

Chemical Analysis Report

NW-DIST-2016-05-03-02

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

Event Description: **WBID 167 167A 160 30G**

Request ID: **RQ-2016-05-02-83**

Customer: **NW-DIST**

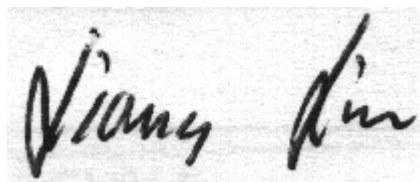
Project ID: **SMP**

Send Reports to:
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Suite 208A
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Attn: Michael King

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 27-MAY-2016 18:41

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured 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: Gum Creek

Collection Date/Time: 05/02/2016 12:00

Field ID: G4NW0381

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794917	EPA 180.1 Rev. 2.0	Turbidity	3.1	A	NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P304062	
		Sulfate	0.83		mg SO4/L	P304063	
	SM 2120 B	Color (true)	81		PCU	P303436	
	SM 2320 B-97	Total Alkalinity	1.3	I	mg CaCO3/L	P304113	
	SM 2540 C-97	TDS	15	U	mg/L	P303938	
	SM 2540 D-97	TSS	5	I	mg/L	P303898	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
1794925	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P304023	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P304361	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.33		mg N/L	P304047	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P304347	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P304744	
1794933	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Gum Creek BELOW SR83

Collection Date/Time: 05/02/2016 13:10

Field ID: G4NW0322

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794918	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P304062	
		Sulfate	0.36	I	mg SO4/L	P304063	
	SM 2120 B	Color (true)	260		PCU	P303436	
	SM 2320 B-97	Total Alkalinity	1.4	I	mg CaCO3/L	P304113	
	SM 2540 C-97	TDS	35		mg/L	P303938	
	SM 2540 D-97	TSS	5	I	mg/L	P303898	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
1794926	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P304023	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P304362	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P304047	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P304347	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P304744	
1794934	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Gum Creek below Bartlett Rd S.of Glendale

Collection Date/Time: 05/02/2016 13:45

Field ID: G4NW0323

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794919	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P303585	

Field ID: G4NW0323

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794919	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P304062	
		Sulfate	0.32	I	mg SO4/L	P304063	
	SM 2120 B	Color (true)	270		PCU	P303436	
	SM 2320 B-97	Total Alkalinity	1.3	I	mg CaCO3/L	P304113	
	SM 2540 C-97	TDS	39		mg/L	P303938	
	SM 2540 D-97	TSS	4	I	mg/L	P303898	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
1794927	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P304023	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P304362	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P304047	
	EPA 365.1 Rev. 2.0	Total-P	0.047		mg P/L	P304347	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P304744	
1794935	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Gum Creek abv CR-183B

Collection Date/Time: 05/02/2016 14:00

Field ID: G4NW0324

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794920	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	2.8		mg Cl/L	P304062	
		Sulfate	0.22	I	mg SO4/L	P304063	
	SM 2120 B	Color (true)	310		PCU	P303436	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P304113	
	SM 2540 C-97	TDS	28		mg/L	P303938	
	SM 2540 D-97	TSS	4	I	mg/L	P303898	
1794928	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.093		mg N/L	P304023	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P304362	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P304047	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P304347	
1794936	SM 5310 B-00	Organic Carbon	24		mg C/L	P304744	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Shoal River off Old Dorcas Rd Walton Co,

Collection Date/Time: 05/02/2016 15:00

Field ID: G4NW0375

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794921	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P304062	
		Sulfate	0.99		mg SO4/L	P304063	

Field ID: G4NW0375

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794921	SM 2120 B	Color (true)	63	A	PCU	P303436	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P304113	
	SM 2540 C-97	TDS	21	I	mg/L	P303938	
	SM 2540 D-97	TSS	14		mg/L	P303898	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
1794929	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P304024	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P304362	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.45		mg N/L	P304048	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P304347	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P304744	
1794937	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Shoal River Hinote Rd

Collection Date/Time: 05/02/2016 15:10

Field ID: G4NW0376

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794922	EPA 180.1 Rev. 2.0	Turbidity	5.1		NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P304062	
		Sulfate	0.98		mg SO4/L	P304063	
	SM 2120 B	Color (true)	65		PCU	P303436	
	SM 2320 B-97	Total Alkalinity	2.9		mg CaCO3/L	P304113	
	SM 2540 C-97	TDS	22	I	mg/L	P303938	
	SM 2540 D-97	TSS	29		mg/L	P303898	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P304024	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P304362	
1794930	EPA 353.2 Rev. 2.0	NO2NO3-N	0.49		mg N/L	P304164	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P304348	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P304744	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Shoal River CR-1087

