

Chemical Analysis Report

SE-DIST-2023-09-19-02

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

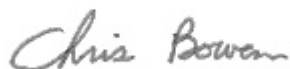
Event Description: **SMP - Broward/Palm Beach**
Request ID: **RQ-2023-09-04-31**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Andrew Luering

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: Chris Bowen, Environmental Administrator

Date Certified: 06-OCT-2023 13:48



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: LAKE MELVA SOUTH OF FIRE STATION

Collection Date/Time: 09/18/2023 10:40

Field ID: G4SE0156

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437957	DEP SOP: NU-094-1	Color (true)	5.3	I	PCU	P435215	
	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P435197	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P435516	
		Sulfate	1.9		mg SO4/L	P435518	
	SM 2320 B-2011	Total Alkalinity	90	A	mg CaCO3/L	P435435	
	SM 2540 C-2015	TDS	153		mg/L	P435727	
	SM 2540 D-2015	TSS	4	I	mg/L	P435683	
	SM 4500-F- C-2011	Fluoride	0.19		mg F/L	P435589	
2437958	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P435417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P435712	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P435969	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P435311	
	SM 5310 B-2011	Organic Carbon	4.1		mg C/L	P435642	

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: HOLLOWAY AT PETERS

Collection Date/Time: 09/18/2023 12:05

Field ID: G4SE0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437959	DEP SOP: NU-094-1	Color (true)	25		PCU	P435215	
	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P435197	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P435516	
		Sulfate	4.7		mg SO4/L	P435518	
	SM 2320 B-2011	Total Alkalinity	126		mg CaCO3/L	P435435	
	SM 2540 C-2015	TDS	194		mg/L	P435727	
	SM 2540 D-2015	TSS	3	I	mg/L	P435683	
2437960	SM 4500-F- C-2011	Fluoride	0.16		mg F/L	P435589	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P435417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P435712	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.053		mg N/L	P435969	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P435311	
2437965	SM 5310 B-2011	Organic Carbon	7.9		mg C/L	P435642	
	EPA 200.7 Rev. 4.4	Calcium	50.0		mg/L	P435236	
		Iron	44	I	ug/L	P435236	
		Magnesium	4.30		mg/L	P435236	
		Potassium	2.0		mg/L	P435236	
		Sodium	19.6		mg/L	P435236	
		Strontium	526		ug/L	P435236	
		Tin	3.0	U	ug/L	P435236	
		Titanium	0.75	U	ug/L	P435236	
		Vanadium	2.0	U	ug/L	P435236	
		Zinc	5.0	U	ug/L	P435236	
	EPA 200.8 Rev. 5.4	Aluminum	9.3	I	ug/L	P435236	
		Antimony	0.17	I	ug/L	P435236	
		Arsenic	1.00		ug/L	P435236	
		Barium	13.8		ug/L	P435236	
		Beryllium	0.010	U	ug/L	P435236	
		Boron	29.9		ug/L	P435236	
		Cadmium	0.020	U	ug/L	P435236	
		Chromium	0.40	U	ug/L	P435236	
		Cobalt	0.031	I	ug/L	P435236	
		Copper	8.31		ug/L	P435236	
		Lead	0.20	U	ug/L	P435236	
		Manganese	6.12		ug/L	P435236	
		Molybdenum	0.68		ug/L	P435236	
		Nickel	0.50	U	ug/L	P435236	
		Selenium	0.20	U	ug/L	P435236	
		Silver	0.010	U	ug/L	P435236	
		Thallium	0.10	U	ug/L	P435236	
	SM 2340 B-2011	Hardness	143		mg/L	P435236	

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: HOLLOWAY CANAL EAST AT NW 74TH AVE

