

Chemical Analysis Report

NE-DIST-2022-10-11-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Nassau West 2022**
Request ID: **RQ-2022-09-05-36**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
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Jacksonville, FL 32256
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 02-NOV-2022 15:46



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: ST MARYS R @ STOKES RD.

Collection Date/Time: 10/10/2022 10:05

Field ID: 19010093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361618	DEP SOP: NU-094-1	Color (true)	430		PCU	P420754	
	EPA 180.1 Rev. 2.0	Turbidity	0.90	I	NTU	P420733	
	EPA 300.0 Rev. 2.1	Chloride	8.0		mg Cl/L	P421200	
		Sulfate	1.2		mg SO4/L	P421203	
	SM 2320 B-2011	Total Alkalinity	3.1		mg CaCO3/L	P421014	
	SM 2540 C-2015	TDS	100		mg/L	P421281	
	SM 2540 D-2015	TSS	2	U	mg/L	P421277	
	SM 4500-F- C-2011	Fluoride	0.049	I	mg F/L	P421016	
2361620	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P420980	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P420758	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.098		mg N/L	P420845	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P420765	
	SM 5310 B-2011	Organic Carbon	37		mg C/L	P420966	
2361627	EPA 200.7 Rev. 4.4	Calcium	4.27		mg/L	P420784	
		Iron	1.27E+03		ug/L	P420784	
		Magnesium	1.92		mg/L	P420784	
		Potassium	0.55	I	mg/L	P420784	
		Sodium	5.2		mg/L	P420784	
		Strontium	21.2		ug/L	P420784	
		Tin	3.0	U	ug/L	P420784	
		Titanium	2.1	I	ug/L	P420784	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P420784	
		Zinc	5.0	U	ug/L	P420784	
		Aluminum	541		ug/L	P420784	
		Antimony	0.050	U	ug/L	P420784	
		Arsenic	0.43		ug/L	P420784	
		Barium	18.1		ug/L	P420784	
		Beryllium	0.038	I	ug/L	P420784	
		Boron	14.5		ug/L	P420784	
		Cadmium	0.020	U	ug/L	P420784	
		Chromium	0.75	I	ug/L	P420784	
		Cobalt	0.343		ug/L	P420784	
		Copper	0.40	U	ug/L	P420784	
		Lead	0.60		ug/L	P420784	
		Manganese	16.5		ug/L	P420784	
		Molybdenum	0.28	I	ug/L	P420784	
		Nickel	0.67	I	ug/L	P420784	
		Selenium	0.20	U	ug/L	P420784	
		Silver	0.010	U	ug/L	P420784	
		Thallium	0.10	U	ug/L	P420784	
	SM 2340 B-2011	Hardness	18.6		mg/L	P420784	

Field ID: 19010093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
SM 4500-F- C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 10/17/2022.

Sample Location: Unnamed Drain to Brandy Branch at Dillon Rd. Collection Date/Time: 10/10/2022 11:00

