

Chemical Analysis Report

SE-DIST-2019-05-07-01

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

Event Description: **SMP-Stuart**
Request ID: **RQ-2019-05-06-43**
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: Drew Liddick

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

Certified by: Colin Wright, Program Administrator

Date Certified: 29-MAY-2019 16:02

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored 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: SOUTH FORK SLR @ HALPATIOKEE TRAIL

Collection Date/Time: 05/06/2019 11:15

Field ID: G2SE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084076	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P363546	
	EPA 300.0 Rev. 2.1	Chloride	100		mg Cl/L	P363822	
		Sulfate	21		mg SO4/L	P363824	
	SM 2120 B	Color (true)	48	A	PCU	P363562	
	SM 2320 B-97	Total Alkalinity	240		mg CaCO3/L	P363808	
	SM 2540 C-97	TDS	492	A	mg/L	P363790	
	SM 2540 D-97	TSS	7	IA	mg/L	P363696	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P363970	
2084077	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P363781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P363856	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.049		mg N/L	P363679	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P363717	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P363992	
2084078	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P363533	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ROEBUCK CREEK @ LOCKS

Collection Date/Time: 05/06/2019 11:30

Field ID: G2SE0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084079	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P363546	
	EPA 300.0	Bromide	0.12		mg Br/L	P363817	
	SM 2320 B-97	Total Alkalinity	178		mg CaCO3/L	P363808	
	SM 2540 D-97	TSS	3	I	mg/L	P363697	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P363970	
2084081	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P363781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P363856	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P363679	
	EPA 365.1 Rev. 2.0	Total-P	0.50		mg P/L	P363717	
	SM 5310 B-00	Organic Carbon	9.3		mg C/L	P364413	
2084083	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.42		mg P/L	P363533	
2084099	EPA 200.7 Rev. 4.4	Iron	350		ug/L	P363548	
		Magnesium	3.14		mg/L	P363548	
		Zinc	5.0	U	ug/L	P363548	
	EPA 200.8 Rev. 5.4	Aluminum	19	I	ug/L	P363548	
		Antimony	0.088	I	ug/L	P363548	
		Arsenic	1.44		ug/L	P363548	
		Cadmium	0.020	U	ug/L	P363548	
		Chromium	0.40	U	ug/L	P363548	
		Copper	8.17		ug/L	P363548	
		Lead	0.20	U	ug/L	P363548	
		Nickel	0.65	I	ug/L	P363548	
		Selenium	0.20	U	ug/L	P363548	
		Silver	0.010	U	ug/L	P363548	
		Thallium	0.10	U	ug/L	P363548	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ROEBUCK CREEK @ MOUTH

Collection Date/Time: 05/06/2019 11:50

Field ID: G2SE0005

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084080	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P363546	
	EPA 300.0	Bromide	16		mg Br/L	P363817	
	SM 2320 B-97	Total Alkalinity	171	A	mg CaCO3/L	P364172	
	SM 2540 D-97	TSS	12		mg/L	P363697	
	SM 4500 F-C-97	Fluoride	0.44		mg F/L	P364176	
2084082	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P363843	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P363931	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P363973	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P364384	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P364413	
2084084	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P363531	
2084100	EPA 200.7 Rev. 4.4	Iron	140		ug/L	P363610	
		Magnesium	282		mg/L	P363610	
		Manganese	48.5		ug/L	P363610	
		Zinc	5.0	U	ug/L	P363610	
	EPA 200.8 Rev. 5.4	Aluminum	111		ug/L	P363610	
		Antimony	0.20	U	ug/L	P363610	
		Arsenic	2.47		ug/L	P363610	
		Cadmium	0.080	U	ug/L	P363610	
		Chromium	4.0	U	ug/L	P363610	
		Copper	2.3	I	ug/L	P363610	
		Lead	0.80	U	ug/L	P363610	
		Nickel	2.0	U	ug/L	P363610	
		Selenium	0.80	U	ug/L	P363610	
		Silver	0.040	U	ug/L	P363610	
		Thallium	0.40	U	ug/L	P363610	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500 F-C-97: 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 magnesium are unavailable because of high analyte concentration in the QC sample.

