

Chemical Analysis Report

NW-DIST-2023-11-21-01

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

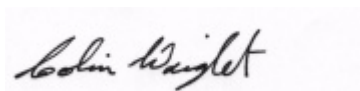
Event Description: **Escambia Co. Make-up**
Request ID: **RQ-2023-11-27-16**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda Butler

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

Certified by: Colin Wright, Program Administrator

Date Certified: 11-DEC-2023 12:22

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: Beaver Pond Creek

Collection Date/Time: 11/20/2023 11:05

Field ID: 33010066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2452598	DEP SOP: NU-094-1	Color (true)	53		PCU	P438138	
	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P438142	
	EPA 300.0 Rev. 2.1	Chloride	15	A	mg Cl/L	P438359	
		Sulfate	48	A	mg SO4/L	P438362	
	SM 2320 B-2011	Total Alkalinity	22		mg CaCO3/L	P438222	
	SM 2540 C-2015	TDS	132		mg/L	P438382	
	SM 2540 D-2015	TSS	8	I	mg/L	P438372	
	SM 4500-F- C-2011	Fluoride	0.037	I	mg F/L	P438335	
2452601	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P438504	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P438274	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P438302	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P438211	
	SM 5310 B-2011	Organic Carbon	6.3		mg C/L	P438188	
2452610	EPA 200.7 Rev. 4.4	Calcium	21.0		mg/L	P438174	
		Iron	1.85E+03		ug/L	P438174	
		Magnesium	4.17		mg/L	P438174	
		Potassium	3.4		mg/L	P438174	
		Sodium	12.2		mg/L	P438174	
		Strontium	54.5		ug/L	P438174	
		Tin	3.0	U	ug/L	P438174	
		Titanium	1.7	I	ug/L	P438174	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P438174	
		Zinc	22		ug/L	P438174	
		Aluminum	261		ug/L	P438174	
		Antimony	0.11	I	ug/L	P438174	
		Arsenic	0.70		ug/L	P438174	
		Barium	25.7		ug/L	P438174	
		Beryllium	0.010	U	ug/L	P438174	
		Boron	90.1		ug/L	P438174	
		Cadmium	0.020	U	ug/L	P438174	
		Chromium	0.43	I	ug/L	P438174	
		Cobalt	0.256		ug/L	P438174	
		Copper	0.40	U	ug/L	P438174	
		Lead	0.20	U	ug/L	P438174	
		Manganese	99.4		ug/L	P438174	
		Molybdenum	0.15	U	ug/L	P438174	
		Nickel	0.50	U	ug/L	P438174	
		Selenium	0.20	U	ug/L	P438174	
		Silver	0.010	U	ug/L	P438174	
		Thallium	0.10	U	ug/L	P438174	
	SM 2340 B-2011	Hardness	69.6		mg/L	P438174	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Tributary South of Perdido Landfill

Collection Date/Time: 11/20/2023 10:20

Field ID: G5NW0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2452599	DEP SOP: NU-094-1	Color (true)	12		PCU	P438140	
	EPA 180.1 Rev. 2.0	Turbidity	28		NTU	P438142	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P438359	
		Sulfate	17		mg SO4/L	P438362	
	SM 2320 B-2011	Total Alkalinity	49		mg CaCO3/L	P438222	
	SM 2540 C-2015	TDS	139		mg/L	P438382	
	SM 2540 D-2015	TSS	10		mg/L	P438372	
2452602	SM 4500-F- C-2011	Fluoride	0.063	I	mg F/L	P438335	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P438504	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P438274	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.77		mg N/L	P438302	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P438212	
2452611	SM 5310 B-2011	Organic Carbon	4.9		mg C/L	P438188	
	EPA 200.7 Rev. 4.4	Calcium	17.9		mg/L	P438174	
		Iron	830		ug/L	P438174	
		Magnesium	2.52		mg/L	P438174	
		Potassium	7.6		mg/L	P438174	
		Sodium	26.0		mg/L	P438174	
		Strontium	46.2		ug/L	P438174	
		Tin	3.0	U	ug/L	P438174	
		Titanium	9.9		ug/L	P438174	
		Vanadium	2.0	I	ug/L	P438174	
		Zinc	12	I	ug/L	P438174	
	EPA 200.8 Rev. 5.4	Aluminum	892		ug/L	P438174	
		Antimony	0.19	I	ug/L	P438174	
		Arsenic	0.51		ug/L	P438174	
		Barium	20.6		ug/L	P438174	
		Beryllium	0.015	I	ug/L	P438174	
		Boron	127		ug/L	P438174	
		Cadmium	0.020	U	ug/L	P438174	
		Chromium	1.1	I	ug/L	P438174	
		Cobalt	0.143		ug/L	P438174	
		Copper	0.94		ug/L	P438174	
		Lead	0.55		ug/L	P438174	
		Manganese	9.32		ug/L	P438174	
		Molybdenum	0.44	I	ug/L	P438174	
		Nickel	1.4	I	ug/L	P438174	
		Selenium	0.20	U	ug/L	P438174	
		Silver	0.010	U	ug/L	P438174	
		Thallium	0.10	U	ug/L	P438174	
	SM 2340 B-2011	Hardness	55.2		mg/L	P438174	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Marcus Creek Upstream of Marcus Pointe Blvd Collection Date/Time: 11/20/2023 11:40

