

Chemical Analysis Report

NW-DIST-2016-07-06-02

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

Event Description: **WBID 25 28 27 336**
Request ID: **RQ-2016-07-11-31**
Customer: **NW-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 25-JUL-2016 10:27

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: 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: BIG HORSE CREEK UPSTREAM OF OLD RIVER ROAD

Collection Date/Time: 07/05/2016 11:55

Field ID: G4NW0298

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813531	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P307447	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P308026	
		Sulfate	0.88		mg SO4/L	P308032	
	SM 2120 B	Color (true)	46		PCU	P307402	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P307629	
	SM 2540 C-97	TDS	26		mg/L	P308085	
	SM 2540 D-97	TSS	8	I	mg/L	P308073	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P307633	
1813538	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P307637	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P307601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P307762	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P307558	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P307769	
1813545	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P307397	

Ref. Method and Comment:

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

Sample Location: BIG HORSE CREEK S.R.2 OKA. CO.

Collection Date/Time: 07/05/2016 12:25

Field ID: G4NW0299

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813532	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P307447	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P308026	
		Sulfate	0.79		mg SO4/L	P308032	
	SM 2120 B	Color (true)	48		PCU	P307402	
	SM 2320 B-97	Total Alkalinity	2.3	I	mg CaCO3/L	P307629	
	SM 2540 C-97	TDS	25		mg/L	P308085	
	SM 2540 D-97	TSS	5	I	mg/L	P308073	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P307633	
1813539	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P307638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P307601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.078		mg N/L	P307762	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P307558	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P307769	
1813546	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P307397	

Ref. Method and Comment:

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

Sample Location: PANTHER CREEK UPSTREAM OF HIGH BRIDGE ROAD

Collection Date/Time: 07/05/2016 12:50

Field ID: G4NW0297

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813533	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P307447	

Field ID: G4NW0297

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813533	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P308026	
		Sulfate	1.9		mg SO4/L	P308032	
	SM 2120 B	Color (true)	29		PCU	P307402	
	SM 2320 B-97	Total Alkalinity	1.0	I	mg CaCO3/L	P307629	
	SM 2540 C-97	TDS	23	I	mg/L	P308085	
	SM 2540 D-97	TSS	2	I	mg/L	P308073	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307633	
1813540	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P307638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P307601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.038		mg N/L	P307762	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P307558	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P307770	
1813547	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307397	

Ref. Method and Comment:

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

Sample Location: PANTHER CREEK UPSTREAM JOHN RILEY BARNHILL ROAD

Collection Date/Time: 07/05/2016 13:20

Field ID: G4NW0296

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813534	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P307447	
	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P308026	
		Sulfate	1.4		mg SO4/L	P308032	
	SM 2120 B	Color (true)	27		PCU	P307402	
	SM 2320 B-97	Total Alkalinity	0.65	I	mg CaCO3/L	P307629	
	SM 2540 C-97	TDS	21	I	mg/L	P308085	
	SM 2540 D-97	TSS	4	I	mg/L	P308073	
1813541	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307633	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P307638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P307601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.077		mg N/L	P307762	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P307558	
1813548	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P307770	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307397	

Ref. Method and Comment:

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

Sample Location: PANTHER CREEK BELOW SHERMAN KENNEDY RD

Collection Date/Time: 07/05/2016 13:40

Field ID: G4NW0295

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813535	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P307447	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P308026	
		Sulfate	0.92		mg SO4/L	P308032	

Field ID: G4NW0295

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813535	SM 2120 B	Color (true)	29		PCU	P307402	
	SM 2320 B-97	Total Alkalinity	1.3	I	mg CaCO3/L	P307629	
	SM 2540 C-97	TDS	18	I	mg/L	P308085	
	SM 2540 D-97	TSS	3	I	mg/L	P308073	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307633	
1813542	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P307638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P307601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P307762	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P307558	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P307770	
1813549	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307398	

Ref. Method and Comment:

