

Chemical Analysis Report

SO-DIST-2016-04-28-01

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

Event Description: **SMP: Highlands Lakes**

Request ID: **RQ-2016-04-04-20**

Customer: **SO-DIST**

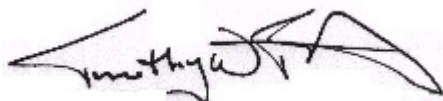
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 25-MAY-2016 17:34

A handwritten signature in black ink, appearing to read 'Timothy W. Fitzpatrick', with a stylized flourish at the end.

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 SIRENA @ MIDDLE

Collection Date/Time: 04/27/2016 11:03

Field ID: G4HL042016-F

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793721	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P303203	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P303647	
		Sulfate	25		mg SO4/L	P303650	
	SM 2120 B	Color (true)	8.4		PCU	P303187	
	SM 2320 B-97	Total Alkalinity	9.0		mg CaCO3/L	P303986	
	SM 2540 C-97	TDS	90		mg/L	P303909	
	SM 2540 D-97	TSS	2	I	mg/L	P303786	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P303819	
1793726	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P303797	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P304144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304002	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P303918	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P304637	
1793731	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303177	

Ref. Method and Comment:

SM 2120 B: The precision data is unavailable due to the low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 149 umhos/cm.

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: LAKE SIRENA @ NORTH SIDE

Collection Date/Time: 04/27/2016 10:56

Field ID: G4HL042016-G

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793722	EPA 180.1 Rev. 2.0	Turbidity	1.1	A	NTU	P303204	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P303647	
		Sulfate	25		mg SO4/L	P303650	
	SM 2120 B	Color (true)	7.1		PCU	P303187	
	SM 2320 B-97	Total Alkalinity	9.2		mg CaCO3/L	P303986	
	SM 2540 C-97	TDS	84		mg/L	P303909	
	SM 2540 D-97	TSS	3	I	mg/L	P303786	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P303819	
1793727	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P303797	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P304144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304002	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P303918	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P304637	
1793732	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303177	

Ref. Method and Comment:

SM 2120 B: The precision data is unavailable due to the low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 149 umhos/cm.

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: LAKE SIRENA @ WEST SIDE

Collection Date/Time: 04/27/2016 11:08

Field ID: G4HL042016-H

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793723	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P303204	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P303647	
		Sulfate	25		mg SO4/L	P303650	
	SM 2120 B	Color (true)	6.4		PCU	P303187	
	SM 2320 B-97	Total Alkalinity	9.1		mg CaCO3/L	P303986	
	SM 2540 C-97	TDS	95		mg/L	P303909	
	SM 2540 D-97	TSS	2	U	mg/L	P303786	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P303819	
1793728	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P303797	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P304144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304002	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P304017	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P304637	
1793733	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303177	

Ref. Method and Comment:

SM 2120 B: The precision data is unavailable due to the low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 149 umhos/cm.

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: LAKE SIRENA @ SOUTH SIDE

Collection Date/Time: 04/27/2016 11:15

Field ID: G4HL042016-J

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793724	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P303204	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P303647	
		Sulfate	25		mg SO4/L	P303650	
	SM 2120 B	Color (true)	7.1		PCU	P303187	
	SM 2320 B-97	Total Alkalinity	9.2		mg CaCO3/L	P303986	
	SM 2540 C-97	TDS	91		mg/L	P303910	
	SM 2540 D-97	TSS	2	I	mg/L	P303787	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P303819	
1793729	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P303797	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P304144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304002	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P304017	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P304637	
1793734	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303177	

Ref. Method and Comment:

SM 2120 B: The precision data is unavailable due to the low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 149 umhos/cm.

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: LAKE SIRENA @ EAST SIDE

Collection Date/Time: 04/27/2016 10:50

Field ID: G4HL042016-K

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G4HL042016-K

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793725	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P303204	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P303648	
		Sulfate	25		mg SO4/L	P303651	
	SM 2120 B	Color (true)	6.4		PCU	P303187	
	SM 2320 B-97	Total Alkalinity	9.0		mg CaCO3/L	P303986	
	SM 2540 C-97	TDS	91		mg/L	P303910	
	SM 2540 D-97	TSS	3	I	mg/L	P303787	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P303819	
1793730	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P303797	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P304144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304003	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P304017	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P304637	
1793735	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303177	

Ref. Method and Comment:

SM 2120 B: The precision data is unavailable due to the low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 149 umhos/cm.