Field ID: G4NW0179

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2452600	DEP SOP: NU-094-1	Color (true)	22	A	PCU	P438139	
	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P438142	
	EPA 300.0 Rev. 2.1	Chloride	8.1		mg Cl/L	P438359	
		Sulfate	2.1		mg SO4/L	P438362	
	SM 2320 B-2011	Total Alkalinity	47		mg CaCO3/L	P438222	
	SM 2540 C-2015	TDS	84		mg/L	P438382	
	SM 2540 D-2015	TSS	2	U	mg/L	P438372	
2452603	SM 4500-F- C-2011	Fluoride	0.026	I	mg F/L	P438335	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P438505	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P438274	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.072		mg N/L	P438303	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P438212	
2452612	SM 5310 B-2011	Organic Carbon	3.3		mg C/L	P438188	
	EPA 200.7 Rev. 4.4	Calcium	14.2		mg/L	P438174	
		Iron	730		ug/L	P438174	
		Magnesium	3.18		mg/L	P438174	
		Potassium	4.7		mg/L	P438174	
		Sodium	6.2		mg/L	P438174	
		Strontium	55.7		ug/L	P438174	
		Tin	3.0	U	ug/L	P438174	
		Titanium	0.75	U	ug/L	P438174	
		Vanadium	2.0	U	ug/L	P438174	
		Zinc	5.0	U	ug/L	P438174	
	EPA 200.8 Rev. 5.4	Aluminum	13	I	ug/L	P438174	
		Antimony	0.050	U	ug/L	P438174	
		Arsenic	0.27		ug/L	P438174	
		Barium	20.8		ug/L	P438174	
		Beryllium	0.010	U	ug/L	P438174	
		Boron	96.6		ug/L	P438174	
		Cadmium	0.020	U	ug/L	P438174	
		Chromium	0.40	U	ug/L	P438174	
		Cobalt	0.106		ug/L	P438174	
		Copper	0.40	U	ug/L	P438174	
		Lead	0.20	U	ug/L	P438174	
		Manganese	86.9		ug/L	P438174	
		Molybdenum	0.15	U	ug/L	P438174	
		Nickel	0.50	U	ug/L	P438174	
		Selenium	0.20	U	ug/L	P438174	
		Silver	0.010	U	ug/L	P438174	
		Thallium	0.10	U	ug/L	P438174	
	SM 2340 B-2011	Hardness	48.6		mg/L	P438174	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P438138

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P438139

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P438140

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P438142

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438174

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: P438174

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438174

Component	Result	Code	Units
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: P438359

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438362

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438504

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438505

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438274

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438302

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438303

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438211

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438212

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

Reference Method: SM 2320 B-2011
Batch ID: P438222

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

Reference Method: SM 2540 C-2015
Batch ID: P438382

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P438372

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P438335

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P438188

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: P438138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.2		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P438139

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.2		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P438140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.6		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P438142

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	108		P	85 - 115
Iron	109		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	101		P	85 - 115
Sodium	106		P	85 - 115
Strontium	97.9		P	85 - 115
Tin	96.8		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	99.5		P	85 - 115
Zinc	97.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	99.2		P	85 - 115
Barium	101		P	85 - 115
Beryllium	89.9		P	85 - 115
Boron	101		P	85 - 115
Cadmium	98.5		P	85 - 115
Chromium	107		P	85 - 115
Cobalt	93.3		P	85 - 115
Copper	98.5		P	85 - 115
Lead	94.6		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	96.7		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Nickel	100		P	85 - 115
Selenium	99.7		P	85 - 115
Silver	97.8		P	85 - 115
Thallium	98.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438359

