

Chemical Analysis Report

SW-DIST-2016-03-30-01

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

Event Description: **1329Z, 1329P, 1329A**

Request ID: **RQ-2016-03-28-19**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 14-APR-2016 17:00



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: LAKE IOLA E

Collection Date/Time: 03/29/2016 10:35

Field ID: G5SW0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784317	EPA 180.1 Rev. 2.0	Turbidity	1.5	A	NTU	P301292	
	EPA 300.0 Rev. 2.1	Chloride	17	A	mg Cl/L	P301449	
		Sulfate	6.4	A	mg SO4/L	P301451	
	SM 2120 B	Color (true)	7.4		PCU	P301285	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P301699	
	SM 2540 C-97	TDS	73		mg/L	P301777	
	SM 2540 D-97	TSS	3	I	mg/L	P301788	
	SM 4500 F-C-97	Fluoride	0.099	I	mg F/L	P301704	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P301688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P301976	MS
1784323	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301531	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P301651	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P301501	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P301296	
	dissolved						

Ref. Method and Comment:

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

Sample Location: LAKE IOLA W

Collection Date/Time: 03/29/2016 10:55

Field ID: G5SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784318	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P301292	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P301449	
		Sulfate	6.5		mg SO4/L	P301451	
	SM 2120 B	Color (true)	7.1		PCU	P301285	
	SM 2320 B-97	Total Alkalinity	35	A	mg CaCO3/L	P301699	
	SM 2540 C-97	TDS	71		mg/L	P301778	
	SM 2540 D-97	TSS	2	U	mg/L	P301789	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P301704	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P301688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P301976	MS
1784324	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301531	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P301651	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P301501	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P301297	
	dissolved						

Ref. Method and Comment:

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

Sample Location: NEFF LAKE SE

Collection Date/Time: 03/29/2016 11:55

Field ID: G5SW0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784319	EPA 180.1 Rev. 2.0	Turbidity	8.7		NTU	P301292	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P301449	
		Sulfate	1.5		mg SO4/L	P301451	

Field ID: G5SW0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784319	SM 2120 B	Color (true)	160		PCU	P301285	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P301699	
	SM 2540 C-97	TDS	65		mg/L	P301778	
	SM 2540 D-97	TSS	7	I	mg/L	P301789	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P301704	
1784325	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P301688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P301977	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301531	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P301652	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P301501	
1784331	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301297	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: NEFF LAKE SW

Collection Date/Time: 03/29/2016 12:20

Field ID: G5SW0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784320	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P301292	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P301449	
		Sulfate	1.5		mg SO4/L	P301451	
	SM 2120 B	Color (true)	160		PCU	P301285	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P301699	
	SM 2540 C-97	TDS	62		mg/L	P301778	
	SM 2540 D-97	TSS	6	I	mg/L	P301789	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P301704	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P301688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P301977	
1784326	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301531	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P301652	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P301501	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301297	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: NEFF LAKE C

Collection Date/Time: 03/29/2016 12:30

Field ID: G4SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784321	EPA 180.1 Rev. 2.0	Turbidity	9.9		NTU	P301292	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P301449	
		Sulfate	1.5		mg SO4/L	P301451	
	SM 2120 B	Color (true)	160		PCU	P301285	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P301699	

Field ID: G4SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784321	SM 2540 C-97	TDS	71		mg/L	P301778	
	SM 2540 D-97	TSS	7	I	mg/L	P301789	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P301704	
1784327	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P301688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P301977	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301532	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P301652	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P301501	
1784333	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301297	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: NEFF LAKE n

Collection Date/Time: 03/29/2016 12:45

Field ID: G4SW0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1784322	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P301292	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P301449	
		Sulfate	1.5		mg SO4/L	P301451	
	SM 2120 B	Color (true)	160		PCU	P301285	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P301700	
	SM 2540 C-97	TDS	62		mg/L	P301778	
	SM 2540 D-97	TSS	6	I	mg/L	P301789	
	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P301705	
1784328	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P301688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P301977	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301532	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P301652	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P301501	
1784334	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301297	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P301292

