

Chemical Analysis Report

SO-DIST-2016-07-15-01

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

Event Description: **SMP: Alligator 2074**

Request ID: **RQ-2016-07-18-29**

Customer: **SO-DIST**

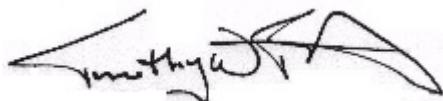
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 08-AUG-2016 10:14

A handwritten signature in black ink, appearing to read 'Timothy W. Fitzpatrick', with a stylized flourish at the end.

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: Alligator Cr South Branch @ SR768

Collection Date/Time: 07/14/2016 14:00

Field ID: G2SD25010009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816533	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P308069	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P308999	
		Sulfate	0.43	I	mg SO4/L	P308998	
	SM 2120 B	Color (true)	76		PCU	P308045	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P308750	
	SM 2540 C-97	TDS	61		mg/L	P308631	
	SM 2540 D-97	TSS	6	I	mg/L	P308597	
	SM 4500 F-C-97	Fluoride	0.038	I	mg F/L	P308754	
1816535	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P308514	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P308251	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P308801	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P308194	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P308719	
1816537	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P308051	
1816541	EPA 200.7 Rev. 4.4	Calcium	10.1		mg/L	P308145	
		Iron	310		ug/L	P308145	
		Magnesium	1.24		mg/L	P308145	
		Potassium	0.30	U	mg/L	P308145	
		Sodium	6.7		mg/L	P308145	
		Zinc	5.0	U	ug/L	P308145	
	EPA 200.8 Rev. 5.4	Arsenic	0.46		ug/L	P308145	
		Cadmium	0.020	U	ug/L	P308145	
		Chromium	0.18	I	ug/L	P308145	
		Copper	0.51		ug/L	P308145	
		Lead	0.18	I	ug/L	P308145	
		Nickel	0.17	I	ug/L	P308145	
		Silver	0.0050	U	ug/L	P308145	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Field Blank

Collection Date/Time: 07/14/2016 14:10

Field ID: G2SD-BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816534	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P308070	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P308999	
		Sulfate	0.20	U	mg SO4/L	P308998	
	SM 2120 B	Color (true)	2.5	U	PCU	P308045	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P308750	
	SM 2540 C-97	TDS	15	U	mg/L	P308628	
	SM 2540 D-97	TSS	2	U	mg/L	P308594	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P308754	
1816536	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P308514	

Field ID: G2SD-BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816536	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P308251	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P308801	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P308194	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P308719	
1816538	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P308051	
1816542	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P308145	
		Iron	30	U	ug/L	P308145	
		Magnesium	0.040	U	mg/L	P308145	
		Potassium	0.30	U	mg/L	P308145	
		Sodium	0.50	U	mg/L	P308145	
		Zinc	5.0	U	ug/L	P308145	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P308145	
		Cadmium	0.020	U	ug/L	P308145	
		Chromium	0.050	U	ug/L	P308145	
		Copper	0.10	U	ug/L	P308145	
		Lead	0.050	U	ug/L	P308145	
		Nickel	0.050	U	ug/L	P308145	
		Silver	0.0050	U	ug/L	P308145	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308069

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308070

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

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: P308145

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308998

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308514

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308251

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308801

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308194

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308051

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P308045

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308750

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

Reference Method: SM 2540 C-97
Batch ID: P308628

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P308631

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308594

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308597

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P308719

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: P308145

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	107		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	105		P	85 - 115
Sodium	104		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	96.4		P	85 - 115
Cadmium	94.7		P	85 - 115
Chromium	97.8		P	85 - 115
Copper	94.2		P	85 - 115
Lead	95.4		P	85 - 115
Nickel	94.4		P	85 - 115
Silver	96.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308998