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438362

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438504

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438505

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438274

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: P438302

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438211

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438212

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

Reference Method: SM 2320 B-2011
Batch ID: P438222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.5		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P438382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	96.4		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P438372

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	96.8		P	85 - 115

Reference Method: SM 4500-F- C-2011
Batch ID: P438335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.1		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P438188

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P438174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452360	Calcium	110	109	P/P	80 - 120
2452360	Iron	110	109	P/P	80 - 120
2452360	Magnesium	111	109	P/P	80 - 120
2452360	Potassium	103	102	P/P	80 - 120
2452360	Sodium	108	108	P/P	80 - 120
2452360	Strontium	102	101	P/P	80 - 120
2452360	Tin	98.1	99.1	P/P	80 - 120
2452360	Titanium	102	102	P/P	80 - 120
2452360	Vanadium	101	101	P/P	80 - 120
2452360	Zinc	98.4	98.3	P/P	80 - 120
2452610	Calcium	106		P	80 - 120
2452610	Iron	108		P	80 - 120
2452610	Magnesium	105		P	80 - 120
2452610	Potassium	99.7		P	80 - 120
2452610	Sodium	105		P	80 - 120
2452610	Strontium	99.1		P	80 - 120
2452610	Tin	94.5		P	80 - 120
2452610	Titanium	101		P	80 - 120
2452610	Vanadium	101		P	80 - 120
2452610	Zinc	98.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P438174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452360	Aluminum	99.4	98.1	P/P	80 - 120
2452360	Antimony	99.2	99.8	P/P	80 - 120
2452360	Arsenic	98.2	97.7	P/P	80 - 120
2452360	Barium	100	100	P/P	80 - 120
2452360	Beryllium	89.5	87.4	P/P	80 - 120
2452360	Boron	104	103	P/P	80 - 120
2452360	Cadmium	97.9	98.2	P/P	80 - 120
2452360	Chromium	97.6	95.1	P/P	80 - 120
2452360	Cobalt	91.8	91.6	P/P	80 - 120
2452360	Copper	99.0	97.5	P/P	80 - 120
2452360	Lead	94.4	93.9	P/P	80 - 120
2452360	Manganese	100	100	P/P	80 - 120
2452360	Molybdenum	99.2	97.9	P/P	80 - 120
2452360	Nickel	95.8	95.1	P/P	80 - 120
2452360	Selenium	99.1	95.9	P/P	80 - 120
2452360	Silver	96.8	96.8	P/P	80 - 120
2452360	Thallium	99.9	98.7	P/P	80 - 120
2452610	Aluminum	99.6		P	80 - 120
2452610	Antimony	99.9		P	80 - 120
2452610	Arsenic	97.2		P	80 - 120
2452610	Barium	98.7		P	80 - 120
2452610	Beryllium	90.4		P	80 - 120
2452610	Boron	101		P	80 - 120
2452610	Cadmium	98.2		P	80 - 120
2452610	Chromium	96.2		P	80 - 120
2452610	Cobalt	89.4		P	80 - 120
2452610	Copper	98.7		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452610	Lead	94.6		P	80 - 120
2452610	Manganese	91.7		P	80 - 120
2452610	Molybdenum	99.3		P	80 - 120
2452610	Nickel	94.7		P	80 - 120
2452610	Selenium	95.3		P	80 - 120
2452610	Silver	96.2		P	80 - 120
2452610	Thallium	98.4		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452598	Chloride	104		P	90 - 110
2452883	Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452598	Sulfate	107		P	90 - 110
2452883	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438504

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452581	Ammonia-N	98.0	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452603	Ammonia-N	97.2	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438274

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452569	Kjeldahl Nitrogen	111	111	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438302

