

Chemical Analysis Report

NW-DIST-2017-02-14-02

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

Event Description: **WBID 1037 959 959B,G,H,J**
Request ID: **RQ-2017-02-13-26**
Customer: **NW-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 08-MAR-2017 11:38



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: FULLER LAKE MIDDLE

Collection Date/Time: 02/13/2017 11:00

Field ID: G3NW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1872535	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P319841	
	EPA 300.0 Rev. 2.1	Chloride	18	A	mg Cl/L	P320748	
		Sulfate	5.5	A	mg SO4/L	P320749	
	SM 2120 B	Color (true)	230		PCU	P319844	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P320108	
	SM 2540 C-97	TDS	82		mg/L	P320455	
	SM 2540 D-97	TSS	3	I	mg/L	P320385	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P320111	
1872537	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P320017	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P319860	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P320172	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P320068	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P319910	
1872539	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319831	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: ALLEN LAKE MIDDLE

Collection Date/Time: 02/13/2017 12:45

Field ID: G3NW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1872536	EPA 180.1 Rev. 2.0	Turbidity	0.85	A	NTU	P319841	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P320748	
		Sulfate	4.4		mg SO4/L	P320749	
	SM 2120 B	Color (true)	240		PCU	P319844	
	SM 2320 B-97	Total Alkalinity	1.3	I	mg CaCO3/L	P320108	
	SM 2540 C-97	TDS	73		mg/L	P320455	
	SM 2540 D-97	TSS	3	I	mg/L	P320385	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P320111	
1872538	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P320017	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P319860	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P320172	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P320068	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P319910	
1872540	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319831	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: STALLWORTH LAKE

Collection Date/Time: 02/13/2017 12:15

Field ID: G3NW0083

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1872541	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P319841	

Field ID: G3NW0083

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1872541	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P320108	
	SM 2540 D-97	TSS	3	I	mg/L	P320388	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P320111	
1872545	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P320017	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P319975	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P320174	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P319903	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P319910	
1872549	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319831	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: MORRIS LAKE CENTER

Collection Date/Time: 02/13/2017 11:40

Field ID: G3NW0126

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1872542	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P319841	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P320108	
	SM 2540 D-97	TSS	2	I	mg/L	P320388	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P320111	
1872546	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P320018	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P319860	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P320174	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P320068	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P319910	
1872550	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319831	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: LITTLE REDFISH LAKE

Collection Date/Time: 02/13/2017 13:30

Field ID: G3NW0125

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1872543	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P319841	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P320108	
	SM 2540 D-97	TSS	4	I	mg/L	P320388	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P320111	
1872547	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P320242	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P319859	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P320028	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P319903	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P319910	
1872551	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319833	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: EASTERN LAKE

Collection Date/Time: 02/13/2017 14:15

Field ID: G3NW0124

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1872544	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P319841	
	SM 2320 B-97	Total Alkalinity	67		mg CaCO3/L	P320239	
	SM 2540 D-97	TSS	5	I	mg/L	P320390	
	SM 4500 F-C-97	Fluoride	0.53		mg F/L	P320240	
1872548	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P320242	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P319859	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P320028	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P319903	
	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P319912	
1872552	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P319833	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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: P319841

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P320748

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P320749

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P320017

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P320018

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P320242

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: P319859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319860

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319975

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320028

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320172

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320174

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319903

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320068

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319831

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319833

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

Reference Method: SM 2120 B
Batch ID: P319844

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P320108

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

Reference Method: SM 2320 B-97
Batch ID: P320239

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

Reference Method: SM 2540 C-97
Batch ID: P320455

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P320385

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P320388

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P320390

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P320240

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P319910

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

Reference Method: SM 5310 B-00
Batch ID: P319912

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: P320748

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320749

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320017

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320018

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: P320242

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319860

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319975

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320028

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320172

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319903

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320068

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319831

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319833

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

Reference Method: SM 2320 B-97
Batch ID: P320108

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P320239

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P320240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P319910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P319912

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872535	Chloride	102		P	90 - 110
1872536	Chloride	101		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320749

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872535	Sulfate	99.7		P	90 - 110
1872536	Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872486	Ammonia-N	92.1	93.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872546	Ammonia-N	92.4	97.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872547	Ammonia-N	98.0	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872548	Kjeldahl Nitrogen	100	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872502	Kjeldahl Nitrogen	107	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319975

