

Chemical Analysis Report

NW-DIST-2017-04-19-01

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

Event Description: **EGLIN WEST WBID 468A 495 644 786A 843A**

Request ID: **RQ-2017-04-10-32**

Customer: **NW-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 17-MAY-2017 12:08



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: TURKEY CREEK ABV EG RD 232

Collection Date/Time: 04/18/2017 10:50

Field ID: G3NW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890090	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P323701	
	EPA 300.0 Rev. 2.1	Chloride	2.8		mg Cl/L	P324026	
		Sulfate	0.47	I	mg SO4/L	P324023	
	SM 2120 B	Color (true)	6.4		PCU	P323668	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	18	I	mg/L	P324029	
	SM 2540 D-97	TSS	3	I	mg/L	P324268	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325275	
1890094	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.091	I	mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P323741	
	SM 5310 B-00	Organic Carbon	0.96	I	mg C/L	P323789	
1890098	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323663	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: JUNIPER CREEK @ HWY 85

Collection Date/Time: 04/18/2017 11:05

Field ID: G3NW0095

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890091	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P323701	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P324026	
		Sulfate	0.62		mg SO4/L	P324023	
	SM 2120 B	Color (true)	15		PCU	P323668	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	15	I	mg/L	P324029	
	SM 2540 D-97	TSS	2	I	mg/L	P324268	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
1890095	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.084	I	mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.069		mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P323741	
	SM 5310 B-00	Organic Carbon	1.4		mg C/L	P323789	
1890099	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323663	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: MILL CREEK ABV JOHN SIMS

Collection Date/Time: 04/18/2017 12:00

Field ID: G3NW0140

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890092	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P323701	

Field ID: G3NW0140

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890092	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P324026	
		Sulfate	6.0		mg SO4/L	P324023	
	SM 2120 B	Color (true)	20		PCU	P323668	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	44		mg/L	P324030	
	SM 2540 D-97	TSS	2	I	mg/L	P324269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
1890096	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P323681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P323741	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P323789	
1890100	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323663	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BASS LAKE DRAINAGE MOONEY

Collection Date/Time: 04/18/2017 12:30

Field ID: G3NW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890087	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P323701	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P324026	
		Sulfate	12		mg SO4/L	P324023	
	SM 2120 B	Color (true)	47		PCU	P323668	
	SM 2320 B-97	Total Alkalinity	40	A	mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	114	A	mg/L	P324029	
	SM 2540 D-97	TSS	3	IA	mg/L	P324268	
1890088	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P323681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P323955	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.87		mg N/L	P323908	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P323741	
1890089	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P323789	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323663	
1890115	EPA 200.7 Rev. 4.4	Calcium	8.80		mg/L	P323983	
		Iron	650		ug/L	P323983	
		Magnesium	2.12		mg/L	P323983	
		Potassium	5.9		mg/L	P323983	
		Sodium	24.5		mg/L	P323983	
		Zinc	5.0	U	ug/L	P323983	
		Arsenic	1.53		ug/L	P323983	
	EPA 200.8 Rev. 5.4	Cadmium	0.020	U	ug/L	P323983	
		Chromium	0.40	I	ug/L	P323983	
		Copper	0.54	I	ug/L	P323983	

Field ID: G3NW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890115	EPA 200.8 Rev. 5.4	Lead	0.27		ug/L	P323983	
		Nickel	0.21	I	ug/L	P323983	
		Silver	0.010	U	ug/L	P323983	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: GAP CR POWERLINES OF OVERBRO

Collection Date/Time: 04/18/2017 13:50

Field ID: G3NW0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890093	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P323701	
	EPA 300.0 Rev. 2.1	Chloride	14	A	mg Cl/L	P324026	
		Sulfate	6.0	A	mg SO4/L	P324023	
	SM 2120 B	Color (true)	45		PCU	P323669	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	77		mg/L	P324030	
	SM 2540 D-97	TSS	3	I	mg/L	P324269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
1890097	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P323681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.089		mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P323741	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P323789	
1890101	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323663	

Ref. Method and Comment:

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

EPA 350.1 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: P323701

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P323983

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: P323983

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323955

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323956

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323908

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323663

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

Reference Method: SM 2120 B
Batch ID: P323668

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P323669

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P324164

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

Reference Method: SM 2540 C-97
Batch ID: P324029

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P324030

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324268

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324269

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P325275

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P323789

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: P323983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	107		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	104		P	85 - 115
Sodium	103		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P323983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	103		P	85 - 115
Copper	97.3		P	85 - 115
Lead	101		P	85 - 115
Nickel	99.6		P	85 - 115
Silver	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323955

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323956

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323908

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323663

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

Reference Method: SM 2320 B-97
Batch ID: P324164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P325275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P323789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P323983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890115	Calcium	104		P	80 - 120
1890115	Iron	107		P	80 - 120
1890115	Magnesium	107		P	80 - 120
1890115	Potassium	104		P	80 - 120
1890115	Sodium	100		P	80 - 120
1890115	Zinc	103		P	80 - 120
1890227	Calcium	96.4		P	80 - 120
1890227	Iron	106	105	P/P	80 - 120
1890227	Magnesium	104	103	P/P	80 - 120
1890227	Potassium	110	111	P/P	80 - 120
1890227	Sodium	100	101	P/P	80 - 120
1890227	Zinc	98.7	96.1	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P323983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890115	Arsenic	107		P	80 - 120
1890115	Cadmium	103		P	80 - 120
1890115	Chromium	101		P	80 - 120
1890115	Copper	98.9		P	80 - 120
1890115	Lead	102		P	80 - 120
1890115	Nickel	99.3		P	80 - 120
1890115	Silver	101		P	80 - 120
1890227	Arsenic	100	100	P/P	80 - 120
1890227	Cadmium	100	98.9	P/P	80 - 120
1890227	Chromium	101	101	P/P	80 - 120
1890227	Copper	95.4	95.7	P/P	80 - 120
1890227	Lead	101	100	P/P	80 - 120
1890227	Nickel	98.0	98.0	P/P	80 - 120
1890227	Silver	100	101	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889995	Sulfate	98.3		P	90 - 110
1890093	Sulfate	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889995	Chloride	99.2		P	90 - 110
1890093	Chloride	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889996	Kjeldahl Nitrogen	94.2	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890096	Kjeldahl Nitrogen	95.4	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323908

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889974	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890097	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890088	Total-P	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890038	O-Phosphate-P	98.2	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890087	Fluoride	101	104	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
 Batch ID: P325275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1895643	Fluoride	102	102	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P323789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889973	Organic Carbon	99.2	99.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P323701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889970	Turbidity	3.37	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P323983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890227	Calcium	0.666	Spike	P	0 - 20
1890227	Iron	0.501	Spike	P	0 - 20
1890227	Magnesium	0.456	Spike	P	0 - 20
1890227	Potassium	0.880	Spike	P	0 - 20
1890227	Sodium	0.251	Spike	P	0 - 20
1890227	Zinc	2.64	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P323983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890227	Arsenic	0.162	Spike	P	0 - 20
1890227	Cadmium	1.16	Spike	P	0 - 20
1890227	Chromium	0.308	Spike	P	0 - 20
1890227	Copper	0.339	Spike	P	0 - 20
1890227	Lead	0.787	Spike	P	0 - 20
1890227	Nickel	0.0661	Spike	P	0 - 20
1890227	Silver	0.647	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P324023

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890093	Sulfate	0.0502	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890093	Chloride	0.245	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890034	Ammonia-N	0.660	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889996	Kjeldahl Nitrogen	0.187	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890096	Kjeldahl Nitrogen	2.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889974	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890097	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890088	Total-P	0.517	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890038	O-Phosphate-P	0.389	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P323668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889995	Color (true)	0.778	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P323669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890171	Color (true)	0.468	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P324164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890087	Total Alkalinity	0.565	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P324029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890087	TDS	7.02	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P324030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890208	TDS	3.83	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890087	Fluoride	2.62	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P325275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895643	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P323789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889973	Organic Carbon	0.245	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A75883