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452507	NO2NO3-N	97.2	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452603	NO2NO3-N	101	98.8	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452601	Total-P	100	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452603	Total-P	104	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P438335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452499	Fluoride	101	103	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P438188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452507	Organic Carbon	98.8		P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P438138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452501	Color (true)	6.43	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P438139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452600	Color (true)	2.19	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P438140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452568	Color (true)	3.31	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P438142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452502	Turbidity	7.27	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452360	Calcium	0.826	Spike	P	0 - 20
2452360	Iron	1.35	Spike	P	0 - 20
2452360	Magnesium	1.02	Spike	P	0 - 20
2452360	Potassium	0.746	Spike	P	0 - 20
2452360	Sodium	0.319	Spike	P	0 - 20
2452360	Strontium	0.764	Spike	P	0 - 20
2452360	Tin	0.922	Spike	P	0 - 20
2452360	Titanium	0.140	Spike	P	0 - 20
2452360	Vanadium	0.457	Spike	P	0 - 20
2452360	Zinc	0.120	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452360	Aluminum	1.25	Spike	P	0 - 20
2452360	Antimony	0.610	Spike	P	0 - 20
2452360	Arsenic	0.485	Spike	P	0 - 20
2452360	Barium	0.104	Spike	P	0 - 20
2452360	Beryllium	2.34	Spike	P	0 - 20
2452360	Boron	1.46	Spike	P	0 - 20
2452360	Cadmium	0.394	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P438174

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452360	Chromium	2.54	Spike	P	0 - 20
2452360	Cobalt	0.169	Spike	P	0 - 20
2452360	Copper	1.52	Spike	P	0 - 20
2452360	Lead	0.477	Spike	P	0 - 20
2452360	Manganese	0.118	Spike	P	0 - 20
2452360	Molybdenum	1.36	Spike	P	0 - 20
2452360	Nickel	0.727	Spike	P	0 - 20
2452360	Selenium	3.34	Spike	P	0 - 20
2452360	Silver	0.00468	Spike	P	0 - 20
2452360	Thallium	1.25	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P438359

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452598	Chloride	1.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P438362

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452598	Sulfate	0.267	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P438504

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452581	Ammonia-N	0.881	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P438505

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452603	Ammonia-N	0.864	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P438274

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452569	Kjeldahl Nitrogen	0.0634	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P438302

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452507	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452603	NO2NO3-N	1.83	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452601	Total-P	0.408	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452603	Total-P	0.674	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P438222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452501	Total Alkalinity	0.210	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P438382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452502	TDS	2.93	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P438335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452499	Fluoride	0.947	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P438188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452507	Organic Carbon	0.284	Spike	P	0 - 20

Quality Assurance Report Precision

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A122870

Included Lab Sample IDs: 2452598, 2452599, 2452600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	90 - 110
Color (true)	98.4	100	P/P	90 - 110
Color (true)	98.8	98.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A122871

Included Lab Sample IDs: 2452598, 2452599, 2452600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A122895

Included Lab Sample IDs: 2452601, 2452602, 2452603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.3	95.0	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A122907

Included Lab Sample IDs: 2452598, 2452599, 2452600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	95.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122924

Included Lab Sample IDs: 2452610, 2452611, 2452612

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	101	P/P	90 - 110
Aluminum	103	101	P/P	90 - 110
Antimony	100	99.8	P/P	90 - 110
Antimony	99.8	98.7	P/P	90 - 110
Arsenic	98.6	98.1	P/P	90 - 110
Arsenic	99.2	98.6	P/P	90 - 110
Barium	101	100	P/P	90 - 110
Barium	100	99.1	P/P	90 - 110
Boron	102	104	P/P	90 - 110
Boron	104	100	P/P	90 - 110
Cadmium	99.3	99.4	P/P	90 - 110
Cadmium	99.4	99.6	P/P	90 - 110
Chromium	101	99.4	P/P	90 - 110
Chromium	99.4	100	P/P	90 - 110
Cobalt	91.1	91.7	P/P	90 - 110
Cobalt	93.0	91.1	P/P	90 - 110
Copper	96.6	96.0	P/P	90 - 110
Copper	97.1	96.6	P/P	90 - 110
Lead	95.0	95.3	P/P	90 - 110
Lead	95.3	95.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122924

Included Lab Sample IDs: 2452610, 2452611, 2452612

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	101	98.6	P/P	90 - 110
Manganese	98.6	100	P/P	90 - 110
Molybdenum	98.8	99.3	P/P	90 - 110
Molybdenum	99.3	98.6	P/P	90 - 110
Nickel	97.3	97.1	P/P	90 - 110
Nickel	97.9	97.3	P/P	90 - 110
Selenium	100	99.0	P/P	90 - 110
Selenium	99.6	100	P/P	90 - 110
Silver	94.4	94.7	P/P	90 - 110
Silver	94.7	94.2	P/P	90 - 110
Thallium	96.2	95.7	P/P	90 - 110
Thallium	96.5	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122927

Included Lab Sample IDs: 2452602, 2452603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122945

Included Lab Sample IDs: 2452601, 2452602, 2452603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A122949