Sample Location: DANFORTH CREEK @ MARTIN HWY

Collection Date/Time: 05/06/2019 12:15

Field ID: G2SE0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084088	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P363546	
	EPA 300.0 Rev. 2.1	Chloride	75		mg Cl/L	P363822	
		Sulfate	92		mg SO4/L	P363824	
	SM 2120 B	Color (true)	31		PCU	P363561	
	SM 2320 B-97	Total Alkalinity	113		mg CaCO3/L	P363808	
	SM 2540 C-97	TDS	401		mg/L	P363790	
	SM 2540 D-97	TSS	4	I	mg/L	P363696	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P363970	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P363781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P363856	
2084089	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P363680	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P363717	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P364413	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.016		mg P/L	P363533	
	dissolved						

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BESSEY CREEK @ MURPHY

Collection Date/Time: 05/06/2019 13:30

Field ID: G2SE0017

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084085	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P363546	
	EPA 300.0	Bromide	9.2		mg Br/L	P363949	
	SM 2320 B-97	Total Alkalinity	196		mg CaCO3/L	P363808	
	SM 2540 D-97	TSS	8	I	mg/L	P363697	
	SM 4500 F-C-97	Fluoride	0.28		mg F/L	P363970	
2084086	EPA 350.1 Rev. 2.0	Ammonia-N	0.095		mg N/L	P363781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P363856	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P363679	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P363717	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P364413	
2084087	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P363533	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363546

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363548

Component	Result	Code	Units
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363610

Component	Result	Code	Units
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363548

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363610

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0
Batch ID: P363817

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0
Batch ID: P363949

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363822

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363843

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363856

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363931

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363680

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363973

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363717

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364384

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363531

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363533

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

Reference Method: SM 2120 B
Batch ID: P363561

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P363562

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P363808

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P364172

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

Reference Method: SM 2540 C-97
Batch ID: P363790

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P363696

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P363697

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363970

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P364176

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P363992

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

Reference Method: SM 5310 B-00
Batch ID: P364413

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363548

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	103		P	85 - 115
Magnesium	101		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363610

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	104		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	101		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363548

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	106		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	105		P	85 - 115
Copper	104		P	85 - 115
Lead	104		P	85 - 115
Nickel	104		P	85 - 115
Selenium	105		P	85 - 115
Silver	102		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363610

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	94.2		P	85 - 115
Antimony	97.6		P	85 - 115
Arsenic	102		P	85 - 115
Cadmium	98.8		P	85 - 115
Chromium	103		P	85 - 115
Copper	97.9		P	85 - 115
Lead	100		P	85 - 115
Nickel	98.8		P	85 - 115
Selenium	100		P	85 - 115
Silver	97.4		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P363817

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P363949

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363843

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363856

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363931

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363973

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: P363717

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364384

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363531

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.1		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P363561

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P363562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P363808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P364172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P363970

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P364176

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P363992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	88.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363548

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083126	Iron	101	101	P/P	80 - 120
2083126	Magnesium	96.1		P	80 - 120
2083126	Zinc	100	101	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363610

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084100	Iron	99.5	99.1	P/P	80 - 120
2084100	Manganese	96.5	95.2	P/P	80 - 120
2084100	Zinc	100	99.6	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363548

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083126	Aluminum	98.2	99.1	P/P	80 - 120
2083126	Antimony	103	105	P/P	80 - 120
2083126	Arsenic	107	108	P/P	80 - 120
2083126	Cadmium	106	105	P/P	80 - 120
2083126	Chromium	101	103	P/P	80 - 120
2083126	Copper	98.5	100	P/P	80 - 120
2083126	Lead	104	105	P/P	80 - 120
2083126	Nickel	99.4	101	P/P	80 - 120
2083126	Selenium	106	106	P/P	80 - 120
2083126	Silver	101	102	P/P	80 - 120
2083126	Thallium	106	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363610