Collection Date/Time: 09/18/2023 12:35

Field ID: G4SE0184

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437966	EPA 200.7 Rev. 4.4	Calcium	56.8		mg/L	P435236	
		Iron	46	I	ug/L	P435236	
		Magnesium	3.00		mg/L	P435236	
		Potassium	1.5		mg/L	P435236	
		Sodium	15.9		mg/L	P435236	
		Strontium	535		ug/L	P435236	
		Tin	3.0	U	ug/L	P435236	
		Titanium	0.75	U	ug/L	P435236	
		Vanadium	2.0	U	ug/L	P435236	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P435236	
		Aluminum	11	I	ug/L	P435236	
		Antimony	0.20	I	ug/L	P435236	
		Arsenic	1.04		ug/L	P435236	
		Barium	13.0		ug/L	P435236	
		Beryllium	0.010	U	ug/L	P435236	
		Boron	30.0		ug/L	P435236	
		Cadmium	0.020	U	ug/L	P435236	
		Chromium	0.40	U	ug/L	P435236	
		Cobalt	0.025	I	ug/L	P435236	
		Copper	2.25		ug/L	P435236	
		Lead	0.20	U	ug/L	P435236	
		Manganese	7.44		ug/L	P435236	
		Molybdenum	0.91		ug/L	P435236	
		Nickel	0.50	U	ug/L	P435236	
		Selenium	0.20	U	ug/L	P435236	
		Silver	0.010	U	ug/L	P435236	
		Thallium	0.10	U	ug/L	P435236	
	SM 2340 B-2011	Hardness	154		mg/L	P435236	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P435215

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P435197

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P435236

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: P435236

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: P435516

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: P435518

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435417

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435712

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435969

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435311

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

Reference Method: SM 2320 B-2011
Batch ID: P435435

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

Reference Method: SM 2540 C-2015
Batch ID: P435727

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P435683

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P435589

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P435642

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: P435215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P435197

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P435236

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	105		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	103		P	85 - 115
Sodium	104		P	85 - 115
Strontium	97.9		P	85 - 115
Tin	97.9		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	100		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P435236

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.8		P	85 - 115
Antimony	97.7		P	85 - 115
Arsenic	101		P	85 - 115
Barium	102		P	85 - 115
Beryllium	93.1		P	85 - 115
Boron	100		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	97.8		P	85 - 115
Cobalt	99.5		P	85 - 115
Copper	99.9		P	85 - 115
Lead	95.7		P	85 - 115
Manganese	98.1		P	85 - 115
Molybdenum	98.6		P	85 - 115
Nickel	99.6		P	85 - 115
Selenium	101		P	85 - 115
Silver	110		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P435516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	105		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P435518

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435417

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435712

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: P435969

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	93.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435311

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

Reference Method: SM 2320 B-2011
Batch ID: P435435

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.6		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P435727

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

Reference Method: SM 2540 D-2015
Batch ID: P435683

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	95.3		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P435589