Included Lab Sample IDs: 2452598, 2452599, 2452600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110
Sulfate	101	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A122950

Included Lab Sample IDs: 2452598, 2452599, 2452600

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122952

Included Lab Sample IDs: 2452610

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	93.5	93.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122958

Included Lab Sample IDs: 2452601, 2452602, 2452603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.2	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122975

Included Lab Sample IDs: 2452611, 2452612

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	98.1	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A123011

Included Lab Sample IDs: 2452601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A123027

Included Lab Sample IDs: 2452601, 2452602, 2452603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	99.2	P/P	90 - 110
Ammonia-N	99.2	99.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A123039

Included Lab Sample IDs: 2452610, 2452611, 2452612

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

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision			
						LCS	SMP	MS	
DEP SOP: NU-094-1	Color (true)	98.2					6.43		
	Color (true)	99.2					2.19		
	Color (true)	98.6					3.31		
EPA 180.1 Rev. 2.0	Turbidity	103					7.27		
EPA 200.7 Rev. 4.4	Calcium	108	110	109	106			0.826	
	Iron	109	110	109	108			1.35	
	Magnesium	110	111	109	105			1.02	
	Potassium	101	103	102	99.7			0.746	
	Sodium	106	108	108	105			0.319	
	Strontium	97.9	102	101	99.1			0.764	
	Tin	96.8	98.1	99.1	94.5			0.922	
	Titanium	101	102	102	101			0.140	
	Vanadium	99.5	101	101	101			0.457	
	Zinc	97.1	98.4	98.3	98.4			0.120	
	EPA 200.8 Rev. 5.4	Aluminum	100	99.4	98.1	99.6			1.25
		Antimony	100	99.2	99.8	99.9			0.610
		Arsenic	99.2	98.2	97.7	97.2			0.485
Barium		101	100	100	98.7			0.104	
Beryllium		89.9	89.5	87.4	90.4			2.34	
Boron		101	104	103	101			1.46	
Cadmium		98.5	97.9	98.2	98.2			0.394	
Chromium		107	97.6	95.1	96.2			2.54	
Cobalt		93.3	91.8	91.6	89.4			0.169	
Copper		98.5	99.0	97.5	98.7			1.52	
Lead		94.6	94.4	93.9	94.6			0.477	
Manganese		100	100	100	91.7			0.118	
Molybdenum		96.7	99.2	97.9	99.3			1.36	
Nickel		100	95.8	95.1	94.7			0.727	
Selenium		99.7	99.1	95.9	95.3			3.34	
Silver		97.8	96.8	96.8	96.2			0.0046	
Thallium		98.6	99.9	98.7	98.4			1.25	
EPA 300.0 Rev. 2.1	Chloride	101	104	98.5			1.15		
	Sulfate	101	107	104			0.267		
EPA 350.1 Rev. 2.0	Ammonia-N	93.8	98.0	96.8				0.881	
	Ammonia-N	95.0	97.2	98.2				0.864	
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	111	111				0.0634	
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	97.2	98.2				0.971	
	NO2NO3-N	99.0	101	98.8				1.83	
EPA 365.1 Rev. 2.0	Total-P	102	100	99.6				0.408	
	Total-P	103	104	104				0.674	
SM 2320 B-2011	Total Alkalinity	97.5					0.210		
SM 2540 C-2015	TDS	96.4					2.93		
SM 2540 D-2015	TSS	96.8							
SM 4500-F- C-2011	Fluoride	99.1	101	103				0.947	
SM 5310 B-2011	Organic Carbon	93.6	98.8					0.284	

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2452598, 2452599, 2452600
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2452598, 2452599, 2452600
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2452610, 2452611, 2452612

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2452610, 2452611, 2452612
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2452598, 2452599, 2452600
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2452598, 2452599, 2452600
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2452601, 2452602, 2452603
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2452601, 2452602, 2452603
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2452601, 2452602, 2452603
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2452601, 2452602, 2452603
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2452598, 2452599, 2452600
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2452610, 2452611, 2452612
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2452598, 2452599, 2452600
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2452598, 2452599, 2452600
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2452598, 2452599, 2452600
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2452601, 2452602, 2452603