Collection Date/Time: 05/02/2016 15:40

Field ID: G4NW0377

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794923	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P304062	
		Sulfate	0.88		mg SO4/L	P304063	
	SM 2120 B	Color (true)	74		PCU	P303437	
	SM 2320 B-97	Total Alkalinity	2.5	I	mg CaCO3/L	P304113	

Field ID: G4NW0377

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794923	SM 2540 C-97	TDS	24	I	mg/L	P303938	
	SM 2540 D-97	TSS	12		mg/L	P303898	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
1794931	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P304024	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P304362	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.43		mg N/L	P304164	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P304348	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P304744	
1794939	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Shoal River Big Swamp cr FLA187

Collection Date/Time: 05/02/2016 16:00

Field ID: G4NW0378

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794924	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P304062	
		Sulfate	0.78		mg SO4/L	P304063	
	SM 2120 B	Color (true)	170		PCU	P303437	
	SM 2320 B-97	Total Alkalinity	2.3	I	mg CaCO3/L	P304113	
	SM 2540 C-97	TDS	36		mg/L	P303939	
	SM 2540 D-97	TSS	7	I	mg/L	P303899	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304120	
1794932	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P304024	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P304362	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.62		mg N/L	P304048	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P304348	
	SM 5310 B-00	Organic Carbon	9.1		mg C/L	P304744	
1794940	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.010		mg P/L	P303431	

Ref. Method and Comment:

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

SM 5310 B-00: 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: P303585

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P304062

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304023

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304361

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304047

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304164

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304347

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303431

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

Reference Method: SM 2120 B
Batch ID: P303436

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P303437

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P304113

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

Reference Method: SM 2540 C-97
Batch ID: P303938

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P303939

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303898

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303899

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P304120

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P304744

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: P304062

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304023

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304361

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304047

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: P304047

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304164

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304347

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304341

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

Reference Method: SM 2320 B-97
Batch ID: P304113

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P304120

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P304744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304062

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794891	Chloride	95.4		P	90 - 110
1794971	Chloride	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794891	Sulfate	93.4		P	90 - 110
1794971	Sulfate	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304023

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794877	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794929	Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794847	Kjeldahl Nitrogen	113	101	F/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794927	Kjeldahl Nitrogen	100	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304047

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794877	NO2NO3-N	97.5	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794972	NO2NO3-N	93.0	93.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794893	NO2NO3-N	98.5	99.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794878	Total-P	99.3	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794930	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794939	O-Phosphate-P	98.5	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P304120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794729	Fluoride	95.8	96.4	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794917	Turbidity	5.55	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794971	Chloride	0.0809	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794971	Sulfate	1.46	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304023

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794877	Ammonia-N	0.853	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794929	Ammonia-N	0.980	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794847	Kjeldahl Nitrogen	6.33	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794927	Kjeldahl Nitrogen	0.0940	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794877	NO2NO3-N	1.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794972	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794893	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794878	Total-P	0.755	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794930	Total-P	2.01	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794939	O-Phosphate-P	0.583	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794921	Color (true)	0.671	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794977	Color (true)	2.33	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P304113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794729	Total Alkalinity	0.468	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794971	TDS	3.60	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P303939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794978	TDS	4.32	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P304120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794729	Fluoride	0.487	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P304744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794893	Organic Carbon	0.789	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: A69241

Included Lab Sample IDs: 1794933, 1794934, 1794935, 1794936, 1794937, 1794938, 1794939, 1794940

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.6	P/P	90 - 110
O-Phosphate-P	101	99.9	P/P	90 - 110
O-Phosphate-P	99.6	99.6	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A69244

Included Lab Sample IDs: 1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 115
Color (true)	102	103	P/P	90 - 115
Color (true)	103	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69290

Included Lab Sample IDs: 1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69388

Included Lab Sample IDs: 1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69415

Included Lab Sample IDs: 1794925, 1794926, 1794927, 1794928, 1794929, 1794932

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.0	94.5	P/P	90 - 110
NO2NO3-N	96.5	95.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69423

Included Lab Sample IDs: 1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	98.7	P/P	90 - 110
Chloride	99.4	98.5	P/P	90 - 110
Sulfate	96.2	97.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69423

Included Lab Sample IDs: 1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	98.6	96.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69434

Included Lab Sample IDs: 1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.3	P/P	90 - 110
Total Alkalinity	98.3	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69434

Included Lab Sample IDs: 1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69443

