

Chemical Analysis Report

NW-DIST-2018-02-06-01

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

Event Description: **Baker Run**
Request ID: **RQ-2018-02-05-24**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-FEB-2018 16:20

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

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

Results for the following analytical 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

Collection Date/Time: 02/05/2018 10:30

Field ID: G4NW0298

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1964594	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P339407	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P339700	
		Sulfate	1.3		mg SO4/L	P339705	
	SM 2120 B	Color (true)	44		PCU	P339417	
	SM 2320 B-97	Total Alkalinity	2.4	I	mg CaCO3/L	P340123	
	SM 2540 C-97	TDS	31		mg/L	P339748	
	SM 2540 D-97	TSS	6	I	mg/L	P339687	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340137	
1964599	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P339780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P339434	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.070		mg N/L	P339754	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P339579	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P339913	
1964604	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P339448	

Ref. Method and Comment:

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

Sample Location: PANTHER CREEK ABOVE SHER

Collection Date/Time: 02/05/2018 11:00

Field ID: G4NW0417

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1964595	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P339407	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P339700	
		Sulfate	1.2		mg SO4/L	P339705	
	SM 2120 B	Color (true)	27	A	PCU	P339419	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P340123	
	SM 2540 C-97	TDS	18	I	mg/L	P339748	
	SM 2540 D-97	TSS	3	I	mg/L	P339687	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340137	
1964600	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P339780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P339436	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P339754	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P339579	
	SM 5310 B-00	Organic Carbon	2.7		mg C/L	P339913	
1964605	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339447	

Ref. Method and Comment:

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

Sample Location: BEAR CREEK @ FOREST RD 0.7

Collection Date/Time: 02/05/2018 11:40

Field ID: G4NW0380

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1964596	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P339407	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P339700	
		Sulfate	0.62		mg SO4/L	P339705	

Field ID: G4NW0380

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1964596	SM 2120 B	Color (true)	33		PCU	P339419	
	SM 2320 B-97	Total Alkalinity	3.6		mg CaCO3/L	P340123	
	SM 2540 C-97	TDS	15	U	mg/L	P339748	
	SM 2540 D-97	TSS	3	I	mg/L	P339687	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340137	
1964601	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P339780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P339436	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P339754	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P339579	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P339913	
1964606	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339447	

Ref. Method and Comment:

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

Sample Location: SWEETWATER CREEK OFF DIRT

Collection Date/Time: 02/05/2018 12:00

Field ID: G4NW0419

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1964597	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P339407	
	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P339700	
		Sulfate	0.87		mg SO4/L	P339705	
	SM 2120 B	Color (true)	38		PCU	P339419	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P340123	
	SM 2540 C-97	TDS	16	I	mg/L	P339748	
	SM 2540 D-97	TSS	3	I	mg/L	P339687	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340137	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P339780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P339436	
1964602	EPA 353.2 Rev. 2.0	NO2NO3-N	0.082		mg N/L	P339756	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P339579	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P339913	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339447	

Ref. Method and Comment:

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

Sample Location: ATES CREEK NE OF BRYANT

Collection Date/Time: 02/05/2018 12:30

Field ID: G4NW0332

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1964598	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P339407	
	EPA 300.0 Rev. 2.1	Chloride	3.5		mg Cl/L	P339700	
		Sulfate	0.87		mg SO4/L	P339705	
	SM 2120 B	Color (true)	17		PCU	P339419	
	SM 2320 B-97	Total Alkalinity	5.6		mg CaCO3/L	P340123	
	SM 2540 C-97	TDS	25		mg/L	P339748	
	SM 2540 D-97	TSS	2	I	mg/L	P339687	

Field ID: G4NW0332

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1964598	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340137	
1964603	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P339780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.096	I	mg N/L	P339436	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P339754	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P339579	
	SM 5310 B-00	Organic Carbon	1.5		mg C/L	P339913	
1964608	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339447	