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084100	Aluminum	95.6	94.3	P/P	70 - 130
2084100	Antimony	102	101	P/P	70 - 130
2084100	Arsenic	110	110	P/P	70 - 130
2084100	Cadmium	97.9	96.3	P/P	70 - 130
2084100	Chromium	96.0	93.6	P/P	70 - 130
2084100	Copper	94.5	94.6	P/P	70 - 130
2084100	Lead	104	104	P/P	70 - 130
2084100	Nickel	97.3	99.2	P/P	70 - 130
2084100	Selenium	100	102	P/P	70 - 130
2084100	Silver	90.7	91.0	P/P	70 - 130
2084100	Thallium	103	104	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P363817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083172	Bromide	95.5	97.3	P/P	90 - 110
2084079	Bromide	96.1		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P363949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2085500	Bromide	97.5	98.9	P/P	90 - 110
2085617	Bromide	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083564	Chloride	98.0		P	90 - 110
2084024	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083564	Sulfate	97.4		P	90 - 110
2084024	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084109	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083644	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084004	Kjeldahl Nitrogen	101	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084053	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084089	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084001	NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084077	Total-P	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086129	Total-P	97.0	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363531

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083647	O-Phosphate-P	94.2	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084058	O-Phosphate-P	95.3	96.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P363992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084028	Organic Carbon	90.5	90.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086216	Organic Carbon	97.9	96.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084107	Turbidity	5.45	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083126	Iron	0.00639	Spike	P	0 - 20
2083126	Magnesium	0.544	Spike	P	0 - 20
2083126	Zinc	0.879	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084100	Iron	0.411	Spike	P	0 - 20
2084100	Magnesium	0.211	Spike	P	0 - 20
2084100	Manganese	1.12	Spike	P	0 - 20
2084100	Zinc	0.562	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083126	Aluminum	0.921	Spike	P	0 - 20
2083126	Antimony	1.31	Spike	P	0 - 20
2083126	Arsenic	0.973	Spike	P	0 - 20
2083126	Cadmium	0.480	Spike	P	0 - 20
2083126	Chromium	1.34	Spike	P	0 - 20
2083126	Copper	1.55	Spike	P	0 - 20
2083126	Lead	1.40	Spike	P	0 - 20
2083126	Nickel	1.90	Spike	P	0 - 20
2083126	Selenium	0.560	Spike	P	0 - 20
2083126	Silver	0.719	Spike	P	0 - 20
2083126	Thallium	1.53	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084100	Aluminum	1.24	Spike	P	0 - 20
2084100	Antimony	0.858	Spike	P	0 - 20
2084100	Arsenic	0.130	Spike	P	0 - 20
2084100	Cadmium	1.67	Spike	P	0 - 20
2084100	Chromium	2.49	Spike	P	0 - 20
2084100	Copper	0.0273	Spike	P	0 - 20
2084100	Lead	0.512	Spike	P	0 - 20
2084100	Nickel	1.99	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084100	Selenium	1.77	Spike	P	0 - 20
2084100	Silver	0.344	Spike	P	0 - 20
2084100	Thallium	0.806	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P363817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083172	Bromide	1.16	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P363949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2085500	Bromide	1.14	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083564	Chloride	1.02	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083564	Sulfate	1.32	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084109	Ammonia-N	0.138	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083644	Ammonia-N	1.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363856

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084054	Kjeldahl Nitrogen	2.09	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084004	Kjeldahl Nitrogen	2.66	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084053	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084089	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084001	NO2NO3-N	0.980	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084077	Total-P	1.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086129	Total-P	1.15	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083647	O-Phosphate-P	1.63	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084058	O-Phosphate-P	1.25	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P363561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084021	Color (true)	0.421	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P363562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084076	Color (true)	1.97	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P363808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083606	Total Alkalinity	0.0673	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P364172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084080	Total Alkalinity	0.393	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P363790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084076	TDS	1.42	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P363970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083606	Fluoride	1.91	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P364176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084080	Fluoride	1.42	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P363992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084028	Organic Carbon	0.319	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P364413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086216	Organic Carbon	0.727	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91228

Included Lab Sample IDs: 2084076, 2084088

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91257

Included Lab Sample IDs: 2084078, 2084083, 2084084, 2084087, 2084090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.7	P/P	90 - 110
O-Phosphate-P	98.5	98.3	P/P	90 - 110
O-Phosphate-P	98.7	97.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91261

Included Lab Sample IDs: 2084076, 2084079, 2084080, 2084085, 2084088

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

Reference Method: SM 2120 B

Run ID: A91271

Included Lab Sample IDs: 2084076, 2084088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91298