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: P303203

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P303204

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303647

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303648

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303650

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303651

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303797

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304144

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304002

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304003

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303918

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304017

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303177

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

Reference Method: SM 2120 B
Batch ID: P303187

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P303986

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

Reference Method: SM 2540 C-97
Batch ID: P303909

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P303910

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303786

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303787

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P303819

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P304637

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: P303647

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303648

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303648

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303650

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303797

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: P304144

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304002

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304003

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: P303918

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304017

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303177

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

Reference Method: SM 2320 B-97
Batch ID: P303986

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

Reference Method: SM 4500 F-C-97
Batch ID: P303819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P304637

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793603	Chloride	101		P	90 - 110
1793617	Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793758	Chloride	99.1		P	90 - 110
1793763	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793603	Sulfate	95.7		P	90 - 110
1793617	Sulfate	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793758	Sulfate	95.3		P	90 - 110
1793763	Sulfate	94.9		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793726	Ammonia-N	98.9	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793651	NO2NO3-N	94.5	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793730	NO2NO3-N	99.0	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303918

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793641	Total-P	98.4	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793728	Total-P	96.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793731	O-Phosphate-P	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P303819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793618	Fluoride	95.6	95.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P304637

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793556	Organic Carbon	95.9	97.6	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793637	Turbidity	0.671	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793722	Turbidity	7.34	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793617	Chloride	0.115	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793758	Chloride	0.105	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793617	Sulfate	0.406	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793758	Sulfate	0.219	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793726	Ammonia-N	1.13	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793652	Kjeldahl Nitrogen	0.721	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793651	NO2NO3-N	2.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793730	NO2NO3-N	2.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303918

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793641	Total-P	0.966	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793728	Total-P	3.87	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793731	O-Phosphate-P	1.97	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P303986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793618	Total Alkalinity	0.134	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793650	TDS	2.19	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P303910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793760	TDS	6.52	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P303819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793618	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P304637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793556	Organic Carbon	1.58	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A69156
Included Lab Sample IDs: 1793731, 1793732, 1793733, 1793734, 1793735

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	99.1	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A69157
Included Lab Sample IDs: 1793721, 1793722, 1793723, 1793724, 1793725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69165
Included Lab Sample IDs: 1793721, 1793722, 1793723, 1793724, 1793725

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A69217
Included Lab Sample IDs: 1793721, 1793722, 1793723, 1793724, 1793725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	101	99.1	P/P	90 - 110
Sulfate	98.9	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69333

Included Lab Sample IDs: 1793726, 1793727, 1793728, 1793729, 1793730

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

Reference Method: SM 4500 F-C-97

Run ID: A69345

Included Lab Sample IDs: 1793721, 1793722, 1793723, 1793724, 1793725

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

Reference Method: SM 2320 B-97

Run ID: A69399

Included Lab Sample IDs: 1793721, 1793722, 1793723, 1793724, 1793725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69407

Included Lab Sample IDs: 1793726, 1793727, 1793728, 1793729, 1793730

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.0	P/P	90 - 110
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69422

Included Lab Sample IDs: 1793726, 1793727

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69459

Included Lab Sample IDs: 1793728, 1793729, 1793730

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69488

Included Lab Sample IDs: 1793726, 1793727, 1793728, 1793729, 1793730

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.9	98.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69584

Included Lab Sample IDs: 1793726, 1793727, 1793728, 1793729, 1793730

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	98.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A69584

Included Lab Sample IDs: 1793726, 1793727, 1793728, 1793729, 1793730

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	97.5	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.671	
	Turbidity				7.34	
EPA 300.0 Rev. 2.1	Chloride	100	98.5 101		0.115	
	Chloride	100	99.1 99.4		0.105	
	Sulfate	97.5	96.8 95.7		0.406	
	Sulfate	96.9	95.3 94.9		0.219	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.9 100			1.13
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103				0.721
EPA 353.2 Rev. 2.0	NO2NO3-N	100	94.5 96.5			2.05
	NO2NO3-N	100	99.0 101			2.00
EPA 365.1 Rev. 2.0	Total-P	101	98.4 99.4			0.966
	Total-P	102	96.5 100			3.87
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	100 102			1.97
SM 2320 B-97	Total Alkalinity	101			0.134	
SM 2540 C-97	TDS				2.19	
	TDS				6.52	
SM 4500 F-C-97	Fluoride	95.0	95.6 95.6			0.0
SM 5310 B-00	Organic Carbon	97.6	95.9 97.6			1.58