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P435642

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P435236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437783	Calcium	105		P	80 - 120
2437783	Iron	106	108	P/P	80 - 120
2437783	Magnesium	106	108	P/P	80 - 120
2437783	Potassium	101	103	P/P	80 - 120
2437783	Sodium	104	106	P/P	80 - 120
2437783	Strontium	97.9	99.2	P/P	80 - 120
2437783	Tin	100	101	P/P	80 - 120
2437783	Titanium	102	103	P/P	80 - 120
2437783	Vanadium	102	103	P/P	80 - 120
2437783	Zinc	98.4	101	P/P	80 - 120
2437951	Calcium	104		P	80 - 120
2437951	Iron	107		P	80 - 120
2437951	Magnesium	104		P	80 - 120
2437951	Potassium	102		P	80 - 120
2437951	Sodium	102		P	80 - 120
2437951	Strontium	99.3		P	80 - 120
2437951	Tin	98.2		P	80 - 120
2437951	Titanium	101		P	80 - 120
2437951	Vanadium	102		P	80 - 120
2437951	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P435236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437783	Aluminum	96.5	98.7	P/P	80 - 120
2437783	Antimony	99.7	100	P/P	80 - 120
2437783	Arsenic	101	100	P/P	80 - 120
2437783	Barium	103	105	P/P	80 - 120
2437783	Beryllium	96.8	96.9	P/P	80 - 120
2437783	Boron	101	101	P/P	80 - 120
2437783	Cadmium	101	101	P/P	80 - 120
2437783	Chromium	98.3	99.2	P/P	80 - 120
2437783	Cobalt	97.2	96.7	P/P	80 - 120
2437783	Copper	95.2	95.2	P/P	80 - 120
2437783	Lead	95.6	96.1	P/P	80 - 120
2437783	Manganese	98.8	98.8	P/P	80 - 120
2437783	Molybdenum	102	103	P/P	80 - 120
2437783	Nickel	94.9	95.1	P/P	80 - 120
2437783	Selenium	99.8	101	P/P	80 - 120
2437783	Silver	110	111	P/P	80 - 120
2437783	Thallium	103	104	P/P	80 - 120
2437951	Aluminum	99.6		P	80 - 120
2437951	Antimony	99.1		P	80 - 120
2437951	Arsenic	97.2		P	80 - 120
2437951	Barium	103		P	80 - 120
2437951	Beryllium	92.8		P	80 - 120
2437951	Boron	104		P	80 - 120
2437951	Cadmium	101		P	80 - 120
2437951	Chromium	100		P	80 - 120
2437951	Cobalt	94.9		P	80 - 120
2437951	Copper	96.3		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P435236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437951	Lead	96.6		P	80 - 120
2437951	Manganese	100		P	80 - 120
2437951	Molybdenum	99.9		P	80 - 120
2437951	Nickel	93.2		P	80 - 120
2437951	Selenium	99.6		P	80 - 120
2437951	Silver	110		P	80 - 120
2437951	Thallium	104		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P435516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437759	Chloride	107		P	90 - 110
2437957	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P435518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437759	Sulfate	109		P	90 - 110
2437957	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437905	Ammonia-N	96.6	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437958	Kjeldahl Nitrogen	106	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437872	NO2NO3-N	97.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437931	Total-P	106	108	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P435589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2438825	Fluoride	100	99.0	P/P	94 - 106

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P435642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437905	Organic Carbon	96.8	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P435215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437901	Color (true)	0.292	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P435197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437731	Turbidity	1.89	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P435236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437783	Calcium	1.15	Spike	P	0 - 20
2437783	Iron	1.31	Spike	P	0 - 20
2437783	Magnesium	1.07	Spike	P	0 - 20
2437783	Potassium	2.00	Spike	P	0 - 20
2437783	Sodium	1.44	Spike	P	0 - 20
2437783	Strontium	1.21	Spike	P	0 - 20
2437783	Tin	0.829	Spike	P	0 - 20
2437783	Titanium	1.35	Spike	P	0 - 20
2437783	Vanadium	0.988	Spike	P	0 - 20
2437783	Zinc	2.21	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P435236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437783	Aluminum	2.23	Spike	P	0 - 20
2437783	Antimony	0.729	Spike	P	0 - 20
2437783	Arsenic	0.744	Spike	P	0 - 20
2437783	Barium	1.00	Spike	P	0 - 20
2437783	Beryllium	0.129	Spike	P	0 - 20
2437783	Boron	0.538	Spike	P	0 - 20
2437783	Cadmium	0.0474	Spike	P	0 - 20
2437783	Chromium	0.867	Spike	P	0 - 20
2437783	Cobalt	0.527	Spike	P	0 - 20
2437783	Copper	0.0384	Spike	P	0 - 20
2437783	Lead	0.458	Spike	P	0 - 20
2437783	Manganese	0.0858	Spike	P	0 - 20
2437783	Molybdenum	1.17	Spike	P	0 - 20
2437783	Nickel	0.149	Spike	P	0 - 20
2437783	Selenium	1.42	Spike	P	0 - 20
2437783	Silver	0.823	Spike	P	0 - 20
2437783	Thallium	1.23	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P435516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437759	Chloride	1.05	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P435518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437759	Sulfate	0.473	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437905	Ammonia-N	1.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437958	Kjeldahl Nitrogen	0.621	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437872	NO2NO3-N	2.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437931	Total-P	1.40	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P435435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437957	Total Alkalinity	0.921	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P435727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437759	TDS	4.35	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P435589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2438825	Fluoride	0.990	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P435642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437905	Organic Carbon	3.30	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: A121627