Included Lab Sample IDs: 2084099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	97.7	99.6	P/P	90 - 110
Magnesium	98.4	100	P/P	90 - 110
Zinc	104	105	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A91304

Included Lab Sample IDs: 2084079, 2084080

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	101	106	P/P	90 - 110
Bromide	110	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91321

Included Lab Sample IDs: 2084077, 2084081, 2084086, 2084089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110
NO2NO3-N	101	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91335

Included Lab Sample IDs: 2084100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	104	102	P/P	95 - 105
Magnesium	104	99.7	P/P	90 - 110
Manganese	100	101	P/P	95 - 105
Zinc	101	102	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91350

Included Lab Sample IDs: 2084077, 2084081, 2084086, 2084089

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

Reference Method: SM 2320 B-97

Run ID: A91372

Included Lab Sample IDs: 2084076, 2084079, 2084085, 2084088

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91382

Included Lab Sample IDs: 2084099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	96.3	94.2	P/P	90 - 110
Antimony	99.3	98.3	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Cadmium	99.0	97.9	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Copper	99.9	99.8	P/P	90 - 110
Lead	101	99.9	P/P	90 - 110
Nickel	99.1	98.5	P/P	90 - 110
Selenium	101	100	P/P	90 - 110
Silver	97.0	95.6	P/P	90 - 110
Thallium	96.9	94.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91385

Included Lab Sample IDs: 2084082

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

Reference Method: EPA 300.0

Run ID: A91402

Included Lab Sample IDs: 2084085

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	107	108	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91427

Included Lab Sample IDs: 2084077, 2084081, 2084086

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91428

Included Lab Sample IDs: 2084089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A91436

Included Lab Sample IDs: 2084076, 2084079, 2084085, 2084088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91438

Included Lab Sample IDs: 2084082

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	98.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91443

Included Lab Sample IDs: 2084100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.4	93.1	P/P	90 - 110
Antimony	97.2	98.4	P/P	90 - 110
Arsenic	98.9	100	P/P	90 - 110
Cadmium	96.2	97.0	P/P	90 - 110
Copper	97.7	98.2	P/P	90 - 110
Lead	99.9	99.5	P/P	90 - 110
Nickel	98.2	98.6	P/P	90 - 110
Selenium	97.3	99.1	P/P	90 - 110
Silver	94.9	95.2	P/P	90 - 110
Thallium	95.0	94.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91449

Included Lab Sample IDs: 2084077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.4	92.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91456

Included Lab Sample IDs: 2084077, 2084081, 2084086, 2084089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91497

Included Lab Sample IDs: 2084082

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

Reference Method: SM 2320 B-97

Run ID: A91513

Included Lab Sample IDs: 2084080

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

Reference Method: SM 4500 F-C-97

Run ID: A91513

Included Lab Sample IDs: 2084080

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91520

Included Lab Sample IDs: 2084100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.0	97.1	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91605

Included Lab Sample IDs: 2084081, 2084082, 2084086, 2084089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91619