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P339407

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P339700

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P339705

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P339780

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P339434

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P339436

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P339754

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339756

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339579

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339447

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339448

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

Reference Method: SM 2120 B
Batch ID: P339417

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P339419

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P340123

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

Reference Method: SM 2540 C-97
Batch ID: P339748

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P339687

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P340137

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P339913

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: P339700

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339705

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339780

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339434

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339436

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339754

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339756

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339756

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339579

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339447

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339448

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

Reference Method: SM 2320 B-97
Batch ID: P340123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.5		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P340137

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P339913

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964534	Chloride	97.0		P	90 - 110
1964594	Chloride	97.5		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964534	Sulfate	93.7		P	90 - 110
1964594	Sulfate	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964601	Ammonia-N	95.9	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964599	Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964602	Kjeldahl Nitrogen	93.3	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964582	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964602	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964583	Total-P	97.4	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964536	O-Phosphate-P	97.7	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964604	O-Phosphate-P	97.0	97.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P340137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964822	Fluoride	95.5	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P339913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964582	Organic Carbon	95.9	97.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P339407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964579	Turbidity	3.69	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964534	Chloride	1.08	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964534	Sulfate	1.76	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964601	Ammonia-N	0.230	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964599	Kjeldahl Nitrogen	3.46	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339436

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964602	Kjeldahl Nitrogen	3.17	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964582	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964602	NO2NO3-N	0.343	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964583	Total-P	5.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964536	O-Phosphate-P	0.825	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964604	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P339417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964560	Color (true)	2.63	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P339419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964595	Color (true)	3.49	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P340123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964822	Total Alkalinity	2.79	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P339748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964534	TDS	3.08	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P340137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964822	Fluoride	0.482	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P339913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964582	Organic Carbon	0.733	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 180.1 Rev. 2.0
Run ID: A81879
Included Lab Sample IDs: 1964594, 1964595, 1964596, 1964597, 1964598

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

Reference Method: SM 2120 B
Run ID: A81880
Included Lab Sample IDs: 1964594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	97.4	P/P	85 - 115

Reference Method: SM 2120 B
Run ID: A81881
Included Lab Sample IDs: 1964595, 1964596, 1964597, 1964598

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A81897

Included Lab Sample IDs: 1964604, 1964605, 1964606, 1964607, 1964608

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.8	P/P	90 - 110
O-Phosphate-P	98.7	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A81918

Included Lab Sample IDs: 1964599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A81939

Included Lab Sample IDs: 1964600, 1964601, 1964602, 1964603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81960

Included Lab Sample IDs: 1964599, 1964600, 1964601, 1964602, 1964603

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A81969

Included Lab Sample IDs: 1964594, 1964595, 1964596, 1964597, 1964598

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A81992

Included Lab Sample IDs: 1964599, 1964600, 1964601, 1964602, 1964603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81995

Included Lab Sample IDs: 1964599, 1964600, 1964601, 1964602, 1964603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	104	P/P	90 - 110
Ammonia-N	105	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A82049

Included Lab Sample IDs: 1964599, 1964600, 1964601, 1964602, 1964603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	96.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82122

Included Lab Sample IDs: 1964594, 1964595, 1964596, 1964597, 1964598

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	96.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82122

Included Lab Sample IDs: 1964594, 1964595, 1964596, 1964597, 1964598

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.6	97.1	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				3.69	
EPA 300.0 Rev. 2.1	Chloride	99.7	97.0 97.5		1.08	
	Sulfate	98.2	93.7 96.0		1.76	
EPA 350.1 Rev. 2.0	Ammonia-N	103	95.9 95.7			0.230
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6	101 105			3.46
	Kjeldahl Nitrogen	104	93.3 96.9			3.17
EPA 353.2 Rev. 2.0	NO2NO3-N	103	106 104			1.01
	NO2NO3-N	104	104 105			0.343
EPA 365.1 Rev. 2.0	Total-P	98.2	97.4 104			5.20
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	97.7 98.6			0.825
	O-Phosphate-P	100	97.0 97.0			0.0
SM 2120 B	Color (true)				2.63	
	Color (true)				3.49	
SM 2320 B-97	Total Alkalinity	97.5			2.79	
SM 2540 C-97	TDS				3.08	
SM 4500 F-C-97	Fluoride	94.5	95.5 96.1			0.482
SM 5310 B-00	Organic Carbon	95.6	95.9 97.2			0.733