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308514

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: P308251

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308801

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308194

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308051

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

Reference Method: SM 2320 B-97
Batch ID: P308750

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

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P308719

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815900	Calcium	107		P	80 - 120
1815900	Iron	107	105	P/P	80 - 120
1815900	Magnesium	104		P	80 - 120
1815900	Potassium	104	103	P/P	80 - 120
1815900	Sodium	107		P	80 - 120
1815900	Zinc	99.4	101	P/P	80 - 120
1816541	Calcium	107		P	80 - 120
1816541	Iron	109		P	80 - 120
1816541	Magnesium	109		P	80 - 120
1816541	Potassium	112		P	80 - 120
1816541	Sodium	107		P	80 - 120
1816541	Zinc	103		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815900	Arsenic	99.8	97.9	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815900	Cadmium	98.6	96.6	P/P	80 - 120
1815900	Chromium	96.9	96.9	P/P	80 - 120
1815900	Copper	92.7	91.7	P/P	80 - 120
1815900	Lead	96.4	94.9	P/P	80 - 120
1815900	Nickel	93.5	91.7	P/P	80 - 120
1815900	Silver	96.8	96.8	P/P	80 - 120
1816541	Arsenic	101		P	80 - 120
1816541	Cadmium	101		P	80 - 120
1816541	Chromium	101		P	80 - 120
1816541	Copper	97.4		P	80 - 120
1816541	Lead	99.6		P	80 - 120
1816541	Nickel	95.5		P	80 - 120
1816541	Silver	99.1		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308998

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816472	Sulfate	97.4		P	90 - 110
1816533	Sulfate	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816472	Chloride	99.9		P	90 - 110
1816533	Chloride	98.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816474	Kjeldahl Nitrogen	93.9	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308801

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816428	NO2NO3-N	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816462	Total-P	97.2	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816573	O-Phosphate-P	96.7	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1817651	Fluoride	95.3	97.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P308719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816217	Organic Carbon	100	98.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816461	Turbidity	2.17	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816561	Turbidity	0.985	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815900	Calcium	0.860	Spike	P	0 - 20
1815900	Iron	1.97	Spike	P	0 - 20
1815900	Magnesium	2.13	Spike	P	0 - 20
1815900	Potassium	0.897	Spike	P	0 - 20
1815900	Sodium	1.53	Spike	P	0 - 20
1815900	Zinc	2.03	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815900	Arsenic	1.91	Spike	P	0 - 20
1815900	Cadmium	2.08	Spike	P	0 - 20
1815900	Chromium	0.00914	Spike	P	0 - 20
1815900	Copper	0.984	Spike	P	0 - 20
1815900	Lead	1.56	Spike	P	0 - 20
1815900	Nickel	1.90	Spike	P	0 - 20
1815900	Silver	0.00458	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308998

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816472	Sulfate	1.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816472	Chloride	0.200	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816462	Ammonia-N	0.0345	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816474	Kjeldahl Nitrogen	3.13	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816428	NO2NO3-N	0.234	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816462	Total-P	1.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816573	O-Phosphate-P	3.36	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P308045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816294	Color (true)	1.79	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P308750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817651	Total Alkalinity	0.666	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P308628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815743	TDS	8.64	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P308631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816564	TDS	8.87	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817651	Fluoride	1.93	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P308719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816217	Organic Carbon	1.92	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: SM 2120 B
Run ID: A70582
Included Lab Sample IDs: 1816533, 1816534

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	97.9	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A70584
Included Lab Sample IDs: 1816537, 1816538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.3	95.9	P/P	90 - 110
O-Phosphate-P	97.5	97.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70588

Included Lab Sample IDs: 1816533, 1816534

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A70661

Included Lab Sample IDs: 1816541, 1816542

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70673

Included Lab Sample IDs: 1816535, 1816536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70722

Included Lab Sample IDs: 1816535, 1816536

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A70730

Included Lab Sample IDs: 1816541, 1816542

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	100	97.9	P/P	90 - 110
Arsenic	97.9	97.1	P/P	90 - 110
Cadmium	95.3	95.1	P/P	90 - 110
Cadmium	96.9	95.3	P/P	90 - 110
Chromium	99.0	99.3	P/P	90 - 110
Chromium	99.4	99.0	P/P	90 - 110
Copper	97.5	95.4	P/P	90 - 110
Copper	98.9	97.5	P/P	90 - 110
Lead	94.5	94.1	P/P	90 - 110
Lead	95.2	94.5	P/P	90 - 110
Nickel	96.5	94.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A70730

Included Lab Sample IDs: 1816541, 1816542

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	97.0	96.5	P/P	90 - 110
Silver	95.9	96.0	P/P	90 - 110
Silver	96.0	95.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70732

Included Lab Sample IDs: 1816535, 1816536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.7	96.2	P/P	90 - 110
Kjeldahl Nitrogen	96.2	96.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A70790

Included Lab Sample IDs: 1816535, 1816536

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

Reference Method: SM 2320 B-97

Run ID: A70797

Included Lab Sample IDs: 1816533, 1816534

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

Reference Method: SM 4500 F-C-97

Run ID: A70797

Included Lab Sample IDs: 1816533, 1816534

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70809

Included Lab Sample IDs: 1816535, 1816536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70885