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P301449

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: P301451

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301688

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301976

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301977

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301531

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301532

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301651

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301652

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301296

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: P301297

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

Reference Method: SM 2120 B
Batch ID: P301285

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P301699

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

Reference Method: SM 2320 B-97
Batch ID: P301700

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

Reference Method: SM 2540 C-97
Batch ID: P301777

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P301778

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P301788

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P301789

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P301704

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: P301705

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P301501

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: P301449

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301451

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301688

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301976

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301977

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301531

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	100		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301532

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: P301532

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	92.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301296

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301297

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

Reference Method: SM 2320 B-97
Batch ID: P301699

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P301700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P301704

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P301705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P301501

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784317	Chloride	98.0		P	90 - 110
1784318	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784317	Sulfate	95.5		P	90 - 110
1784318	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784327	Ammonia-N	97.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784278	Kjeldahl Nitrogen	89.7	94.2	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301531

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784279	NO2NO3-N	96.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784328	NO2NO3-N	98.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784244	Total-P	97.3	96.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784325	Total-P	96.6	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784251	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784365	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P301704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784318	Fluoride	96.3	97.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P301705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784758	Fluoride	96.3	97.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P301501

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784239	Organic Carbon	95.2	94.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784317	Turbidity	1.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784317	Chloride	0.304	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784317	Sulfate	0.197	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784327	Ammonia-N	2.29	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784278	Kjeldahl Nitrogen	4.37	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784327	Kjeldahl Nitrogen	0.125	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784279	NO2NO3-N	0.565	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784328	NO2NO3-N	1.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784244	Total-P	0.878	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784325	Total-P	7.97	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784251	O-Phosphate-P	1.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784365	O-Phosphate-P	0.0979	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P301285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784293	Color (true)	7.49	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P301699

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784318	Total Alkalinity	1.08	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P301700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784758	Total Alkalinity	1.00	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P301777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784276	TDS	6.71	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P301778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784756	TDS	4.31	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P301704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784318	Fluoride	0.990	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P301705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784758	Fluoride	1.03	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P301501

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784239	Organic Carbon	1.00	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A68535
Included Lab Sample IDs: 1784317, 1784318, 1784319, 1784320, 1784321, 1784322

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115
Color (true)	103	102	P/P	85 - 115
Color (true)	97.1	99.9	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A68538
Included Lab Sample IDs: 1784329, 1784330, 1784331, 1784332, 1784333, 1784334

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	99.2	P/P	90 - 110
O-Phosphate-P	99.2	99.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68539
Included Lab Sample IDs: 1784317, 1784318, 1784319, 1784320, 1784321, 1784322

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68546
Included Lab Sample IDs: 1784317, 1784318, 1784319, 1784320, 1784321, 1784322

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	104	P/P	90 - 110
Chloride	104	102	P/P	90 - 110
Sulfate	100	102	P/P	90 - 110
Sulfate	102	99.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A68615

Included Lab Sample IDs: 1784323, 1784324, 1784325, 1784326, 1784327, 1784328

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	94.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68624

Included Lab Sample IDs: 1784323, 1784324, 1784325, 1784326, 1784327, 1784328

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68662

Included Lab Sample IDs: 1784323, 1784324, 1784325, 1784326, 1784327, 1784328

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	100	P/P	90 - 110
Ammonia-N	99.8	98.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68687

Included Lab Sample IDs: 1784317, 1784318, 1784319, 1784320, 1784321, 1784322

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	103	100	P/P	90 - 110
Total Alkalinity	99.5	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68687

Included Lab Sample IDs: 1784317, 1784318, 1784319, 1784320, 1784321, 1784322

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.1	P/P	90 - 110
Fluoride	99.1	98.5	P/P	90 - 110
Fluoride	99.1	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68724

Included Lab Sample IDs: 1784325, 1784326, 1784327, 1784328

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68725

Included Lab Sample IDs: 1784324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68755

Included Lab Sample IDs: 1784323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68819