Included Lab Sample IDs: 2437957, 2437959

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

Reference Method: DEP SOP: NU-094-1

Run ID: A121632

Included Lab Sample IDs: 2437957, 2437959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A121703

Included Lab Sample IDs: 2437965, 2437966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	104	P/P	90 - 110
Iron	104	106	P/P	90 - 110
Magnesium	104	105	P/P	90 - 110
Potassium	102	104	P/P	90 - 110
Sodium	101	104	P/P	90 - 110
Strontium	99.2	101	P/P	90 - 110
Tin	103	102	P/P	90 - 110
Titanium	102	101	P/P	90 - 110
Vanadium	101	101	P/P	90 - 110
Zinc	103	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A121706

Included Lab Sample IDs: 2437965, 2437966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.0	99.2	P/P	90 - 110
Antimony	95.6	96.4	P/P	90 - 110
Arsenic	97.9	97.5	P/P	90 - 110
Barium	98.9	99.8	P/P	90 - 110
Beryllium	97.9	97.8	P/P	90 - 110
Boron	98.0	101	P/P	90 - 110
Cadmium	100	102	P/P	90 - 110
Chromium	100	103	P/P	90 - 110
Cobalt	96.5	95.7	P/P	90 - 110
Copper	95.0	94.2	P/P	90 - 110
Lead	94.0	94.4	P/P	90 - 110
Manganese	100	103	P/P	90 - 110
Molybdenum	97.6	97.4	P/P	90 - 110
Nickel	95.0	94.6	P/P	90 - 110
Selenium	101	100	P/P	90 - 110
Silver	98.9	99.8	P/P	90 - 110
Thallium	97.5	98.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A121729

Included Lab Sample IDs: 2437958, 2437960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A121734

Included Lab Sample IDs: 2437958, 2437960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	101	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A121739

Included Lab Sample IDs: 2437957, 2437959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	93.0	96.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A121771

Included Lab Sample IDs: 2437957, 2437959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Chloride	99.6	102	P/P	90 - 110
Sulfate	101	104	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A121790

Included Lab Sample IDs: 2437957, 2437959

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

Reference Method: SM 5310 B-2011

Run ID: A121814

Included Lab Sample IDs: 2437958, 2437960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A121882

Included Lab Sample IDs: 2437958, 2437960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	96.8	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A121950

Included Lab Sample IDs: 2437958, 2437960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.0	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)	101				0.292	
EPA 180.1 Rev. 2.0	Turbidity	104				1.89	
EPA 200.7 Rev. 4.4	Calcium	103	105	104			1.15
	Iron	105	106	108	107		1.31
	Magnesium	105	106	108	104		1.07
	Potassium	103	101	103	102		2.00
	Sodium	104	104	106	102		1.44
	Strontium	97.9	97.9	99.2	99.3		1.21
	Tin	97.9	100	101	98.2		0.829
	Titanium	101	102	103	101		1.35
	Vanadium	100	102	103	102		0.988
	Zinc	100	98.4	101	102		2.21
EPA 200.8 Rev. 5.4	Aluminum	99.8	96.5	98.7	99.6		2.23
	Antimony	97.7	99.7	100	99.1		0.729
	Arsenic	101	101	100	97.2		0.744
	Barium	102	103	105	103		1.00
	Beryllium	93.1	96.8	96.9	92.8		0.129
	Boron	100	101	101	104		0.538
	Cadmium	101	101	101	101		0.0474
	Chromium	97.8	98.3	99.2	100		0.867
	Cobalt	99.5	97.2	96.7	94.9		0.527
	Copper	99.9	95.2	95.2	96.3		0.0384
	Lead	95.7	95.6	96.1	96.6		0.458
	Manganese	98.1	98.8	98.8	100		0.0858
	Molybdenum	98.6	102	103	99.9		1.17
	Nickel	99.6	94.9	95.1	93.2		0.149
	Selenium	101	99.8	101	99.6		1.42
	Silver	110	110	111	110		0.823
	Thallium	102	103	104	104		1.23
EPA 300.0 Rev. 2.1	Chloride	105	107	99.5		1.05	
	Sulfate	106	109	102		0.473	
EPA 350.1 Rev. 2.0	Ammonia-N	97.6	96.6	98.2			1.55
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	106	107			0.621
EPA 353.2 Rev. 2.0	NO2NO3-N	93.0	97.0	99.5			2.54
EPA 365.1 Rev. 2.0	Total-P	100	106	108			1.40
SM 2320 B-2011	Total Alkalinity	95.6				0.921	
SM 2540 C-2015	TDS	104				4.35	
SM 2540 D-2015	TSS	95.3					
SM 4500-F- C-2011	Fluoride	100	100	99.0			0.990
SM 5310 B-2011	Organic Carbon	96.2	96.8	100			3.30