Field ID: G4NE0297

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361619	DEP SOP: NU-094-1	Color (true)	490		PCU	P420754	
	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P420733	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P421200	
		Sulfate	0.24	I	mg SO4/L	P421203	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P421014	
	SM 2540 C-2015	TDS	106		mg/L	P421281	
	SM 2540 D-2015	TSS	2	U	mg/L	P421277	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P421016	
2361621	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P420980	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P420758	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420845	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P420765	
	SM 5310 B-2011	Organic Carbon	57		mg C/L	P420966	
2361628	EPA 200.7 Rev. 4.4	Calcium	1.62		mg/L	P420784	
		Iron	1.71E+03		ug/L	P420784	
		Magnesium	0.77		mg/L	P420784	
		Potassium	0.30	U	mg/L	P420784	
		Sodium	5.6		mg/L	P420784	
		Strontium	11.3		ug/L	P420784	
		Tin	3.0	U	ug/L	P420784	
		Titanium	1.8	I	ug/L	P420784	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P420784	
		Zinc	5.0	U	ug/L	P420784	
		Aluminum	649		ug/L	P420784	
		Antimony	0.050	U	ug/L	P420784	
		Arsenic	0.36		ug/L	P420784	
		Barium	12.6		ug/L	P420784	
		Beryllium	0.051		ug/L	P420784	
		Boron	14.0		ug/L	P420784	
		Cadmium	0.020	U	ug/L	P420784	
		Chromium	0.77	I	ug/L	P420784	
		Cobalt	0.317		ug/L	P420784	
		Copper	0.40	U	ug/L	P420784	
		Lead	0.73		ug/L	P420784	
		Manganese	13.1		ug/L	P420784	
		Molybdenum	0.15	U	ug/L	P420784	
		Nickel	1.1	I	ug/L	P420784	
		Selenium	0.20	U	ug/L	P420784	
		Silver	0.010	U	ug/L	P420784	
		Thallium	0.10	U	ug/L	P420784	
	SM 2340 B-2011	Hardness	7.2		mg/L	P420784	

Field ID: G4NE0297

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
SM 4500-F- C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 10/17/2022.

Sample Location: Unnamed Drain to Brandy Branch at US301

Collection Date/Time: 10/10/2022 11:20

Field ID: G4NE0302

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361629	EPA 200.7 Rev. 4.4	Calcium	3.06		mg/L	P420784	
		Iron	2.13E+03		ug/L	P420784	
		Magnesium	1.07		mg/L	P420784	
		Potassium	0.30	U	mg/L	P420784	
		Sodium	6.7		mg/L	P420784	
		Strontium	20.6		ug/L	P420784	
		Tin	3.0	U	ug/L	P420784	
		Titanium	1.4	I	ug/L	P420784	
		Vanadium	2.0	U	ug/L	P420784	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P420784	
		Aluminum	679		ug/L	P420784	
		Antimony	0.050	U	ug/L	P420784	
		Arsenic	0.46		ug/L	P420784	
		Barium	16.0		ug/L	P420784	
		Beryllium	0.056		ug/L	P420784	
		Boron	17.6		ug/L	P420784	
		Cadmium	0.020	U	ug/L	P420784	
		Chromium	0.79	I	ug/L	P420784	
		Cobalt	0.492		ug/L	P420784	
		Copper	0.40	U	ug/L	P420784	
		Lead	0.55		ug/L	P420784	
		Manganese	15.4		ug/L	P420784	
		Molybdenum	0.15	U	ug/L	P420784	
		Nickel	1.2	I	ug/L	P420784	
		Selenium	0.20	U	ug/L	P420784	
		Silver	0.010	U	ug/L	P420784	
		Thallium	0.10	U	ug/L	P420784	
	SM 2340 B-2011	Hardness	12.1		mg/L	P420784	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 10/17/2022.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P420754

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420733

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420784

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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420784

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	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
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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 300.0 Rev. 2.1
Batch ID: P421200

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421203

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420980

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420758

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420845

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420765

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

Reference Method: SM 2320 B-2011
Batch ID: P421014

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

Reference Method: SM 2540 C-2015
Batch ID: P421281

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421277

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P421016

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P420966

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P420754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420733

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	99.8		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420784

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	109		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	103		P	85 - 115
Sodium	104		P	85 - 115
Strontium	109		P	85 - 115
Tin	104		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420784

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.0		P	85 - 115
Antimony	99.7		P	85 - 115
Arsenic	103		P	85 - 115
Barium	103		P	85 - 115
Beryllium	94.8		P	85 - 115
Boron	105		P	85 - 115
Cadmium	97.4		P	85 - 115
Chromium	98.2		P	85 - 115
Cobalt	102		P	85 - 115
Copper	103		P	85 - 115
Lead	94.7		P	85 - 115
Manganese	98.5		P	85 - 115
Molybdenum	97.5		P	85 - 115
Nickel	103		P	85 - 115
Selenium	100		P	85 - 115
Silver	102		P	85 - 115
Thallium	96.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421200