Included Lab Sample IDs: 1784323, 1784324, 1784325, 1784326, 1784327, 1784328

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.0	P/P	90 - 110
Kjeldahl Nitrogen	101	99.1	P/P	90 - 110
Kjeldahl Nitrogen	98.0	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.37	
EPA 300.0 Rev. 2.1	Chloride	102	100	98.0		0.304	
	Sulfate	99.5	95.5	98.2		0.197	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	97.8	100			2.29
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.0	89.7	94.2			4.37
	Kjeldahl Nitrogen	101					0.125
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.2				0.565
	NO2NO3-N	100	98.5	97.0			1.53
EPA 365.1 Rev. 2.0	Total-P	94.1	97.3	96.4			0.878
	Total-P	92.2	96.6	106			7.97
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	103			1.07
	O-Phosphate-P	104	102	102			0.0979
SM 2120 B	Color (true)					7.49	
SM 2320 B-97	Total Alkalinity	103				1.08	
	Total Alkalinity	103				1.00	
SM 2540 C-97	TDS					6.71	
	TDS					4.31	
SM 4500 F-C-97	Fluoride	96.7	96.3	97.5			0.990
	Fluoride	96.7	96.3	97.5			1.03
SM 5310 B-00	Organic Carbon	95.0	95.2	94.1			1.00

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1784317, 1784318, 1784319, 1784320, 1784321, 1784322

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1784323, 1784324, 1784325, 1784326, 1784327, 1784328
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1784323, 1784324, 1784325, 1784326, 1784327, 1784328
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1784323, 1784324, 1784325, 1784326, 1784327, 1784328
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1784323, 1784324, 1784325, 1784326, 1784327, 1784328
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1784329, 1784330, 1784331, 1784332, 1784333, 1784334
SM 2120 B / E31780	True Color measured at 450 nm	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1784323, 1784324, 1784325, 1784326, 1784327, 1784328

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	03/30/2016			03/30/2016 14:45	Sima Feizi	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
EPA 300.0 Rev. 2.1	03/30/2016			04/01/2016	Ping Hua	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
EPA 350.1 Rev. 2.0	03/30/2016			04/05/2016	Diana M. Turner	1784323, 1784324, 1784325, 1784326, 1784327, 1784328
EPA 351.2 Rev. 2.0	03/30/2016	04/11/2016	Sofia Elnemr	04/12/2016	Christopher Armour	1784323, 1784324, 1784325, 1784326, 1784327, 1784328
EPA 353.2 Rev. 2.0	03/30/2016			04/04/2016	Diana M. Turner	1784323, 1784324, 1784325, 1784326, 1784327, 1784328
EPA 365.1 Rev. 2.0	03/30/2016	04/06/2016	Christopher Armour	04/07/2016	Lipi Saha	1784324, 1784325, 1784326, 1784327, 1784328
EPA 365.1 Rev. 2.0 dissolved	03/30/2016	04/06/2016	Christopher Armour	04/08/2016	Lipi Saha	1784323
	03/30/2016			03/30/2016 13:41	Julia Storbeck	1784329
	03/30/2016			03/30/2016 13:46	Julia Storbeck	1784330
	03/30/2016			03/30/2016 13:47	Julia Storbeck	1784331, 1784332
	03/30/2016			03/30/2016 13:48	Julia Storbeck	1784333
SM 2120 B	03/30/2016			03/30/2016 13:49	Julia Storbeck	1784334
	03/30/2016			03/30/2016 13:33	Blanca Fach	1784317, 1784318
	03/30/2016			03/30/2016 14:04	Blanca Fach	1784319
	03/30/2016			03/30/2016 14:05	Blanca Fach	1784320
	03/30/2016			03/30/2016 14:06	Blanca Fach	1784321
SM 2320 B-97	03/30/2016			03/30/2016 14:09	Blanca Fach	1784322
	03/30/2016			04/05/2016	Dale L. Simmons	1784317, 1784318, 1784319, 1784320, 1784321
	03/30/2016			04/06/2016	Dale L. Simmons	1784322
SM 2540 C-97	03/30/2016			04/01/2016	Yijie Li	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
SM 2540 D-97	03/30/2016			04/01/2016	Yijie Li	1784317, 1784318, 1784319, 1784320, 1784321, 1784322
SM 4500 F-C-97	03/30/2016			04/05/2016	Dale L. Simmons	1784317, 1784318, 1784319, 1784320, 1784321
	03/30/2016			04/06/2016	Dale L. Simmons	1784322
SM 5310 B-00	03/30/2016			04/01/2016	Sofia Elnemr	1784323, 1784324, 1784325, 1784326, 1784327, 1784328