Included Lab Sample IDs: 2084082

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	101	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		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					5.45	
EPA 200.7 Rev. 4.4	Iron	103	101	101			0.0063
	Iron	104	99.5	99.1			0.411
	Magnesium	101	96.1				0.544
	Magnesium	101					0.211
	Manganese	101	96.5	95.2			1.12
	Zinc	102	100	101			0.879
	Zinc	101	100	99.6			0.562
EPA 200.8 Rev. 5.4	Aluminum	100	98.2	99.1			0.921
	Aluminum	94.2	95.6	94.3			1.24
	Antimony	102	103	105			1.31
	Antimony	97.6	102	101			0.858
	Arsenic	106	107	108			0.973
	Arsenic	102	110	110			0.130
	Cadmium	103	106	105			0.480
	Cadmium	98.8	97.9	96.3			1.67
	Chromium	105	101	103			1.34
	Chromium	103	96.0	93.6			2.49
	Copper	104	98.5	100			1.55
	Copper	97.9	94.5	94.6			0.0273
	Lead	104	104	105			1.40
	Lead	100	104	104			0.512
	Nickel	104	99.4	101			1.90
	Nickel	98.8	97.3	99.2			1.99
	Selenium	105	106	106			0.560
	Selenium	100	100	102			1.77
	Silver	102	101	102			0.719
	Silver	97.4	90.7	91.0			0.344
	Thallium	104	106	108			1.53
	Thallium	101	103	104			0.806
EPA 300.0	Bromide	99.8	95.5	97.3	96.1		1.16
	Bromide	102	97.5	98.9	101		1.14
EPA 300.0 Rev. 2.1	Chloride	97.7	98.0	98.4		1.02	
	Sulfate	98.2	97.4	98.2		1.32	
EPA 350.1 Rev. 2.0	Ammonia-N	102	103	103			0.138
	Ammonia-N	104	103	104			1.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6					2.09
	Kjeldahl Nitrogen	108	101	104			2.66
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	102			0.487
	NO2NO3-N	102	100	100			0.0
	NO2NO3-N	99.0	102	102			0.980
EPA 365.1 Rev. 2.0	Total-P	101	98.5	100			1.22
	Total-P	101	97.0	98.2			1.15
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	94.2	96.2			1.63
	O-Phosphate-P	99.1	95.3	96.5			1.25
SM 2120 B	Color (true)	102				0.421	
	Color (true)	102				1.97	
SM 2320 B-97	Total Alkalinity	103				0.0673	
	Total Alkalinity	103				0.393	
SM 2540 C-97	TDS					1.42	
SM 4500 F-C-97	Fluoride	97.1					1.91
	Fluoride	96.7					1.42
SM 5310 B-00	Organic Carbon	88.8	90.5	90.9			0.319
	Organic Carbon	98.2	97.9	96.7			0.727

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2084076, 2084079, 2084080, 2084085, 2084088
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2084099, 2084100
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2084099, 2084100
EPA 300.0 / E31780	Bromide in aqueous matrices	2084079, 2084080, 2084085
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2084076, 2084088
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2084076, 2084088
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2084077, 2084081, 2084082, 2084086, 2084089
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2084077, 2084081, 2084082, 2084086, 2084089
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2084077, 2084081, 2084082, 2084086, 2084089
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2084077, 2084081, 2084082, 2084086, 2084089
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2084078, 2084083, 2084084, 2084087, 2084090
SM 2120 B / E31780	True Color measured at 450 nm	2084076, 2084088
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2084076, 2084079, 2084080, 2084085, 2084088
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2084076, 2084088
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2084076, 2084079, 2084080, 2084085, 2084088
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2084076, 2084079, 2084080, 2084085, 2084088
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2084077, 2084081, 2084082, 2084086, 2084089