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.4		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421203

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420980

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420758

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420845

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420765

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

Reference Method: SM 2320 B-2011
Batch ID: P421014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P421281

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

Reference Method: SM 2540 D-2015
Batch ID: P421277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	99.8		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P421016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	96 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P420966

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P420784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361420	Calcium	99.2		P	80 - 120
2361420	Iron	106	110	P/P	80 - 120
2361420	Magnesium	98.1		P	80 - 120
2361420	Sodium	96.3		P	80 - 120
2361420	Strontium	103	107	P/P	80 - 120
2361420	Tin	106	104	P/P	80 - 120
2361420	Titanium	107	104	P/P	80 - 120
2361420	Vanadium	107	103	P/P	80 - 120
2361420	Zinc	106	101	P/P	80 - 120
2361727	Calcium	99.5		P	80 - 120
2361727	Iron	107		P	80 - 120
2361727	Magnesium	95.7		P	80 - 120
2361727	Potassium	110		P	80 - 120
2361727	Sodium	107		P	80 - 120
2361727	Strontium	105		P	80 - 120
2361727	Tin	103		P	80 - 120
2361727	Titanium	104		P	80 - 120
2361727	Vanadium	103		P	80 - 120
2361727	Zinc	97.6		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361420	Aluminum	94.8	94.1	P/P	80 - 120
2361420	Antimony	99.8	98.5	P/P	80 - 120
2361420	Arsenic	101	102	P/P	80 - 120
2361420	Barium	102	99.7	P/P	80 - 120
2361420	Beryllium	95.7	94.5	P/P	80 - 120
2361420	Boron	106	109	P/P	80 - 120
2361420	Cadmium	97.8	99.2	P/P	80 - 120
2361420	Chromium	99.0	98.7	P/P	80 - 120
2361420	Cobalt	98.4	99.2	P/P	80 - 120
2361420	Copper	97.6	99.2	P/P	80 - 120
2361420	Lead	96.4	96.6	P/P	80 - 120
2361420	Manganese	99.0	97.2	P/P	80 - 120
2361420	Molybdenum	99.7	100	P/P	80 - 120
2361420	Nickel	97.8	98.1	P/P	80 - 120
2361420	Selenium	98.2	96.5	P/P	80 - 120
2361420	Silver	99.1	98.9	P/P	80 - 120
2361420	Thallium	97.4	98.2	P/P	80 - 120
2361727	Aluminum	101		P	80 - 120
2361727	Antimony	104		P	80 - 120
2361727	Arsenic	96.9		P	80 - 120
2361727	Barium	103		P	80 - 120
2361727	Beryllium	94.8		P	80 - 120
2361727	Boron	98.1		P	80 - 120
2361727	Cadmium	104		P	80 - 120
2361727	Chromium	106		P	80 - 120
2361727	Cobalt	99.1		P	80 - 120
2361727	Copper	94.8		P	80 - 120
2361727	Lead	93.8		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361727	Manganese	101		P	80 - 120
2361727	Molybdenum	97.6		P	80 - 120
2361727	Nickel	98.5		P	80 - 120
2361727	Selenium	103		P	80 - 120
2361727	Silver	101		P	80 - 120
2361727	Thallium	91.3		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P421200

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361682	Chloride	95.5		P	90 - 110
2361753	Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P421203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361682	Sulfate	96.9		P	90 - 110
2361753	Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P420980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361568	Ammonia-N	97.8	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P420758

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361198	Kjeldahl Nitrogen	95.2	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P420845

