

Chemical Analysis Report

CEN-DIST-2017-10-24-01

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

Event Description: **Greenwood / Noname / Hope**
Request ID: **RQ-2017-10-23-28**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 16-NOV-2017 16:00



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 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: GREENWOOD LAKE WEST LOBE @ CENTER **Collection Date/Time: 10/23/2017 10:30**

Field ID: G2CE0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939458	EPA 180.1 Rev. 2.0	Turbidity	3.8	A	NTU	P333959	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P333984	
		Sulfate	2.6		mg SO4/L	P333987	
	SM 2120 B	Color (true)	61		PCU	P333950	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P334078	
	SM 2540 C-97	TDS	81		mg/L	P334385	
	SM 2540 D-97	TSS	4	I	mg/L	P334374	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P334081	
1939459	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P334166	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P334626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P334292	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P334191	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P334510	
1939460	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P333955	
1939466	EPA 200.7 Rev. 4.4	Calcium	13.2		mg/L	P333962	
		Iron	130		ug/L	P333962	
		Magnesium	2.06		mg/L	P333962	
		Potassium	2.4		mg/L	P333962	
		Sodium	10.3		mg/L	P333962	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P333962	
		Arsenic	0.77		ug/L	P333962	
		Cadmium	0.020	U	ug/L	P333962	
		Chromium	0.40	U	ug/L	P333962	
		Copper	1.59		ug/L	P334317	
		Lead	0.050	U	ug/L	P333962	
		Nickel	0.20	U	ug/L	P333962	
		Silver	0.010	U	ug/L	P333962	

Ref. Method and Comment:

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

Sample Location: LAKE HOPE @ CENTER

Collection Date/Time: 10/23/2017 11:50

Field ID: G2CE0106

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939452	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P333959	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P333984	
		Sulfate	19		mg SO4/L	P333987	
	SM 2120 B	Color (true)	28	A	PCU	P333950	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P334078	
	SM 2540 C-97	TDS	137		mg/L	P334385	
	SM 2540 D-97	TSS	2	I	mg/L	P334374	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P334081	
1939454	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P334166	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P334626	

Field ID: G2CE0106

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939454	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P334292	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P334191	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P334510	
1939456	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P333955	

Ref. Method and Comment:

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

Sample Location: NONAME LAKE @ CENTER

Collection Date/Time: 10/23/2017 13:30

Field ID: G2CE0068

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939453	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P333959	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P333984	
		Sulfate	10		mg SO4/L	P333987	
	SM 2120 B	Color (true)	22		PCU	P333950	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P334078	
	SM 2540 C-97	TDS	61		mg/L	P334385	
	SM 2540 D-97	TSS	3	I	mg/L	P334374	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P334081	
1939455	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P334166	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P334626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P334292	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P334191	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P334510	
1939457	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P333955	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P333959

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P333962

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
Zinc	5.0	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P333962

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Lead	0.67		ug/L
Nickel	0.44	I	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P334317

Component	Result	Code	Units
Copper	0.20	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333984

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334166

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334626

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334292

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334191

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 dissolved
Batch ID: P333955

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

Reference Method: SM 2120 B
Batch ID: P333950

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P334078

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

Reference Method: SM 2540 C-97
Batch ID: P334385

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P334374

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P334081

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P334510

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: P333962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	108		P	85 - 115
Iron	109		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	107		P	85 - 115
Sodium	106		P	85 - 115
Zinc	105		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P333962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	99.7		P	85 - 115
Lead	96.8		P	85 - 115
Nickel	101		P	85 - 115
Silver	97.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P334317

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	98.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333984

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334166

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: P334626

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334292

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334191

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 dissolved
Batch ID: P333955

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

Reference Method: SM 2320 B-97
Batch ID: P334078

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P334081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P334510

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P333962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939114	Calcium	97.3		P	80 - 120
1939114	Iron	105		P	80 - 120
1939114	Magnesium	107		P	80 - 120
1939114	Potassium	105		P	80 - 120
1939114	Sodium	103		P	80 - 120
1939114	Zinc	103		P	80 - 120
1939360	Calcium	102	104	P/P	80 - 120
1939360	Iron	103	106	P/P	80 - 120
1939360	Magnesium	107	110	P/P	80 - 120
1939360	Potassium	98.7	101	P/P	80 - 120
1939360	Sodium	97.8	100	P/P	80 - 120
1939360	Zinc	101	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P333962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939114	Arsenic	103		P	80 - 120
1939114	Cadmium	102		P	80 - 120
1939114	Chromium	98.4		P	80 - 120
1939114	Lead	97.2		P	80 - 120
1939114	Nickel	100		P	80 - 120
1939114	Silver	98.3		P	80 - 120
1939360	Arsenic	102	102	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P333962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939360	Cadmium	105	104	P/P	80 - 120
1939360	Chromium	101	100	P/P	80 - 120
1939360	Lead	98.7	97.2	P/P	80 - 120
1939360	Nickel	101	100	P/P	80 - 120
1939360	Silver	98.4	97.7	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P334317