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

Sample Location: BAGGETT CREEK UPSTREAM OF KEYSER MILL ROAD

Collection Date/Time: 07/05/2016 14:10

Field ID: G4NW0335

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813536	EPA 180.1 Rev. 2.0	Turbidity	2.7	A	NTU	P307448	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P308026	
		Sulfate	0.53		mg SO4/L	P308032	
	SM 2120 B	Color (true)	19		PCU	P307402	
	SM 2320 B-97	Total Alkalinity	3.7		mg CaCO3/L	P307629	
	SM 2540 C-97	TDS	26		mg/L	P308085	
	SM 2540 D-97	TSS	6	I	mg/L	P308073	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307633	
1813543	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P307638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P307601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.85		mg N/L	P307763	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P307558	
	SM 5310 B-00	Organic Carbon	1.6		mg C/L	P307770	
1813550	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307398	

Ref. Method and Comment:

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

Sample Location: BAGGETT CREEK UPSTREAM OF HWY 90

Collection Date/Time: 07/05/2016 14:40

Field ID: G4NW0336

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813537	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P307448	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P308026	
		Sulfate	0.58		mg SO4/L	P308032	
	SM 2120 B	Color (true)	27		PCU	P307403	
	SM 2320 B-97	Total Alkalinity	7.2		mg CaCO3/L	P307629	
	SM 2540 C-97	TDS	16	I	mg/L	P308085	

Field ID: G4NW0336

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1813537	SM 2540 D-97	TSS	4	I	mg/L	P308073	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307633	
1813544	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P307638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P307601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.62		mg N/L	P307763	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P307558	
	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P307770	
1813551	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P307398	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P307447

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P307448

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P308026

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P308032

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P307637

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P307638

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307601

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307762

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307763

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307558

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307397

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307398

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

Reference Method: SM 2120 B
Batch ID: P307402

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P307403

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P307629

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P308085

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308073

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P307633

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P307769

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

Reference Method: SM 5310 B-00
Batch ID: P307770

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308026

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308032

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307637

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307638

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307638

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307601

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307762

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307763

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307558

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307397

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307398

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

Reference Method: SM 2320 B-97
Batch ID: P307629

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

Reference Method: SM 4500 F-C-97
Batch ID: P307633

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P307769

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.3		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P307770

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 300.0 Rev. 2.1
Batch ID: P308026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813608	Chloride	98.7		P	90 - 110
1813649	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813608	Sulfate	99.8		P	90 - 110
1813649	Sulfate	93.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307637

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813514	Ammonia-N	98.1	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813541	Ammonia-N	97.3	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307601

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813514	Kjeldahl Nitrogen	100	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307762

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813479	NO2NO3-N	99.5		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813570	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813515	Total-P	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813445	O-Phosphate-P	99.0	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813550	O-Phosphate-P	99.5	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P307633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814095	Fluoride	97.3	97.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P307769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813438	Organic Carbon	98.8	100	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P307770

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1813540	Organic Carbon	99.2	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813498	Turbidity	3.55	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813536	Turbidity	1.12	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813649	Chloride	0.169	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813649	Sulfate	1.32	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813514	Ammonia-N	1.32	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813541	Ammonia-N	1.71	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813514	Kjeldahl Nitrogen	0.922	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813479	NO2NO3-N	2.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813570	NO2NO3-N	0.471	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P307558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813515	Total-P	1.27	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P307397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813445	O-Phosphate-P	0.705	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P307398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813550	O-Phosphate-P	0.101	Spike	P	0 - 20

Reference Method: SM 2120 B

Batch ID: P307402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813511	Color (true)	0.567	Sample	P	0 - 20

Reference Method: SM 2120 B

Batch ID: P307403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813566	Color (true)	1.75	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P307629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814095	Total Alkalinity	1.90	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97

Batch ID: P308085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813512	TDS	5.38	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97

Batch ID: P307633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814095	Fluoride	0.477	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P307769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813438	Organic Carbon	0.711	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P307770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1813540	Organic Carbon	0.812	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: A70414
Included Lab Sample IDs: 1813545, 1813546, 1813547, 1813548, 1813549, 1813550, 1813551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.1	P/P	90 - 110
O-Phosphate-P	99.5	98.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70415
Included Lab Sample IDs: 1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.2	95.7	P/P	90 - 115
Color (true)	95.7	95.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70429
Included Lab Sample IDs: 1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537

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

Reference Method: SM 2320 B-97
Run ID: A70476
Included Lab Sample IDs: 1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A70476

Included Lab Sample IDs: 1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	99.5	P/P	90 - 110
Fluoride	99.5	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70478