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361569	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P420765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361568	Total-P	103	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Batch ID: P420966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361686	Organic Carbon	102	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P420754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361415	Color (true)	2.68	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361354	Turbidity	1.33	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361420	Calcium	3.17	Spike	P	0 - 20
2361420	Iron	3.17	Spike	P	0 - 20
2361420	Magnesium	3.07	Spike	P	0 - 20
2361420	Potassium	3.01	Spike	P	0 - 20
2361420	Sodium	2.96	Spike	P	0 - 20
2361420	Strontium	3.29	Spike	P	0 - 20
2361420	Tin	1.56	Spike	P	0 - 20
2361420	Titanium	3.59	Spike	P	0 - 20
2361420	Vanadium	3.72	Spike	P	0 - 20
2361420	Zinc	4.40	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361420	Aluminum	0.750	Spike	P	0 - 20
2361420	Antimony	1.28	Spike	P	0 - 20
2361420	Arsenic	1.14	Spike	P	0 - 20
2361420	Barium	2.02	Spike	P	0 - 20
2361420	Beryllium	1.27	Spike	P	0 - 20
2361420	Boron	1.73	Spike	P	0 - 20
2361420	Cadmium	1.41	Spike	P	0 - 20
2361420	Chromium	0.314	Spike	P	0 - 20
2361420	Cobalt	0.812	Spike	P	0 - 20
2361420	Copper	1.56	Spike	P	0 - 20
2361420	Lead	0.182	Spike	P	0 - 20
2361420	Manganese	1.41	Spike	P	0 - 20
2361420	Molybdenum	0.331	Spike	P	0 - 20
2361420	Nickel	0.245	Spike	P	0 - 20
2361420	Selenium	1.75	Spike	P	0 - 20
2361420	Silver	0.196	Spike	P	0 - 20
2361420	Thallium	0.840	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421200

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361682	Chloride	0.0543	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361682	Sulfate	0.222	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361568	Ammonia-N	2.65	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420758

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361198	Kjeldahl Nitrogen	3.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420845

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361569	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361568	Total-P	1.48	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P421014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361910	Total Alkalinity	0.403	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P421281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361335	TDS	6.28	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 D-2015
Batch ID: P421277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361335	TSS	5.83	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P421016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361910	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P420966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361686	Organic Carbon	0.327	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A115227

Included Lab Sample IDs: 2361618, 2361619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1

Run ID: A115238

Included Lab Sample IDs: 2361618, 2361619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.3	99.8	P/P	90 - 110
Color (true)	99.8	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115269

Included Lab Sample IDs: 2361620, 2361621

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115281

Included Lab Sample IDs: 2361620, 2361621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115285

Included Lab Sample IDs: 2361620, 2361621

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115327

Included Lab Sample IDs: 2361627, 2361628, 2361629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	103	P/P	90 - 110
Iron	104	103	P/P	90 - 110
Magnesium	103	103	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Strontium	104	101	P/P	90 - 110
Tin	101	103	P/P	90 - 110
Titanium	101	104	P/P	90 - 110
Vanadium	100	102	P/P	90 - 110
Zinc	99.4	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115332

Included Lab Sample IDs: 2361627, 2361628, 2361629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.7	109	P/P	90 - 110
Arsenic	98.1	92.1	P/P	90 - 110
Beryllium	96.5	94.5	P/P	90 - 110
Boron	104	91.9	P/P	90 - 110
Cadmium	98.0	105	P/P	90 - 110
Chromium	94.8	108	P/P	90 - 110
Cobalt	96.5	99.4	P/P	90 - 110
Copper	97.9	96.1	P/P	90 - 110
Lead	92.8	91.6	P/P	90 - 110
Molybdenum	98.4	95.9	P/P	90 - 110
Nickel	97.6	97.9	P/P	90 - 110
Silver	99.3	97.9	P/P	90 - 110
Thallium	97.0	94.3	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A115336

Included Lab Sample IDs: 2361620, 2361621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115344

Included Lab Sample IDs: 2361620, 2361621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.0	96.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115348