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/07/2019			05/07/2019 16:30	Adrian Shelby	2084076, 2084079, 2084080, 2084085, 2084088
EPA 200.7 Rev. 4.4	05/07/2019	05/07/2019 17:40	Elliott D. Healy	05/08/2019 17:30	Betina Topolski	2084099
	05/07/2019	05/08/2019 16:10	Elliott D. Healy	05/09/2019 15:02	Betina Topolski	2084100
	05/07/2019	05/08/2019 16:10	Elliott D. Healy	05/09/2019 15:52	Betina Topolski	2084100
EPA 200.8 Rev. 5.4	05/07/2019	05/07/2019 17:40	Elliott D. Healy	05/10/2019 22:23	Martin Acosta	2084099
	05/07/2019	05/08/2019 16:10	Elliott D. Healy	05/15/2019 10:46	Martin Acosta	2084100
	05/07/2019	05/08/2019 16:10	Elliott D. Healy	05/17/2019 16:19	Martin Acosta	2084100
EPA 300.0	05/07/2019			05/10/2019 15:18	Lipi Saha	2084079
	05/07/2019			05/10/2019 21:52	Lipi Saha	2084080
	05/07/2019			05/14/2019 16:37	Lipi Saha	2084085
EPA 300.0 Rev. 2.1	05/07/2019			05/10/2019 21:06	Lipi Saha	2084076
	05/07/2019			05/10/2019 21:42	Lipi Saha	2084088
EPA 350.1 Rev. 2.0	05/07/2019			05/09/2019 13:40	Ping Hua	2084077
	05/07/2019			05/09/2019 13:42	Ping Hua	2084081
	05/07/2019			05/09/2019 13:43	Ping Hua	2084086
	05/07/2019			05/09/2019 13:45	Ping Hua	2084089
	05/07/2019			05/10/2019 13:22	Ping Hua	2084082
EPA 351.2 Rev. 2.0	05/07/2019	05/13/2019 17:00	Adrian Shelby	05/15/2019 14:50	Joseph Suarez	2084077
	05/07/2019	05/13/2019 17:00	Adrian Shelby	05/15/2019 14:51	Joseph Suarez	2084081
	05/07/2019	05/13/2019 17:00	Adrian Shelby	05/15/2019 14:53	Joseph Suarez	2084086
	05/07/2019	05/13/2019 17:00	Adrian Shelby	05/15/2019 14:55	Joseph Suarez	2084089
	05/07/2019	05/14/2019 12:30	Adrian Shelby	05/17/2019 09:56	Joseph Suarez	2084082
EPA 353.2 Rev. 2.0	05/07/2019			05/09/2019 11:10	Beverly Y. Sanders	2084077
	05/07/2019			05/09/2019 11:11	Beverly Y. Sanders	2084081
	05/07/2019			05/09/2019 11:12	Beverly Y. Sanders	2084086
	05/07/2019			05/09/2019 11:19	Beverly Y. Sanders	2084089
	05/07/2019			05/15/2019 08:19	Beverly Y. Sanders	2084082
EPA 365.1 Rev. 2.0	05/07/2019	05/10/2019 08:53	Joseph Suarez	05/14/2019 14:26	Rosalyn Ballman	2084077
	05/07/2019	05/10/2019 08:53	Joseph Suarez	05/14/2019 14:36	Rosalyn Ballman	2084081
	05/07/2019	05/10/2019 08:53	Joseph Suarez	05/14/2019 14:37	Rosalyn Ballman	2084086
	05/07/2019	05/10/2019 08:53	Joseph Suarez	05/14/2019 17:31	Rosalyn Ballman	2084089
	05/07/2019	05/22/2019 02:01	Lipi Saha	05/22/2019 19:00	Rosalyn Ballman	2084082
EPA 365.1 Rev. 2.0 dissolved	05/07/2019			05/07/2019 15:28	Jhamieka S. Greenwood	2084084
	05/07/2019			05/07/2019 15:34	Jhamieka S. Greenwood	2084090
	05/07/2019			05/07/2019 15:39	Jhamieka S. Greenwood	2084078
	05/07/2019			05/07/2019 15:52	Jhamieka S. Greenwood	2084083
	05/07/2019			05/07/2019 15:54	Jhamieka S. Greenwood	2084087
SM 2120 B	05/07/2019			05/07/2019 15:31	Mariam Hanna	2084088
	05/07/2019			05/07/2019 15:35	Mariam Hanna	2084076

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	05/07/2019			05/12/2019 00:27	Dale L. Simmons	2084076
	05/07/2019			05/12/2019 00:40	Dale L. Simmons	2084079
	05/07/2019			05/12/2019 00:53	Dale L. Simmons	2084088
	05/07/2019			05/12/2019 01:18	Dale L. Simmons	2084085
	05/07/2019			05/17/2019 08:03	Dale L. Simmons	2084080
SM 2540 C-97	05/07/2019			05/08/2019 16:15	Mariam Hanna	2084076, 2084088
SM 2540 D-97	05/07/2019			05/08/2019 17:47	Mariam Hanna	2084076, 2084079, 2084080, 2084085, 2084088
SM 4500 F-C-97	05/07/2019			05/15/2019 07:05	Dale L. Simmons	2084076
	05/07/2019			05/15/2019 07:10	Dale L. Simmons	2084079
	05/07/2019			05/15/2019 07:14	Dale L. Simmons	2084088
	05/07/2019			05/15/2019 07:23	Dale L. Simmons	2084085
	05/07/2019			05/17/2019 06:04	Dale L. Simmons	2084080
SM 5310 B-00	05/07/2019			05/14/2019 06:44	Julia Storbeck	2084077
	05/07/2019			05/22/2019 11:41	Julia Storbeck	2084081
	05/07/2019			05/22/2019 11:55	Julia Storbeck	2084082
	05/07/2019			05/22/2019 12:08	Julia Storbeck	2084086
	05/07/2019			05/22/2019 12:21	Julia Storbeck	2084089