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	11/21/2023			11/21/2023 14:55	Chandler E Cox	2452598
	11/21/2023			11/21/2023 15:00	Chandler E Cox	2452600
	11/21/2023			11/21/2023 15:11	Chandler E Cox	2452599
EPA 180.1 Rev. 2.0	11/21/2023			11/21/2023 14:42	Anna M. Plaviak	2452598
	11/21/2023			11/21/2023 14:43	Anna M. Plaviak	2452599
	11/21/2023			11/21/2023 14:46	Anna M. Plaviak	2452600
EPA 200.7 Rev. 4.4	11/21/2023	11/27/2023 13:20	George D Taylor	12/05/2023 17:41	Chase Roberts	2452610
	11/21/2023	11/27/2023 13:20	George D Taylor	12/05/2023 18:01	Chase Roberts	2452611
	11/21/2023	11/27/2023 13:20	George D Taylor	12/05/2023 18:07	Chase Roberts	2452612
EPA 200.8 Rev. 5.4	11/21/2023	11/27/2023 13:20	George D Taylor	11/28/2023 17:46	Conrad Hartmann	2452610
	11/21/2023	11/27/2023 13:20	George D Taylor	11/28/2023 19:06	Conrad Hartmann	2452611
	11/21/2023	11/27/2023 13:20	George D Taylor	11/28/2023 19:15	Conrad Hartmann	2452612
	11/21/2023	11/27/2023 13:20	George D Taylor	11/29/2023 18:54	Emily M Philpot	2452610
	11/21/2023	11/27/2023 13:20	George D Taylor	11/30/2023 15:46	Emily M Philpot	2452611
EPA 300.0 Rev. 2.1	11/21/2023	11/27/2023 13:20	George D Taylor	11/30/2023 15:55	Emily M Philpot	2452612
	11/21/2023			11/30/2023 00:45	James L Waggeberby	2452598
	11/21/2023			11/30/2023 02:31	James L Waggeberby	2452599
	11/21/2023			11/30/2023 02:46	James L Waggeberby	2452600
	11/21/2023			12/05/2023 14:06	Ping Hua	2452601
EPA 350.1 Rev. 2.0	11/21/2023			12/05/2023 14:07	Ping Hua	2452602
	11/21/2023			12/05/2023 14:19	Ping Hua	2452603
	11/21/2023	11/29/2023 14:15	Simonne.V. Calhoun	11/30/2023 10:35	Ping Hua	2452601
	11/21/2023	11/29/2023 14:15	Simonne.V. Calhoun	11/30/2023 10:37	Ping Hua	2452602
EPA 351.2 Rev. 2.0	11/21/2023	11/29/2023 14:15	Simonne.V. Calhoun	11/30/2023 10:38	Ping Hua	2452603
	11/21/2023			11/29/2023 11:58	Fadila Guebre	2452601
	11/21/2023			11/29/2023 11:59	Fadila Guebre	2452602
EPA 353.2 Rev. 2.0	11/21/2023			11/29/2023 12:17	Fadila Guebre	2452603
	11/21/2023	11/28/2023 10:59	Adam P Silver	11/29/2023 11:12	James L Waggeberby	2452603
	11/21/2023	11/28/2023 10:59	Adam P Silver	11/29/2023 11:13	James L Waggeberby	2452602
	11/21/2023	11/28/2023 10:59	Adam P Silver	12/04/2023 12:50	Chandler E Cox	2452601
SM 2320 B-2011	11/21/2023			11/28/2023 04:28	Adam P Silver	2452598
	11/21/2023			11/28/2023 04:39	Adam P Silver	2452599
	11/21/2023			11/28/2023 04:52	Adam P Silver	2452600
SM 2340 B-2011	11/21/2023			12/05/2023 17:41	Chase Roberts	2452610
	11/21/2023			12/05/2023 18:01	Chase Roberts	2452611
	11/21/2023			12/05/2023 18:07	Chase Roberts	2452612
SM 2540 C-2015	11/21/2023			11/21/2023 16:31	Yijie Li	2452598, 2452599, 2452600
SM 2540 D-2015	11/21/2023			11/21/2023 16:31	Yijie Li	2452598, 2452599, 2452600
SM 4500-F- C-2011	11/21/2023			11/30/2023 07:17	Chandler E Cox	2452598
	11/21/2023			11/30/2023 07:22	Chandler E Cox	2452599

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500-F- C-2011	11/21/2023			11/30/2023 07:28	Chandler E Cox	2452600
SM 5310 B-2011	11/21/2023			11/27/2023 23:40	Kenneth H Lee	2452601
	11/21/2023			11/27/2023 23:53	Kenneth H Lee	2452602
	11/21/2023			11/28/2023 00:07	Kenneth H Lee	2452603