Included Lab Sample IDs: 1794930, 1794931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69513

Included Lab Sample IDs: 1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69562

Included Lab Sample IDs: 1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	90.7	P/P	90 - 110
Kjeldahl Nitrogen	95.8	92.4	P/P	90 - 110
Kjeldahl Nitrogen	95.8	94.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69609

Included Lab Sample IDs: 1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	99.2	P/P	90 - 110
Organic Carbon	99.2	98.4	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					5.55	
EPA 300.0 Rev. 2.1	Chloride	99.3	97.4	95.4		0.0809	
	Sulfate	96.5	94.2	93.4		1.46	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	101	102			0.853
	Ammonia-N	101	102	100			0.980
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	113	101			6.33
	Kjeldahl Nitrogen	100	100	100			0.0940
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	97.5	98.5			1.02
	NO ₂ NO ₃ -N	97.5	93.0	93.0			0.0
	NO ₂ NO ₃ -N	106	98.5	99.5			1.01
EPA 365.1 Rev. 2.0	Total-P	102	99.3	98.5			0.755
	Total-P	95.7	104	102			2.01
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.5	99.1			0.583
SM 2120 B	Color (true)					0.671	
	Color (true)					2.33	
SM 2320 B-97	Total Alkalinity	101				0.468	
SM 2540 C-97	TDS					3.60	
	TDS					4.32	
SM 4500 F-C-97	Fluoride	97.6	95.8	96.4			0.487
SM 5310 B-00	Organic Carbon	97.4					0.789

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1794933, 1794934, 1794935, 1794936, 1794937, 1794938, 1794939, 1794940
SM 2120 B / E31780	True Color measured at 450 nm	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924

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)	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932

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	05/03/2016			05/04/2016 10:06	Rochelle Y Jackson	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
EPA 300.0 Rev. 2.1	05/03/2016			05/10/2016	Elisa J Lutz	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
EPA 350.1 Rev. 2.0	05/03/2016			05/10/2016	Diana M. Turner	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932
EPA 351.2 Rev. 2.0	05/03/2016	05/16/2016	Sofia Elnemr	05/18/2016	Christopher Armour	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932
EPA 353.2 Rev. 2.0	05/03/2016			05/11/2016	Peter D. Kaus	1794925, 1794926, 1794927, 1794928, 1794929, 1794932
EPA 365.1 Rev. 2.0	05/03/2016	05/16/2016	Vijayalakshmi Reddy	05/12/2016	Peter D. Kaus	1794930, 1794931
	05/03/2016			05/17/2016	Lipi Saha	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932
EPA 365.1 Rev. 2.0 dissolved	05/03/2016			05/03/2016 15:04	Julia Storbeck	1794939
	05/03/2016			05/03/2016 15:56	Julia Storbeck	1794933, 1794934
	05/03/2016			05/03/2016 16:03	Julia Storbeck	1794935
	05/03/2016			05/03/2016 16:04	Julia Storbeck	1794936
	05/03/2016			05/03/2016 16:05	Julia Storbeck	1794937
	05/03/2016			05/03/2016 16:06	Julia Storbeck	1794938
	05/03/2016			05/03/2016 16:07	Julia Storbeck	1794940
SM 2120 B	05/03/2016			05/03/2016 16:55	Chrisoulla Rakowski	1794917
	05/03/2016			05/03/2016 16:59	Chrisoulla Rakowski	1794921
	05/03/2016			05/03/2016 17:00	Chrisoulla Rakowski	1794922
	05/03/2016			05/03/2016 17:03	Chrisoulla Rakowski	1794923
	05/03/2016			05/03/2016 17:25	Chrisoulla Rakowski	1794918
	05/03/2016			05/03/2016 17:26	Chrisoulla Rakowski	1794919
	05/03/2016			05/03/2016 17:27	Chrisoulla Rakowski	1794920
	05/03/2016			05/03/2016 17:28	Chrisoulla Rakowski	1794924
SM 2320 B-97	05/03/2016			05/11/2016	Dale L. Simmons	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 2540 C-97	05/03/2016			05/04/2016	Yijie Li	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 2540 D-97	05/03/2016			05/04/2016	Yijie Li	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 4500 F-C-97	05/03/2016			05/11/2016	Dale L. Simmons	1794917, 1794918, 1794919, 1794920, 1794921, 1794922, 1794923, 1794924
SM 5310 B-00	05/03/2016			05/21/2016	Ping Hua	1794925, 1794926, 1794927, 1794928, 1794929, 1794930, 1794931, 1794932