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938506	Copper	92.0		P	80 - 120
1939080	Copper	96.5	95.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939482	Chloride	105		P	90 - 110
1939641	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939639	Sulfate	110		P	90 - 110
1939640	Sulfate	109		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939382	Ammonia-N	103	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939455	Kjeldahl Nitrogen	96.8	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939382	NO2NO3-N	101	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939454	Total-P	102	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939487	O-Phosphate-P	94.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P334081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939477	Fluoride	96.1	96.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P334510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939454	Organic Carbon	94.3	95.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939458	Turbidity	0.524	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P333962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939360	Calcium	2.03	Spike	P	0 - 20
1939360	Iron	2.59	Spike	P	0 - 20
1939360	Magnesium	2.29	Spike	P	0 - 20
1939360	Potassium	2.41	Spike	P	0 - 20
1939360	Sodium	1.85	Spike	P	0 - 20
1939360	Zinc	1.81	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P333962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939360	Arsenic	0.702	Spike	P	0 - 20
1939360	Cadmium	0.928	Spike	P	0 - 20
1939360	Chromium	0.718	Spike	P	0 - 20
1939360	Lead	1.49	Spike	P	0 - 20
1939360	Nickel	0.826	Spike	P	0 - 20
1939360	Silver	0.673	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P334317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939080	Copper	1.17	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939482	Chloride	0.620	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939640	Sulfate	1.05	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939382	Ammonia-N	3.35	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939455	Kjeldahl Nitrogen	0.730	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939382	NO2NO3-N	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939454	Total-P	0.332	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939487	O-Phosphate-P	6.43	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P333950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939452	Color (true)	3.35	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P334078

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939477	Total Alkalinity	0.444	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P334385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939381	TDS	5.50	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P334081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939477	Fluoride	0.472	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P334510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939454	Organic Carbon	0.879	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 365.1 Rev. 2.0 dissolved
Run ID: A79769
Included Lab Sample IDs: 1939456, 1939457, 1939460

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	98.5	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A79770
Included Lab Sample IDs: 1939452, 1939453, 1939458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	98.5	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A79771

Included Lab Sample IDs: 1939452, 1939453, 1939458

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A79775

Included Lab Sample IDs: 1939452, 1939453, 1939458

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

Reference Method: SM 2320 B-97

Run ID: A79813

Included Lab Sample IDs: 1939452, 1939453, 1939458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.6	P/P	90 - 110
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A79813

Included Lab Sample IDs: 1939452, 1939453, 1939458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.6	P/P	90 - 110
Fluoride	98.6	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A79837

Included Lab Sample IDs: 1939466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	107	106	P/P	90 - 110
Cadmium	105	106	P/P	90 - 110
Chromium	104	105	P/P	90 - 110
Lead	100	100	P/P	90 - 110
Nickel	105	106	P/P	90 - 110
Silver	99.7	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A79840

Included Lab Sample IDs: 1939466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.7	97.9	P/P	90 - 110
Iron	98.4	97.7	P/P	90 - 110
Magnesium	100	99.2	P/P	90 - 110
Potassium	98.8	98.1	P/P	90 - 110
Sodium	97.8	97.1	P/P	90 - 110
Zinc	98.0	96.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A79843

Included Lab Sample IDs: 1939454, 1939455, 1939459

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A79892

Included Lab Sample IDs: 1939454, 1939455, 1939459

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A79900

Included Lab Sample IDs: 1939454, 1939455, 1939459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A79974

Included Lab Sample IDs: 1939454, 1939455, 1939459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A80006

Included Lab Sample IDs: 1939466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	99.7	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80098

Included Lab Sample IDs: 1939454, 1939455, 1939459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	103	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				0.524	
EPA 200.7 Rev. 4.4	Calcium	108	97.3	102 104		2.03
	Iron	109	105	103 106		2.59
	Magnesium	112	107	107 110		2.29