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872467	Kjeldahl Nitrogen	93.9	90.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872042	NO2NO3-N	104	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872487	NO2NO3-N	107	107	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872545	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871860	Total-P	97.2	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872947	Total-P	97.6	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872397	O-Phosphate-P	96.9	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872552	O-Phosphate-P	94.2	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872640	Fluoride	101	101	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P320240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870137	Fluoride	97.4	98.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P319910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872537	Organic Carbon	93.8	94.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P319912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871296	Organic Carbon	93.4	94.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872535	Chloride	0.0333	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872535	Sulfate	0.0711	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872486	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872546	Ammonia-N	3.95	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872547	Ammonia-N	2.14	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872548	Kjeldahl Nitrogen	3.72	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872502	Kjeldahl Nitrogen	1.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319975

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872467	Kjeldahl Nitrogen	2.94	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872042	NO2NO3-N	2.44	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872487	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872545	NO2NO3-N	0.800	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871860	Total-P	0.836	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872947	Total-P	2.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872397	O-Phosphate-P	0.476	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872552	O-Phosphate-P	1.71	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P319844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872483	Color (true)	1.89	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P320108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872640	Total Alkalinity	0.161	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P320239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1873348	Total Alkalinity	0.0568	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P320455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872485	TDS	6.29	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P320388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1873090	TSS	9.84	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872640	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P320240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870137	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P319910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872537	Organic Carbon	0.557	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P319912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871296	Organic Carbon	0.806	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: A74465

Included Lab Sample IDs: 1872539, 1872540, 1872549, 1872550, 1872551, 1872552

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.2	P/P	90 - 110
O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A74468

Included Lab Sample IDs: 1872535, 1872536, 1872541, 1872542, 1872543, 1872544

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	102	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A74469

Included Lab Sample IDs: 1872535, 1872536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	105	P/P	85 - 115

Reference Method: SM 5310 B-00

Run ID: A74499

Included Lab Sample IDs: 1872537, 1872538, 1872545, 1872546, 1872547, 1872548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.6	P/P	90 - 110
Organic Carbon	96.8	96.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74531

Included Lab Sample IDs: 1872545, 1872547, 1872548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74538

Included Lab Sample IDs: 1872537, 1872538, 1872545, 1872546

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.8	97.4	P/P	90 - 110
Ammonia-N	98.2	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74542

Included Lab Sample IDs: 1872537, 1872538, 1872546, 1872547, 1872548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.8	P/P	90 - 110
Kjeldahl Nitrogen	97.0	101	P/P	90 - 110
Kjeldahl Nitrogen	97.8	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74547

Included Lab Sample IDs: 1872547, 1872548

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74554

Included Lab Sample IDs: 1872545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A74571

Included Lab Sample IDs: 1872535, 1872536, 1872541, 1872542, 1872543

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

Reference Method: SM 4500 F-C-97

Run ID: A74571

Included Lab Sample IDs: 1872535, 1872536, 1872541, 1872542, 1872543

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110
Fluoride	98.0	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74601

Included Lab Sample IDs: 1872537, 1872538, 1872545, 1872546

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74613

Included Lab Sample IDs: 1872537, 1872538, 1872546

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
 Run ID: A74626
 Included Lab Sample IDs: 1872544

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

Reference Method: SM 4500 F-C-97
 Run ID: A74626
 Included Lab Sample IDs: 1872544

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	98.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Run ID: A74627
 Included Lab Sample IDs: 1872547, 1872548

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

Reference Method: EPA 300.0 Rev. 2.1
 Run ID: A74765
 Included Lab Sample IDs: 1872535, 1872536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	107	P/P	90 - 110
Chloride	105	104	P/P	90 - 110
Sulfate	101	93.0	P/P	90 - 110
Sulfate	96.2	101	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 300.0 Rev. 2.1	Chloride	104	102	101	0.0333	
	Sulfate	99.8	99.7	99.1	0.0711	
EPA 350.1 Rev. 2.0	Ammonia-N	101	92.1	93.7		1.27
	Ammonia-N	99.8	92.4	97.3		3.95
	Ammonia-N	99.7	98.0	95.6		2.14
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	100	105		3.72
	Kjeldahl Nitrogen	104	107	105		1.38
	Kjeldahl Nitrogen	99.6	93.9	90.1		2.94
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	101		2.44
	NO2NO3-N	106	107	107		0.0
	NO2NO3-N	107	104	105		0.800
EPA 365.1 Rev. 2.0	Total-P	97.2	97.2	96.4		0.836
	Total-P	98.0	97.6	95.4		2.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	96.9	97.7		0.476
	O-Phosphate-P	101	94.2	95.9		1.71