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1964594, 1964595, 1964596, 1964597, 1964598
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1964594, 1964595, 1964596, 1964597, 1964598

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1964594, 1964595, 1964596, 1964597, 1964598
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1964599, 1964600, 1964601, 1964602, 1964603
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1964599, 1964600, 1964601, 1964602, 1964603
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1964599, 1964600, 1964601, 1964602, 1964603
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1964599, 1964600, 1964601, 1964602, 1964603
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1964604, 1964605, 1964606, 1964607, 1964608
SM 2120 B / E31780	True Color measured at 450 nm	1964594, 1964595, 1964596, 1964597, 1964598
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1964594, 1964595, 1964596, 1964597, 1964598
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1964594, 1964595, 1964596, 1964597, 1964598
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1964594, 1964595, 1964596, 1964597, 1964598
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1964594, 1964595, 1964596, 1964597, 1964598
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1964599, 1964600, 1964601, 1964602, 1964603

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	02/06/2018			02/06/2018 17:02	DeAsia Armster	1964594, 1964595, 1964596, 1964597, 1964598
EPA 300.0 Rev. 2.1	02/06/2018			02/09/2018	Julia Storbeck	1964594, 1964595, 1964596, 1964597, 1964598
EPA 350.1 Rev. 2.0	02/06/2018			02/12/2018	Julia Storbeck	1964599, 1964600, 1964601, 1964602, 1964603
EPA 351.2 Rev. 2.0	02/06/2018	02/07/2018	Adrian Shelby	02/08/2018	Joseph Suarez	1964599, 1964600, 1964601, 1964602, 1964603
EPA 353.2 Rev. 2.0	02/06/2018			02/12/2018	Lauren Bottorf	1964599, 1964600, 1964601, 1964602, 1964603
EPA 365.1 Rev. 2.0	02/06/2018	02/08/2018	Sima Feizi	02/09/2018	Lipi Saha	1964599, 1964600, 1964601, 1964602, 1964603
EPA 365.1 Rev. 2.0 dissolved	02/06/2018			02/06/2018 16:43	Megan Treadwell	1964604
	02/06/2018			02/06/2018 17:20	Megan Treadwell	1964605
	02/06/2018			02/06/2018 17:21	Megan Treadwell	1964606
	02/06/2018			02/06/2018 17:22	Megan Treadwell	1964607
	02/06/2018			02/06/2018 17:23	Megan Treadwell	1964608
SM 2120 B	02/06/2018			02/06/2018 16:32	Tanya Welborn	1964594
	02/06/2018			02/06/2018 18:18	Tanya Welborn	1964595
	02/06/2018			02/06/2018 18:19	Tanya Welborn	1964596, 1964597
	02/06/2018			02/06/2018 18:20	Tanya Welborn	1964598
SM 2320 B-97	02/06/2018			02/16/2018	Dale L. Simmons	1964594, 1964595, 1964596, 1964597, 1964598
SM 2540 C-97	02/06/2018			02/07/2018	Yijie Li	1964594, 1964595, 1964596, 1964597, 1964598
SM 2540 D-97	02/06/2018			02/07/2018	Yijie Li	1964594, 1964595, 1964596, 1964597, 1964598
SM 4500 F-C-97	02/06/2018			02/16/2018	Dale L. Simmons	1964594, 1964595, 1964596, 1964597, 1964598
SM 5310 B-00	02/06/2018			02/13/2018	Megan Treadwell	1964599, 1964600, 1964601, 1964602, 1964603