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
			LCS	SMP	MS		
EPA 200.7 Rev. 4.4	Potassium	107	105	98.7	101		2.41
	Sodium	106	103	97.8	100		1.85
	Zinc	105	103	101	103		1.81
EPA 200.8 Rev. 5.4	Arsenic	101	103	102	102		0.702
	Cadmium	101	102	105	104		0.928
	Chromium	99.7	98.4	101	100		0.718
	Copper	98.1	92.0	96.5	95.4		1.17
	Lead	96.8	98.7	97.2	97.2		1.49
	Nickel	101	100	101	100		0.826
	Silver	97.5	98.3	98.4	97.7		0.673
EPA 300.0 Rev. 2.1	Chloride	104	105	104		0.620	
	Sulfate	109	109	110		1.05	
EPA 350.1 Rev. 2.0	Ammonia-N	104	103	99.2			3.35
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.4	96.8	97.8			0.730
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	101	99.5			1.50
EPA 365.1 Rev. 2.0	Total-P	102	102	101			0.332
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	94.8	101			6.43
SM 2120 B	Color (true)					3.35	
SM 2320 B-97	Total Alkalinity	102				0.444	
SM 2540 C-97	TDS					5.50	
SM 4500 F-C-97	Fluoride	95.5	96.1	96.6			0.472
SM 5310 B-00	Organic Carbon	95.6	94.3	95.4			0.879

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1939452, 1939453, 1939458
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1939466
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1939466
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1939452, 1939453, 1939458
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1939452, 1939453, 1939458
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1939454, 1939455, 1939459
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1939454, 1939455, 1939459
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1939454, 1939455, 1939459
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1939454, 1939455, 1939459
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1939456, 1939457, 1939460
SM 2120 B / E31780	True Color measured at 450 nm	1939452, 1939453, 1939458
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1939452, 1939453, 1939458
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1939452, 1939453, 1939458
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1939452, 1939453, 1939458
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1939452, 1939453, 1939458
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1939454, 1939455, 1939459

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	10/24/2017			10/24/2017 14:26	DeAsia Armster	1939452
	10/24/2017			10/24/2017 15:02	DeAsia Armster	1939453, 1939458
EPA 200.7 Rev. 4.4	10/24/2017	10/24/2017	Elliott D. Healy	10/26/2017	Betina Topolski	1939466
EPA 200.8 Rev. 5.4	10/24/2017	10/24/2017	Elliott D. Healy	10/26/2017	Nadine Brooks	1939466
	10/24/2017	10/30/2017	Elliott D. Healy	11/03/2017	Nadine Brooks	1939466
EPA 300.0 Rev. 2.1	10/24/2017			10/25/2017	Julia Storbeck	1939452, 1939453, 1939458
	10/24/2017			10/27/2017	Irina Carbone	1939452, 1939453, 1939458
EPA 350.1 Rev. 2.0	10/24/2017			10/26/2017	Sofia Elnemr	1939454, 1939455, 1939459
EPA 351.2 Rev. 2.0	10/24/2017	11/03/2017	Adrian Shelby	11/06/2017	Joseph Suarez	1939454, 1939455, 1939459
EPA 353.2 Rev. 2.0	10/24/2017			10/30/2017	Beverly Y. Sanders	1939454, 1939455, 1939459
EPA 365.1 Rev. 2.0	10/24/2017	10/27/2017	Sima Feizi	10/30/2017	Lipi Saha	1939454, 1939455, 1939459
EPA 365.1 Rev. 2.0 dissolved	10/24/2017			10/24/2017 15:16	Megan Treadwell	1939456
	10/24/2017			10/24/2017 15:17	Megan Treadwell	1939457
	10/24/2017			10/24/2017 15:18	Megan Treadwell	1939460
SM 2120 B	10/24/2017			10/24/2017 15:28	Tanya Welborn	1939452, 1939453
	10/24/2017			10/24/2017 15:29	Tanya Welborn	1939458
SM 2320 B-97	10/24/2017			10/25/2017	Dale L. Simmons	1939452, 1939453
	10/24/2017			10/26/2017	Dale L. Simmons	1939458
SM 2540 C-97	10/24/2017			10/25/2017	Yijie Li	1939452, 1939453, 1939458
SM 2540 D-97	10/24/2017			10/25/2017	Yijie Li	1939452, 1939453, 1939458
SM 4500 F-C-97	10/24/2017			10/25/2017	Dale L. Simmons	1939452, 1939453
	10/24/2017			10/26/2017	Dale L. Simmons	1939458
SM 5310 B-00	10/24/2017			10/31/2017	Ping Hua	1939454, 1939455, 1939459