

Chemical Analysis Report

SO-DIST-2016-05-20-01

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

Event Description: **SMP: Highlands Lakes Rachard & Buck**

Request ID: **RQ-2016-05-09-14**

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
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Date Certified: 14-JUN-2016 13:52



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 RACHARD @ CENTER

Collection Date/Time: 05/19/2016 12:35

Field ID: *26010647

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800793	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P304728	
	EPA 300.0 Rev. 2.1	Chloride	6.7		mg Cl/L	P305175	
		Sulfate	17		mg SO4/L	P305176	
	SM 2120 B	Color (true)	8.1		PCU	P304732	
	SM 2320 B-97	Total Alkalinity	41		mg CaCO3/L	P305293	
	SM 2540 C-97	TDS	72		mg/L	P305268	
	SM 2540 D-97	TSS	3	I	mg/L	P305159	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P305296	
1800797	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P305262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P305226	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304996	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P305433	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P305288	
1800801	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304725	

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: BLUE LAKE @ NORTHSIDE

Collection Date/Time: 05/19/2016 10:10

Field ID: G4SD0122

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800794	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P304728	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305177	
		Sulfate	24		mg SO4/L	P305179	
	SM 2120 B	Color (true)	12		PCU	P304732	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P305293	
	SM 2540 C-97	TDS	98	A	mg/L	P305268	
	SM 2540 D-97	TSS	3	I	mg/L	P305159	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P305296	
1800798	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P305262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P305226	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P304987	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P305433	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P305288	
1800802	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304725	

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: BLUE LAKE @ SW SIDE

Collection Date/Time: 05/19/2016 10:30

Field ID: G4SD0123

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800795	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P304728	

Field ID: G4SD0123

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800795	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305177	
		Sulfate	24		mg SO4/L	P305179	
	SM 2120 B	Color (true)	12		PCU	P304732	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P305293	
	SM 2540 C-97	TDS	107		mg/L	P305269	
	SM 2540 D-97	TSS	2	I	mg/L	P305160	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P305296	
1800799	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P305262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P305226	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P304987	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P305433	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P305288	
1800803	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304725	

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: BLUE LAKE @ SE SIDE

Collection Date/Time: 05/19/2016 10:20

Field ID: G4SD0124

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800796	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P304728	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305177	
		Sulfate	24		mg SO4/L	P305179	
	SM 2120 B	Color (true)	12		PCU	P304732	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P305294	
	SM 2540 C-97	TDS	106	A	mg/L	P305269	
	SM 2540 D-97	TSS	3	I	mg/L	P305160	
1800800	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P305297	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P305262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P305226	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P304987	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P305433	
1800804	SM 5310 B-00	Organic Carbon	10		mg C/L	P305288	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304725	

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: P304728

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305175

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305176

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305177

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305179

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305262

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305226

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304987

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304996

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305433

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304725

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

Reference Method: SM 2120 B
Batch ID: P304732

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305293

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

Reference Method: SM 2320 B-97
Batch ID: P305294

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

Reference Method: SM 2540 C-97
Batch ID: P305268

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P305269

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305159

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305160

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305296

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: P305297

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P305288

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: P305175

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305176

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305177

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305179

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305262

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304987

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: P304987

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304996

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305433

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.0		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P305293

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P305294

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305296

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P305297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P305288

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800451	Chloride	96.5	97.4	P/P	90 - 110
1800628	Chloride	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305176

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800451	Sulfate	96.9	98.2	P/P	90 - 110
1800628	Sulfate	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801237	Chloride	100		P	90 - 110
1801238	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801237	Sulfate	99.0		P	90 - 110
1801238	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800799	Ammonia-N	99.9	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800798	NO2NO3-N	98.8	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800797	NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800714	Total-P	97.8	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304725

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304725

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800801	O-Phosphate-P	95.8	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800848	Fluoride	95.3	95.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801212	Fluoride	96.7	96.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P305288

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800581	Organic Carbon	97.4	99.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P304728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800627	Turbidity	1.07	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800451	Chloride	0.588	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800451	Sulfate	1.26	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801237	Chloride	0.254	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801237	Sulfate	0.860	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800799	Ammonia-N	1.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800828	Kjeldahl Nitrogen	17.2	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800798	NO2NO3-N	2.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800797	NO2NO3-N	1.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800714	Total-P	6.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800801	O-Phosphate-P	0.832	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P304732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800627	Color (true)	5.19	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P305293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800848	Total Alkalinity	0.0736	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P305294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801212	Total Alkalinity	0.969	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P305268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800794	TDS	1.03	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P305269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800796	TDS	8.45	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800848	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P305297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801212	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P305288

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800581	Organic Carbon	0.990	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A69604

Included Lab Sample IDs: 1800801, 1800802, 1800803, 1800804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.7	P/P	90 - 110
O-Phosphate-P	101	99.7	P/P	90 - 110
O-Phosphate-P	99.7	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69605

Included Lab Sample IDs: 1800793, 1800794, 1800795, 1800796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	101	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A69606

Included Lab Sample IDs: 1800793, 1800794, 1800795, 1800796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	98.5	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69676

Included Lab Sample IDs: 1800793, 1800794, 1800795, 1800796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	100	94.2	P/P	90 - 110
Sulfate	97.3	100	P/P	90 - 110
Sulfate	97.9	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69684