Included Lab Sample IDs: 2361627, 2361628, 2361629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	95.6	99.5	P/P	90 - 110
Antimony	99.5	100	P/P	90 - 110
Barium	96.2	97.9	P/P	90 - 110
Barium	97.9	98.2	P/P	90 - 110
Copper	99.9	96.6	P/P	90 - 110
Selenium	103	104	P/P	90 - 110
Selenium	104	104	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115358

Included Lab Sample IDs: 2361618, 2361619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.3	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500-F- C-2011

Run ID: A115358

Included Lab Sample IDs: 2361618, 2361619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115378

Included Lab Sample IDs: 2361627, 2361628, 2361629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	96.9	98.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115395

Included Lab Sample IDs: 2361618, 2361619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.4	97.8	P/P	90 - 110
Sulfate	98.2	99.3	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				
DEP SOP: NU-094-1	Color (true)	100				2.68	
EPA 180.1 Rev. 2.0	Turbidity	99.8				1.33	
EPA 200.7 Rev. 4.4	Calcium	106	99.2	99.5			3.17
	Iron	109	106	110	107		3.17
	Magnesium	104	98.1	95.7			3.07
	Potassium	103	110				3.01
	Sodium	104	96.3	107			2.96
	Strontium	109	103	107	105		3.29
	Tin	104	106	104	103		1.56
	Titanium	104	107	104	104		3.59
	Vanadium	103	107	103	103		3.72
	Zinc	102	106	101	97.6		4.40
EPA 200.8 Rev. 5.4	Aluminum	98.0	94.8	94.1	101		0.750
	Antimony	99.7	104	99.8	98.5		1.28
	Arsenic	103	101	102	96.9		1.14
	Barium	103	103	102	99.7		2.02
	Beryllium	94.8	95.7	94.5	94.8		1.27
	Boron	105	106	109	98.1		1.73
	Cadmium	97.4	97.8	99.2	104		1.41
	Chromium	98.2	99.0	98.7	106		0.314
	Cobalt	102	98.4	99.2	99.1		0.812
	Copper	103	97.6	99.2	94.8		1.56
	Lead	94.7	96.4	96.6	93.8		0.182
	Manganese	98.5	101	99.0	97.2		1.41
	Molybdenum	97.5	99.7	100	97.6		0.331
	Nickel	103	97.8	98.1	98.5		0.245
	Selenium	100	103	98.2	96.5		1.75
	Silver	102	99.1	98.9	101		0.196
	Thallium	96.6	97.4	98.2	91.3		0.840
EPA 300.0 Rev. 2.1	Chloride	95.4	95.5	96.6		0.0543	
	Sulfate	98.1	96.9	97.9		0.222	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	97.8	101			2.65
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.0	95.2	99.4			3.48
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	102	103	102			1.48
SM 2320 B-2011	Total Alkalinity	101				0.403	
SM 2540 C-2015	TDS	101				6.28	
SM 2540 D-2015	TSS	99.8				5.83	
SM 4500-F- C-2011	Fluoride	102					0.0
SM 5310 B-2011	Organic Carbon	99.1	102	103			0.327

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2361618, 2361619
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2361618, 2361619
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2361627, 2361628, 2361629
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2361627, 2361628, 2361629
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2361618, 2361619
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2361618, 2361619
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2361620, 2361621

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2361620, 2361621
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2361620, 2361621
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2361620, 2361621
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2361618, 2361619
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2361627, 2361628, 2361629
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2361618, 2361619
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2361618, 2361619
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2361618, 2361619
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2361620, 2361621