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1793721, 1793722, 1793723, 1793724, 1793725
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1793721, 1793722, 1793723, 1793724, 1793725
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1793721, 1793722, 1793723, 1793724, 1793725
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1793726, 1793727, 1793728, 1793729, 1793730
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1793726, 1793727, 1793728, 1793729, 1793730
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1793726, 1793727, 1793728, 1793729, 1793730
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1793726, 1793727, 1793728, 1793729, 1793730
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1793731, 1793732, 1793733, 1793734, 1793735
SM 2120 B / E31780	True Color measured at 450 nm	1793721, 1793722, 1793723, 1793724, 1793725

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1793721, 1793722, 1793723, 1793724, 1793725
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1793721, 1793722, 1793723, 1793724, 1793725
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1793721, 1793722, 1793723, 1793724, 1793725
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1793721, 1793722, 1793723, 1793724, 1793725
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1793726, 1793727, 1793728, 1793729, 1793730

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	04/28/2016			04/28/2016 15:12	Sima Feizi	1793721, 1793722, 1793723, 1793724, 1793725
EPA 300.0 Rev. 2.1	04/28/2016			05/05/2016	Elisa J Lutz	1793721, 1793722, 1793723, 1793724, 1793725
EPA 350.1 Rev. 2.0	04/28/2016			05/06/2016	Diana M. Turner	1793726, 1793727, 1793728, 1793729, 1793730
EPA 351.2 Rev. 2.0	04/28/2016	05/12/2016	Christopher Armour	05/15/2016	Virginia P. Brown	1793726, 1793727, 1793728, 1793729, 1793730
EPA 353.2 Rev. 2.0	04/28/2016			05/10/2016	Peter D. Kaus	1793726, 1793727, 1793728, 1793729, 1793730
EPA 365.1 Rev. 2.0	04/28/2016	05/10/2016	Vijayalakshmi Reddy	05/11/2016	Lipi Saha	1793726, 1793727
	04/28/2016	05/11/2016	Vijayalakshmi Reddy	05/12/2016	Rochelle Y Jackson	1793728, 1793729, 1793730
EPA 365.1 Rev. 2.0 dissolved	04/28/2016			04/28/2016 14:27	Julia Storbeck	1793731
	04/28/2016			04/28/2016 15:01	Julia Storbeck	1793732
	04/28/2016			04/28/2016 15:02	Julia Storbeck	1793733
	04/28/2016			04/28/2016 15:03	Julia Storbeck	1793734
	04/28/2016			04/28/2016 15:04	Julia Storbeck	1793735
SM 2120 B	04/28/2016			04/28/2016 13:59	Rochelle Y Jackson	1793721
	04/28/2016			04/28/2016 14:00	Rochelle Y Jackson	1793722
	04/28/2016			04/28/2016 14:01	Rochelle Y Jackson	1793723, 1793724
	04/28/2016			04/28/2016 14:02	Rochelle Y Jackson	1793725
SM 2320 B-97	04/28/2016			05/10/2016	Dale L. Simmons	1793721, 1793722, 1793723, 1793724, 1793725
SM 2540 C-97	04/28/2016			05/03/2016	Yijie Li	1793721, 1793722, 1793723, 1793724, 1793725
SM 2540 D-97	04/28/2016			05/03/2016	Yijie Li	1793721, 1793722, 1793723, 1793724, 1793725
SM 4500 F-C-97	04/28/2016			05/06/2016	Dale L. Simmons	1793721, 1793722, 1793723
	04/28/2016			05/07/2016	Dale L. Simmons	1793724, 1793725
SM 5310 B-00	04/28/2016			05/19/2016	Diana M. Turner	1793726, 1793727, 1793728, 1793729, 1793730