Included Lab Sample IDs: 1800797, 1800798, 1800799, 1800800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69751

Included Lab Sample IDs: 1800797, 1800798, 1800799, 1800800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.1	P/P	90 - 110
Ammonia-N	99.5	99.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69765

Included Lab Sample IDs: 1800797, 1800798, 1800799, 1800800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A69765

Included Lab Sample IDs: 1800797, 1800798, 1800799, 1800800

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

Reference Method: SM 2320 B-97

Run ID: A69766

Included Lab Sample IDs: 1800793, 1800794, 1800795, 1800796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69766

Included Lab Sample IDs: 1800793, 1800794, 1800795, 1800796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	100	P/P	90 - 110
Fluoride	96.6	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69797

Included Lab Sample IDs: 1800797, 1800798, 1800799, 1800800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	96.6	P/P	90 - 110
Kjeldahl Nitrogen	98.8	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69851

Included Lab Sample IDs: 1800797, 1800798, 1800799, 1800800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	100	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			Precision	
			LCS			SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.07	
EPA 300.0 Rev. 2.1	Chloride	99.6	96.5	97.4	98.8		0.588
	Chloride	101	100	101		0.254	
	Sulfate	98.6	96.9	98.2	98.3		1.26
	Sulfate	99.2	99.0	100		0.860	
EPA 350.1 Rev. 2.0	Ammonia-N	100	99.9	97.0			1.63
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.4					17.2
EPA 353.2 Rev. 2.0	NO2NO3-N	101	98.8	102			2.83

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	106			1.43
EPA 365.1 Rev. 2.0	Total-P	99.3	97.8	107			6.23
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.0	95.8	96.6			0.832
SM 2120 B	Color (true)					5.19	
SM 2320 B-97	Total Alkalinity	102				0.0736	
	Total Alkalinity	102				0.969	
SM 2540 C-97	TDS					1.03	
	TDS					8.45	
SM 4500 F-C-97	Fluoride	98.1	95.3	95.3			0.0
	Fluoride	96.1	96.7	96.7			0.0
SM 5310 B-00	Organic Carbon	99.8	97.4	99.1			0.990

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1800793, 1800794, 1800795, 1800796
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1800793, 1800794, 1800795, 1800796
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1800793, 1800794, 1800795, 1800796
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1800797, 1800798, 1800799, 1800800
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1800797, 1800798, 1800799, 1800800
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1800797, 1800798, 1800799, 1800800
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1800797, 1800798, 1800799, 1800800
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1800801, 1800802, 1800803, 1800804
SM 2120 B / E31780	True Color measured at 450 nm	1800793, 1800794, 1800795, 1800796
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1800793, 1800794, 1800795, 1800796
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1800793, 1800794, 1800795, 1800796
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1800793, 1800794, 1800795, 1800796
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1800793, 1800794, 1800795, 1800796
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1800797, 1800798, 1800799, 1800800

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/20/2016			05/20/2016 15:55	Sima Feizi	1800793, 1800794, 1800795, 1800796
EPA 300.0 Rev. 2.1	05/20/2016			05/26/2016	Ping Hua	1800793
	05/20/2016			05/27/2016	Ping Hua	1800794, 1800795, 1800796
EPA 350.1 Rev. 2.0	05/20/2016			05/27/2016	Diana M. Turner	1800797, 1800798, 1800799, 1800800
EPA 351.2 Rev. 2.0	05/20/2016	05/31/2016	Sofia Elnemr	06/02/2016	Christopher Armour	1800797, 1800798, 1800799, 1800800
EPA 353.2 Rev. 2.0	05/20/2016			05/25/2016	Peter D. Kaus	1800797, 1800798, 1800799, 1800800
EPA 365.1 Rev. 2.0	05/20/2016	06/02/2016	Vijayalakshmi Reddy	06/03/2016	Rochelle Y Jackson	1800797, 1800798, 1800799, 1800800
EPA 365.1 Rev. 2.0 dissolved	05/20/2016			05/20/2016 14:23	Ping Hua	1800801
	05/20/2016			05/20/2016 14:42	Ping Hua	1800802
	05/20/2016			05/20/2016 14:47	Ping Hua	1800803
	05/20/2016			05/20/2016 14:48	Ping Hua	1800804
SM 2120 B	05/20/2016			05/20/2016 15:33	Rochelle Y Jackson	1800793, 1800794
	05/20/2016			05/20/2016 15:34	Rochelle Y Jackson	1800795
	05/20/2016			05/20/2016 15:35	Rochelle Y Jackson	1800796
SM 2320 B-97	05/20/2016			05/27/2016	Dale L. Simmons	1800793, 1800794, 1800795, 1800796
SM 2540 C-97	05/20/2016			05/25/2016	Yijie Li	1800793, 1800794, 1800795, 1800796
SM 2540 D-97	05/20/2016			05/25/2016	Yijie Li	1800793, 1800794, 1800795, 1800796
SM 4500 F-C-97	05/20/2016			05/27/2016	Dale L. Simmons	1800793, 1800794, 1800795, 1800796
SM 5310 B-00	05/20/2016			05/27/2016	Diana M. Turner	1800797, 1800798, 1800799, 1800800