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	10/11/2022			10/11/2022 16:04	Anna M. Plaviak	2361618
	10/11/2022			10/11/2022 16:10	Anna M. Plaviak	2361619
EPA 180.1 Rev. 2.0	10/11/2022			10/11/2022 13:47	Chandler E Cox	2361618, 2361619
EPA 200.7 Rev. 4.4	10/11/2022	10/12/2022 11:59	George D Taylor	10/15/2022 07:43	McKinley C Carter	2361627
	10/11/2022	10/12/2022 11:59	George D Taylor	10/15/2022 07:51	McKinley C Carter	2361628
	10/11/2022	10/12/2022 11:59	George D Taylor	10/15/2022 07:59	McKinley C Carter	2361629
EPA 200.8 Rev. 5.4	10/11/2022	10/12/2022 11:59	George D Taylor	10/14/2022 16:58	Emily M Philpot	2361627
	10/11/2022	10/12/2022 11:59	George D Taylor	10/14/2022 17:07	Emily M Philpot	2361628
	10/11/2022	10/12/2022 11:59	George D Taylor	10/14/2022 17:17	Emily M Philpot	2361629
	10/11/2022	10/12/2022 11:59	George D Taylor	10/17/2022 18:00	Emily M Philpot	2361627
	10/11/2022	10/12/2022 11:59	George D Taylor	10/17/2022 18:08	Emily M Philpot	2361628
	10/11/2022	10/12/2022 11:59	George D Taylor	10/17/2022 18:56	Emily M Philpot	2361629
	10/11/2022	10/12/2022 11:59	George D Taylor	10/18/2022 15:36	Emily M Philpot	2361627
	10/11/2022	10/12/2022 11:59	George D Taylor	10/18/2022 15:45	Emily M Philpot	2361628
	10/11/2022	10/12/2022 11:59	George D Taylor	10/18/2022 15:55	Emily M Philpot	2361629
EPA 300.0 Rev. 2.1	10/11/2022			10/19/2022 17:03	Anna M. Plaviak	2361618
	10/11/2022			10/19/2022 17:18	Anna M. Plaviak	2361619
EPA 350.1 Rev. 2.0	10/11/2022			10/17/2022 11:47	Judith K. Clark	2361620
	10/11/2022			10/17/2022 11:48	Judith K. Clark	2361621
EPA 351.2 Rev. 2.0	10/11/2022	10/12/2022 12:56	Samantha L Bates	10/13/2022 10:52	Samantha L Bates	2361620
	10/11/2022	10/12/2022 12:56	Samantha L Bates	10/13/2022 10:53	Samantha L Bates	2361621
EPA 353.2 Rev. 2.0	10/11/2022			10/13/2022 09:36	Beverly Y. Sanders	2361620
	10/11/2022			10/13/2022 09:37	Beverly Y. Sanders	2361621
EPA 365.1 Rev. 2.0	10/11/2022	10/12/2022 14:20	Simonne.V. Calhoun	10/13/2022 14:24	Simonne.V. Calhoun	2361620
	10/11/2022	10/12/2022 14:20	Simonne.V. Calhoun	10/13/2022 14:25	Simonne.V. Calhoun	2361621
SM 2320 B-2011	10/11/2022			10/13/2022 23:00	Dale L. Simmons	2361618
	10/11/2022			10/13/2022 23:07	Dale L. Simmons	2361619
SM 2340 B-2011	10/11/2022			10/15/2022 07:43	McKinley C Carter	2361627
	10/11/2022			10/15/2022 07:51	McKinley C Carter	2361628
	10/11/2022			10/15/2022 07:59	McKinley C Carter	2361629
SM 2540 C-2015	10/11/2022			10/13/2022 16:08	Yijie Li	2361618, 2361619
SM 2540 D-2015	10/11/2022			10/13/2022 16:08	Yijie Li	2361618, 2361619
SM 4500-F- C-2011	10/11/2022			10/13/2022 23:00	Dale L. Simmons	2361618
	10/11/2022			10/13/2022 23:07	Dale L. Simmons	2361619
SM 5310 B-2011	10/11/2022			10/14/2022 10:25	Khloe J Berg	2361620
	10/11/2022			10/14/2022 10:39	Khloe J Berg	2361621