Included Lab Sample IDs: 1816533, 1816534

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	100	P/P	90 - 110
Chloride	102	100	P/P	90 - 110
Sulfate	98.7	96.3	P/P	90 - 110
Sulfate	99.4	96.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

* 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		MS
									SMP		
EPA 180.1 Rev. 2.0	Turbidity								2.17		
	Turbidity								0.985		
EPA 200.7 Rev. 4.4	Calcium	103			107	107					0.860
	Iron	107			107	105	109				1.97
	Magnesium	104			104	109					2.13
	Potassium	105			104	103	112				0.897
	Sodium	104			107	107					1.53
	Zinc	101			99.4	101	103				2.03
EPA 200.8 Rev. 5.4	Arsenic	96.4			99.8	97.9	101				1.91
	Cadmium	94.7			98.6	96.6	101				2.08
	Chromium	97.8			96.9	96.9	101				0.0091
	Copper	94.2			92.7	91.7	97.4				0.984
	Lead	95.4			96.4	94.9	99.6				1.56
	Nickel	94.4			93.5	91.7	95.5				1.90
	Silver	96.5			96.8	96.8	99.1				0.0045
EPA 300.0 Rev. 2.1	Chloride	99.0			99.9	98.9			0.200		
	Sulfate	96.3			97.4	97.9			1.33		
EPA 350.1 Rev. 2.0	Ammonia-N	102									0.0345
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.0			93.9	98.5					3.13
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101			99.8						0.234
EPA 365.1 Rev. 2.0	Total-P	100			97.2	99.3					1.68
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105			96.7	100					3.36
SM 2120 B	Color (true)								1.79		
SM 2320 B-97	Total Alkalinity	104							0.666		
SM 2540 C-97	TDS								8.64		
	TDS								8.87		
SM 4500 F-C-97	Fluoride	98.3			95.3	97.4					1.93
SM 5310 B-00	Organic Carbon	98.4			100	98.3					1.92

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1816533, 1816534
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1816541, 1816542
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1816541, 1816542
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1816533, 1816534
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1816533, 1816534
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1816535, 1816536
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1816535, 1816536

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1816535, 1816536
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1816535, 1816536
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1816537, 1816538
SM 2120 B / E31780	True Color measured at 450 nm	1816533, 1816534
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1816533, 1816534
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1816533, 1816534
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1816533, 1816534
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1816533, 1816534
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1816535, 1816536

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	07/15/2016			07/15/2016 14:09	Blanca Fach	1816533, 1816534
EPA 200.7 Rev. 4.4	07/15/2016	07/18/2016	Elliott D. Healy	07/20/2016	Joshua Ayres	1816541, 1816542
EPA 200.8 Rev. 5.4	07/15/2016	07/18/2016	Elliott D. Healy	07/22/2016	Charles J. Peterson	1816541, 1816542
EPA 300.0 Rev. 2.1	07/15/2016			08/02/2016	Ping Hua	1816533, 1816534
EPA 350.1 Rev. 2.0	07/15/2016			07/21/2016	Virginia P. Brown	1816535, 1816536
EPA 351.2 Rev. 2.0	07/15/2016	07/20/2016	Sofia Elnemr	07/22/2016	Christopher Armour	1816535, 1816536
EPA 353.2 Rev. 2.0	07/15/2016			07/28/2016	Beverly Y. Sanders	1816535, 1816536
EPA 365.1 Rev. 2.0	07/15/2016	07/19/2016	Vijayalakshmi Reddy	07/20/2016	Lipi Saha	1816535, 1816536
EPA 365.1 Rev. 2.0 dissolved	07/15/2016			07/15/2016 15:37	Julia Storbeck	1816538
	07/15/2016			07/15/2016 15:46	Julia Storbeck	1816537
SM 2120 B	07/15/2016			07/15/2016 13:34	Rochelle Y Jackson	1816533
	07/15/2016			07/15/2016 13:35	Rochelle Y Jackson	1816534
SM 2320 B-97	07/15/2016			07/27/2016	Dale L. Simmons	1816533, 1816534
SM 2540 C-97	07/15/2016			07/18/2016	Yijie Li	1816533, 1816534
SM 2540 D-97	07/15/2016			07/18/2016	Yijie Li	1816533, 1816534
SM 4500 F-C-97	07/15/2016			07/27/2016	Dale L. Simmons	1816533, 1816534
SM 5310 B-00	07/15/2016			07/26/2016	Sofia Elnemr	1816535, 1816536