Included Lab Sample IDs: 1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.6	P/P	90 - 110
Ammonia-N	99.6	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70498

Included Lab Sample IDs: 1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.0	P/P	90 - 110
Total-P	99.0	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70499

Included Lab Sample IDs: 1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544

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

Reference Method: SM 5310 B-00

Run ID: A70509

Included Lab Sample IDs: 1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	100	P/P	90 - 110
Organic Carbon	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70512

Included Lab Sample IDs: 1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	102	P/P	90 - 110
Kjeldahl Nitrogen	102	96.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70540

Included Lab Sample IDs: 1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	98.9	P/P	90 - 110
Sulfate	99.3	95.1	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.55	
	Turbidity					1.12	
EPA 300.0 Rev. 2.1	Chloride	99.5	98.3	98.7		0.169	
	Sulfate	99.5	93.7	99.8		1.32	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	98.1	99.6			1.32
	Ammonia-N	97.6	97.3	99.1			1.71
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.2	100	98.6			0.922
EPA 353.2 Rev. 2.0	NO2NO3-N	103	99.5				2.35
	NO2NO3-N	102	104	104			0.471
EPA 365.1 Rev. 2.0	Total-P	101	99.0	100			1.27
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	99.0	99.7			0.705
	O-Phosphate-P	102	99.5	99.4			0.101
SM 2120 B	Color (true)					0.567	
	Color (true)					1.75	
SM 2320 B-97	Total Alkalinity	104				1.90	
SM 2540 C-97	TDS					5.38	
SM 4500 F-C-97	Fluoride	99.0	97.3	97.8			0.477
SM 5310 B-00	Organic Carbon	97.3	98.8	100			0.711
	Organic Carbon	99.6	99.2	100			0.812

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1813545, 1813546, 1813547, 1813548, 1813549, 1813550, 1813551
SM 2120 B / E31780	True Color measured at 450 nm	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544

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	07/06/2016			07/06/2016 16:41	Blanca Fach	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
EPA 300.0 Rev. 2.1	07/06/2016			07/15/2016	Ping Hua	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
EPA 350.1 Rev. 2.0	07/06/2016			07/08/2016	Diana M. Turner	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 351.2 Rev. 2.0	07/06/2016	07/11/2016	Sofia Elnemr	07/12/2016	Christopher Armour	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 353.2 Rev. 2.0	07/06/2016			07/12/2016	Beverly Y. Sanders	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 365.1 Rev. 2.0	07/06/2016	07/08/2016	Vijayalakshmi Reddy	07/12/2016	Lipi Saha	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544
EPA 365.1 Rev. 2.0 dissolved	07/06/2016			07/06/2016 14:30	Julia Storbeck	1813550
	07/06/2016			07/06/2016 15:17	Julia Storbeck	1813545
	07/06/2016			07/06/2016 15:18	Julia Storbeck	1813546
	07/06/2016			07/06/2016 15:19	Julia Storbeck	1813547
	07/06/2016			07/06/2016 15:20	Julia Storbeck	1813548
	07/06/2016			07/06/2016 15:21	Julia Storbeck	1813549, 1813551
SM 2120 B	07/06/2016			07/06/2016 15:18	Rochelle Y Jackson	1813531
	07/06/2016			07/06/2016 15:19	Rochelle Y Jackson	1813532, 1813533
	07/06/2016			07/06/2016 15:20	Rochelle Y Jackson	1813534
	07/06/2016			07/06/2016 15:21	Rochelle Y Jackson	1813535
	07/06/2016			07/06/2016 15:22	Rochelle Y Jackson	1813536
	07/06/2016			07/06/2016 15:25	Rochelle Y Jackson	1813537
SM 2320 B-97	07/06/2016			07/09/2016	Dale L. Simmons	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 2540 C-97	07/06/2016			07/08/2016	Yijie Li	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 2540 D-97	07/06/2016			07/08/2016	Yijie Li	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 4500 F-C-97	07/06/2016			07/09/2016	Dale L. Simmons	1813531, 1813532, 1813533, 1813534, 1813535, 1813536, 1813537
SM 5310 B-00	07/06/2016			07/12/2016	Diana M. Turner	1813538, 1813539, 1813540, 1813541, 1813542, 1813543, 1813544