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 2120 B	Color (true)				1.89	
SM 2320 B-97	Total Alkalinity	103			0.161	
	Total Alkalinity	103			0.0568	
SM 2540 C-97	TDS				6.29	
SM 2540 D-97	TSS				9.84	
SM 4500 F-C-97	Fluoride	98.4	101	101		0.0
	Fluoride	99.2	97.4	98.1		0.473
SM 5310 B-00	Organic Carbon	93.8	93.8	94.8		0.557
	Organic Carbon	94.7	93.4	94.3		0.806

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1872535, 1872536, 1872541, 1872542, 1872543, 1872544
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1872535, 1872536
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1872535, 1872536
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1872537, 1872538, 1872545, 1872546, 1872547, 1872548
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1872537, 1872538, 1872545, 1872546, 1872547, 1872548
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1872537, 1872538, 1872545, 1872546, 1872547, 1872548
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1872537, 1872538, 1872545, 1872546, 1872547, 1872548
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1872539, 1872540, 1872549, 1872550, 1872551, 1872552
SM 2120 B / E31780	True Color measured at 450 nm	1872535, 1872536
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1872535, 1872536, 1872541, 1872542, 1872543, 1872544
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1872535, 1872536
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1872535, 1872536, 1872541, 1872542, 1872543, 1872544
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1872535, 1872536, 1872541, 1872542, 1872543, 1872544
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1872537, 1872538, 1872545, 1872546, 1872547, 1872548

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	02/14/2017			02/14/2017 15:27	Julie Michelle Frank	1872535, 1872536, 1872541, 1872542, 1872543, 1872544
EPA 300.0 Rev. 2.1	02/14/2017			02/28/2017	Ping Hua	1872535, 1872536
EPA 350.1 Rev. 2.0	02/14/2017			02/16/2017	Sofia Elnemr	1872537, 1872538, 1872545, 1872546
	02/14/2017			02/21/2017	Sofia Elnemr	1872547, 1872548
EPA 351.2 Rev. 2.0	02/14/2017	02/15/2017	Adrian Shelby	02/16/2017	Joseph Suarez	1872537, 1872538, 1872546, 1872547, 1872548
	02/14/2017	02/16/2017	Adrian Shelby	02/17/2017	Joseph Suarez	1872545
EPA 353.2 Rev. 2.0	02/14/2017			02/17/2017	Beverly Y. Sanders	1872547, 1872548
	02/14/2017			02/21/2017	Beverly Y. Sanders	1872537, 1872538, 1872545, 1872546
EPA 365.1 Rev. 2.0	02/14/2017	02/15/2017	Vijayalakshmi Reddy	02/16/2017	Lipi Saha	1872545, 1872547, 1872548
	02/14/2017	02/17/2017	Vijayalakshmi Reddy	02/21/2017	Lipi Saha	1872537, 1872538, 1872546
EPA 365.1 Rev. 2.0 dissolved	02/14/2017			02/14/2017 14:48	Julia Storbeck	1872552
	02/14/2017			02/14/2017 15:21	Julia Storbeck	1872539, 1872540
	02/14/2017			02/14/2017 15:22	Julia Storbeck	1872549
	02/14/2017			02/14/2017 15:23	Julia Storbeck	1872550
	02/14/2017			02/14/2017 15:24	Julia Storbeck	1872551
SM 2120 B	02/14/2017			02/14/2017 17:08	Julie Michelle Frank	1872535
	02/14/2017			02/14/2017 17:09	Julie Michelle Frank	1872536
SM 2320 B-97	02/14/2017			02/19/2017	Dale L. Simmons	1872535, 1872536, 1872541, 1872542, 1872543
	02/14/2017			02/21/2017	Dale L. Simmons	1872544
SM 2540 C-97	02/14/2017			02/17/2017	Yijie Li	1872535, 1872536
SM 2540 D-97	02/14/2017			02/17/2017	Yijie Li	1872535, 1872536, 1872541, 1872542, 1872543, 1872544
SM 4500 F-C-97	02/14/2017			02/19/2017	Dale L. Simmons	1872535, 1872536, 1872541, 1872542, 1872543
	02/14/2017			02/21/2017	Dale L. Simmons	1872544
SM 5310 B-00	02/14/2017			02/15/2017	Julie Michelle Frank	1872537, 1872538, 1872545, 1872546, 1872547, 1872548