Included Lab Sample IDs: 1890089, 1890098, 1890099, 1890100, 1890101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	98.1	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A75886

Included Lab Sample IDs: 1890087, 1890090, 1890091, 1890092, 1890093

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115
Color (true)	101	100	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75889

Included Lab Sample IDs: 1890088, 1890094, 1890095, 1890096, 1890097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	102	P/P	90 - 110
Ammonia-N	102	102	P/P	90 - 110
Ammonia-N	104	105	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A75900

Included Lab Sample IDs: 1890087, 1890090, 1890091, 1890092, 1890093

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

Reference Method: SM 5310 B-00

Run ID: A75924

Included Lab Sample IDs: 1890088, 1890094, 1890095, 1890096, 1890097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75932

Included Lab Sample IDs: 1890088, 1890094, 1890095, 1890096, 1890097

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75962

Included Lab Sample IDs: 1890088, 1890094, 1890095, 1890096, 1890097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	97.0	P/P	90 - 110
NO2NO3-N	98.0	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75996

Included Lab Sample IDs: 1890088, 1890094, 1890095, 1890096, 1890097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	102	P/P	90 - 110
Kjeldahl Nitrogen	102	99.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75999

Included Lab Sample IDs: 1890087, 1890090, 1890091, 1890092, 1890093

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	99.7	100	P/P	90 - 110
Sulfate	93.7	98.9	P/P	90 - 110
Sulfate	93.8	98.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A76039

Included Lab Sample IDs: 1890115

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.4	94.4	P/P	90 - 110
Cadmium	93.4	94.9	P/P	90 - 110
Chromium	96.7	96.4	P/P	90 - 110
Copper	94.4	94.9	P/P	90 - 110
Lead	98.6	98.7	P/P	90 - 110
Nickel	94.5	95.4	P/P	90 - 110
Silver	95.1	95.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76045

Included Lab Sample IDs: 1890087, 1890090, 1890091, 1890092, 1890093

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	102	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A76102

Included Lab Sample IDs: 1890115

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	103	P/P	90 - 110
Iron	104	104	P/P	90 - 110
Magnesium	104	103	P/P	90 - 110
Potassium	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A76102

Included Lab Sample IDs: 1890115

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	99.6	101	P/P	90 - 110
Zinc	99.8	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76396

Included Lab Sample IDs: 1890087, 1890091, 1890092, 1890093

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.0	P/P	90 - 110
Fluoride	98.0	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76418

Included Lab Sample IDs: 1890090

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

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
			LCS			SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.37	
EPA 200.7 Rev. 4.4	Calcium	101	104	96.4			0.666
	Iron	107	107	106	105		0.501
	Magnesium	109	107	104	103		0.456
	Potassium	104	104	110	111		0.880
	Sodium	103	100	100	101		0.251
	Zinc	100	103	98.7	96.1		2.64
EPA 200.8 Rev. 5.4	Arsenic	104	107	100	100		0.162
	Cadmium	103	103	100	98.9		1.16
	Chromium	103	101	101	101		0.308
	Copper	97.3	98.9	95.4	95.7		0.339
	Lead	101	102	101	100		0.787
	Nickel	99.6	99.3	98.0	98.0		0.0661
	Silver	102	101	100	101		0.647
EPA 300.0 Rev. 2.1	Chloride	101	99.5	99.2		0.245	
	Sulfate	98.9	98.8	98.3		0.0502	
EPA 350.1 Rev. 2.0	Ammonia-N	102					0.660
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.0	94.2	94.0			0.187
	Kjeldahl Nitrogen	98.6	95.4	97.8			2.04
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.0	102	100			0.990
	NO ₂ NO ₃ -N	101	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	93.8	103	103			0.517
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.2	98.6			0.389

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
SM 2120 B	Color (true)					0.778	
	Color (true)					0.468	
SM 2320 B-97	Total Alkalinity	104				0.565	
SM 2540 C-97	TDS					7.02	
	TDS					3.83	
SM 4500 F-C-97	Fluoride	101	101	104			2.62
	Fluoride	98.5	102	102			0.480
SM 5310 B-00	Organic Carbon	99.6	99.2	99.6			0.245

