs: 2265331

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

Reference Method: SM 4500 F-C-2011
Run ID: A106931
Included Lab Sample IDs: 2265331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A106978
Included Lab Sample IDs: 2265332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.8	95.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A107025
Included Lab Sample IDs: 2265331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	100	99.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A107098
Included Lab Sample IDs: 2265332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.6	99.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A107107
Included Lab Sample IDs: 2265339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.8	99.7	P/P	90 - 110
Antimony	99.1	99.2	P/P	90 - 110
Arsenic	99.2	100	P/P	90 - 110
Beryllium	98.8	99.5	P/P	90 - 110
Boron	98.0	99.3	P/P	90 - 110
Cadmium	99.1	99.0	P/P	90 - 110
Chromium	98.2	98.6	P/P	90 - 110
Lead	98.9	98.2	P/P	90 - 110
Nickel	99.3	99.8	P/P	90 - 110
Selenium	96.9	98.4	P/P	90 - 110
Silver	95.1	95.2	P/P	90 - 110
Thallium	102	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A107149
Included Lab Sample IDs: 2265332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A107192
Included Lab Sample IDs: 2265339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	91.2	92.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107224
Included Lab Sample IDs: 2265339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	98.9	95.9	P/P	90 - 110
Iron	94.2	90.9	P/P	90 - 110
Manganese	98.4	96.9	P/P	90 - 110
Potassium	98.3	100	P/P	90 - 110
Sodium	98.2	98.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107254
Included Lab Sample IDs: 2265339

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107254
Included Lab Sample IDs: 2265339

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A107302
Included Lab Sample IDs: 2265332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	105	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		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						3.16	
EPA 200.7 Rev. 4.4	Barium	103	101	98.8	99.7			0.874
	Calcium	95.4	91.2	104				1.27
	Iron	97.0	94.8	93.2	94.8			1.74
	Magnesium	98.5	96.2	94.1	95.9			1.76
	Manganese	99.8	97.5	96.4	97.4			1.03
	Potassium	96.4	102	100	102			2.20
	Sodium	98.6	99.1	100	103			2.03
	Zinc	101	95.5	107	107			0.315
EPA 200.8 Rev. 5.4	Aluminum	96.9	96.5	94.7	95.6			1.77
	Antimony	96.9	97.0	94.9	96.5			2.13
	Arsenic	98.5	98.8	96.8	98.1			2.06
	Beryllium	100	98.2	97.6	102			0.610
	Boron	97.6	97.3	95.3	99.4			1.86
	Cadmium	93.5	94.8	91.2	94.6			3.84
	Chromium	94.5	95.2	92.6	95.2			2.71
	Copper	93.0	111	94.2	91.6			16.8
	Lead	95.7	94.6	93.2	95.7			1.44
	Nickel	97.9	101	96.4	95.6			4.47
	Selenium	96.9	96.9	95.7	97.5			1.22
	Silver	107	107	106	106			1.02
	Thallium	97.4	100	99.9	102			0.435
EPA 300.0 Rev. 2.1	Chloride	99.6	98.5	95.8			0.710	
	Sulfate	101	99.5	98.0			1.30	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	98.8	99.2				0.300
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	104	106				1.05
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.5	98.0				0.916
EPA 365.1 Rev. 2.0	Total-P	109	108	107				0.163
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	99.9	99.9				0.0
SM 2120 B-2011	Color (true)	101					5.30	
SM 2320 B-2011	Total Alkalinity	102					0.188	
SM 2540 C-2011	TDS						2.33	
SM 4500 F-C-2011	Fluoride	102	101	98.6				1.88
SM 5310 B-2011	Organic Carbon	97.6	97.0	97.6				0.458

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2265331
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2265339
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2265339
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2265331
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2265331
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2265332
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2265332
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2265332
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2265332
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2265333
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2265331
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2265331

Reference Method Descriptions

Method	Description	Associated Samples
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2265339
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2265331
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2265331
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2265331
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2265332

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	07/28/2021			07/28/2021 16:34	Sarah A Nixon	2265331
EPA 200.7 Rev. 4.4	07/28/2021	08/10/2021 16:20	Elliott D. Healy	08/12/2021 15:37	Josef B Mick	2265339
	07/28/2021	08/10/2021 16:20	Elliott D. Healy	08/13/2021 18:11	Josef B Mick	2265339
EPA 200.8 Rev. 5.4	07/28/2021	07/29/2021 14:20	Elliott D. Healy	08/07/2021 09:43	Alexander Thompson	2265339
	07/28/2021	08/10/2021 16:20	Elliott D. Healy	08/11/2021 17:10	Alexander Thompson	2265339
EPA 300.0 Rev. 2.1	07/28/2021			08/03/2021 00:19	Lipi Saha	2265331
EPA 350.1 Rev. 2.0	07/28/2021			08/06/2021 14:06	Roberta Tatti	2265332
EPA 351.2 Rev. 2.0	07/28/2021	08/16/2021 13:00	Benjamin T. Nordmann	08/17/2021 09:14	Virginia P. Brown	2265332
EPA 353.2 Rev. 2.0	07/28/2021			07/29/2021 10:14	Beverly Y. Sanders	2265332
EPA 365.1 Rev. 2.0	07/28/2021	07/30/2021 15:31	Simonne.V. Calhoun	08/02/2021 12:29	Shengyu Ding	2265332
EPA 365.1 Rev. 2.0 dissolved	07/28/2021			07/28/2021 14:51	Ping Hua	2265333
SM 2120 B-2011	07/28/2021			07/28/2021 17:01	Benjamin T. Nordmann	2265331
SM 2320 B-2011	07/28/2021			07/29/2021 20:19	Sarah A Nixon	2265331
SM 2340B	07/28/2021			08/13/2021 18:11	Josef B Mick	2265339
SM 2540 C-2011	07/28/2021			07/30/2021 15:15	Yijie Li	2265331
SM 2540 D-2011	07/28/2021			07/30/2021 15:15	Yijie Li	2265331
SM 4500 F-C-2011	07/28/2021			07/29/2021 20:19	Sarah A Nixon	2265331
SM 5310 B-2011	07/28/2021			08/10/2021 02:53	Madeline Gruver	2265332