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2437957, 2437959
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2437957, 2437959
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2437965, 2437966
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2437965, 2437966
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2437957, 2437959
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2437957, 2437959
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2437958, 2437960

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2437958, 2437960
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2437958, 2437960
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2437958, 2437960
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2437957, 2437959
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2437965, 2437966
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2437957, 2437959
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2437957, 2437959
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2437957, 2437959
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2437958, 2437960

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	09/19/2023			09/19/2023 17:13	Alexis Price	2437957, 2437959
EPA 180.1 Rev. 2.0	09/19/2023			09/19/2023 12:52	Chandler E Cox	2437957
	09/19/2023			09/19/2023 12:53	Chandler E Cox	2437959
EPA 200.7 Rev. 4.4	09/19/2023	09/20/2023 11:55	George D Taylor	09/21/2023 15:55	Samatha Luckman	2437965
	09/19/2023	09/20/2023 11:55	George D Taylor	09/21/2023 16:03	Samatha Luckman	2437966
EPA 200.8 Rev. 5.4	09/19/2023	09/20/2023 11:55	George D Taylor	09/21/2023 20:18	Emily M Philpot	2437965
	09/19/2023	09/20/2023 11:55	George D Taylor	09/21/2023 20:27	Emily M Philpot	2437966
EPA 300.0 Rev. 2.1	09/19/2023			09/26/2023 09:02	James L Waggeberby	2437957
	09/19/2023			09/26/2023 13:19	James L Waggeberby	2437959
EPA 350.1 Rev. 2.0	09/19/2023			09/22/2023 13:46	Khloe J Berg	2437958
	09/19/2023			09/22/2023 13:47	Khloe J Berg	2437960
EPA 351.2 Rev. 2.0	09/19/2023	09/29/2023 10:15	Samantha L Bates	10/02/2023 15:06	Samantha L Bates	2437958
	09/19/2023	09/29/2023 10:15	Samantha L Bates	10/02/2023 15:11	Samantha L Bates	2437960
EPA 353.2 Rev. 2.0	09/19/2023			10/04/2023 14:16	Fadila Guebre	2437958
	09/19/2023			10/04/2023 14:17	Fadila Guebre	2437960
EPA 365.1 Rev. 2.0	09/19/2023	09/21/2023 14:48	Adam P Silver	09/22/2023 14:31	James L Waggeberby	2437958
	09/19/2023	09/21/2023 14:48	Adam P Silver	09/22/2023 14:32	James L Waggeberby	2437960
SM 2320 B-2011	09/19/2023			09/22/2023 16:16	Dale L. Simmons	2437957
	09/19/2023			09/22/2023 16:38	Dale L. Simmons	2437959
SM 2340 B-2011	09/19/2023			09/21/2023 15:55	Samatha Luckman	2437965
	09/19/2023			09/21/2023 16:03	Samatha Luckman	2437966
SM 2540 C-2015	09/19/2023			09/21/2023 16:01	Yijie Li	2437957, 2437959
SM 2540 D-2015	09/19/2023			09/21/2023 16:01	Yijie Li	2437957, 2437959
SM 4500-F- C-2011	09/19/2023			09/27/2023 05:41	Adam P Silver	2437957
	09/19/2023			09/27/2023 05:47	Adam P Silver	2437959
SM 5310 B-2011	09/19/2023			09/27/2023 21:09	Khloe J Berg	2437958
	09/19/2023			09/27/2023 21:24	Khloe J Berg	2437960