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1890087, 1890090, 1890091, 1890092, 1890093
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1890115
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1890115
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1890087, 1890090, 1890091, 1890092, 1890093
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1890087, 1890090, 1890091, 1890092, 1890093
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1890088, 1890094, 1890095, 1890096, 1890097
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1890088, 1890094, 1890095, 1890096, 1890097
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1890088, 1890094, 1890095, 1890096, 1890097
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1890088, 1890094, 1890095, 1890096, 1890097
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1890089, 1890098, 1890099, 1890100, 1890101
SM 2120 B / E31780	True Color measured at 450 nm	1890087, 1890090, 1890091, 1890092, 1890093
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1890087, 1890090, 1890091, 1890092, 1890093
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1890087, 1890090, 1890091, 1890092, 1890093
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1890087, 1890090, 1890091, 1890092, 1890093
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1890087, 1890090, 1890091, 1890092, 1890093
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1890088, 1890094, 1890095, 1890096, 1890097

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	04/19/2017			04/19/2017 16:06	Sima Feizi	1890087, 1890090, 1890091, 1890092, 1890093
EPA 200.7 Rev. 4.4	04/19/2017	04/25/2017	Elliott D. Healy	05/01/2017	Martin Acosta	1890115
EPA 200.8 Rev. 5.4	04/19/2017	04/25/2017	Elliott D. Healy	04/27/2017	Betina Topolski	1890115
EPA 300.0 Rev. 2.1	04/19/2017			04/26/2017	Ping Hua	1890087, 1890090, 1890091, 1890092, 1890093
EPA 350.1 Rev. 2.0	04/19/2017			04/19/2017	Julie Michelle Frank	1890088, 1890094, 1890095, 1890096, 1890097
EPA 351.2 Rev. 2.0	04/19/2017	04/25/2017	Adrian Shelby	04/26/2017	Joseph Suarez	1890088, 1890094, 1890095, 1890096, 1890097
EPA 353.2 Rev. 2.0	04/19/2017			04/24/2017	Beverly Y. Sanders	1890088, 1890094, 1890095, 1890096, 1890097
EPA 365.1 Rev. 2.0	04/19/2017	04/20/2017	Adrian Shelby	04/21/2017	Lipi Saha	1890088, 1890094, 1890095, 1890096, 1890097
EPA 365.1 Rev. 2.0 dissolved	04/19/2017			04/19/2017 14:35	Anthony C. Onicha	1890089
	04/19/2017			04/19/2017 14:36	Anthony C. Onicha	1890098
	04/19/2017			04/19/2017 14:37	Anthony C. Onicha	1890099
	04/19/2017			04/19/2017 14:38	Anthony C. Onicha	1890100
	04/19/2017			04/19/2017 14:39	Anthony C. Onicha	1890101
SM 2120 B	04/19/2017			04/19/2017 15:51	Julia Storbeck	1890087
	04/19/2017			04/19/2017 15:52	Julia Storbeck	1890090
	04/19/2017			04/19/2017 15:53	Julia Storbeck	1890091
	04/19/2017			04/19/2017 15:54	Julia Storbeck	1890092
	04/19/2017			04/19/2017 15:58	Julia Storbeck	1890093
SM 2320 B-97	04/19/2017			04/27/2017	Dale L. Simmons	1890087, 1890090, 1890091, 1890092, 1890093
SM 2540 C-97	04/19/2017			04/21/2017	Yijie Li	1890087, 1890090, 1890091, 1890092, 1890093
SM 2540 D-97	04/19/2017			04/21/2017	Yijie Li	1890087, 1890090, 1890091, 1890092, 1890093
SM 4500 F-C-97	04/19/2017			05/13/2017	Dale L. Simmons	1890087, 1890091, 1890092, 1890093
	04/19/2017			05/15/2017	Dale L. Simmons	1890090
SM 5310 B-00	04/19/2017			04/20/2017	Julie Michelle Frank	1890088, 1890094, 1890095, 1890096, 1890097