

Chemical Analysis Report

SO-DIST-2016-04-07-01

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

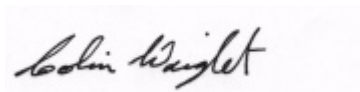
Event Description: **SMP: Group 4 Streams**
Request ID: **RQ-2016-04-04-21**
Customer: **SO-DIST**
Project ID: **SMP**

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: Colin Wright, Environmental Administrator

Date Certified: 04-MAY-2016 11:29

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: PLATT BRANCH @ CR 731

Collection Date/Time: 04/06/2016 09:45

Field ID: SD040616-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787693	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P301860	
	EPA 300.0 Rev. 2.1	Chloride	170		mg Cl/L	P302457	
		Sulfate	77		mg SO4/L	P302311	
	SM 2120 B	Color (true)	210		PCU	P302069	
	SM 2320 B-97	Total Alkalinity	39		mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	516	A	mg/L	P302608	
	SM 2540 D-97	TSS	5	I	mg/L	P302328	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P302195	
1787699	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P302274	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P302580	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P302091	
	EPA 365.1 Rev. 2.0	Total-P	0.35		mg P/L	P302355	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P302340	
1787705	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.28		mg P/L	P301833	

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: BOOTHEEL CREEK EAST BRANCH

Collection Date/Time: 04/06/2016 10:10

Field ID: SD040616-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787694	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P301860	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P302305	
		Sulfate	0.96		mg SO4/L	P302311	
	SM 2120 B	Color (true)	530		PCU	P302070	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	115		mg/L	P302608	
	SM 2540 D-97	TSS	2	I	mg/L	P302328	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P302195	
1787700	EPA 350.1 Rev. 2.0	Ammonia-N	0.054		mg N/L	P302274	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P302580	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302091	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P302355	
	SM 5310 B-00	Organic Carbon	42		mg C/L	P302341	
1787706	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P301833	

Ref. Method and Comment:

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

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

Sample Location: JOE SLOUGH AT GRAHAM DAIRY ROAD.

Collection Date/Time: 04/06/2016 10:40

Field ID: SD040616-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787695	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P301860	
	EPA 300.0 Rev. 2.1	Chloride	37		mg Cl/L	P302305	

Field ID: SD040616-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787695	EPA 300.0 Rev. 2.1	Sulfate	5.9		mg SO4/L	P302311	
	SM 2120 B	Color (true)	210		PCU	P302070	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	153		mg/L	P302608	
	SM 2540 D-97	TSS	8	I	mg/L	P302328	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P302195	
1787701	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P302274	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4		mg N/L	P302580	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302091	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P302356	
	SM 5310 B-00	Organic Carbon	27		mg C/L	P302341	
1787707	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.044		mg P/L	P301833	

Ref. Method and Comment:

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

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

Sample Location: PLACID JUNE CANAL @ END OF LAKE GROVES RD.

Collection Date/Time: 04/06/2016 13:30

Field ID: SD040616-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787696	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P301860	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P302305	
		Sulfate	16		mg SO4/L	P302311	
	SM 2120 B	Color (true)	43	A	PCU	P302070	
	SM 2320 B-97	Total Alkalinity	8.0		mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	137		mg/L	P302609	
	SM 2540 D-97	TSS	2	U	mg/L	P302329	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P302195	
1787702	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P302274	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P302580	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.47		mg N/L	P302091	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P302356	
	SM 5310 B-00	Organic Carbon	9.3		mg C/L	P302341	
1787708	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P301833	

Ref. Method and Comment:

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

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

Sample Location: LWO @ SR 66

Collection Date/Time: 04/06/2016 14:30

Field ID: SD040616-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787697	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P301861	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P302306	
		Sulfate	4.8		mg SO4/L	P302312	
	SM 2120 B	Color (true)	450		PCU	P302070	

Field ID: SD040616-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787697	SM 2320 B-97	Total Alkalinity	3.7		mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	115		mg/L	P302609	
	SM 2540 D-97	TSS	2	U	mg/L	P302329	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P302195	
1787703	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P302274	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P302580	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.070		mg N/L	P302091	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P302356	
	SM 5310 B-00	Organic Carbon	32		mg C/L	P302341	
1787709	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P301833	

Ref. Method and Comment:

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

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

Sample Location: FENCE LINE DRAIN @ BLUE HEAD RANCH SE Collection Date/Time: 04/06/2016 12:00

Field ID: SD040616-6

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787698	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P301861	
	EPA 300.0 Rev. 2.1	Chloride	56		mg Cl/L	P302306	
		Sulfate	9.4		mg SO4/L	P302312	
	SM 2120 B	Color (true)	210		PCU	P302070	
1787704	SM 2320 B-97	Total Alkalinity	75		mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	228	A	mg/L	P302609	
	SM 2540 D-97	TSS	4	I	mg/L	P302329	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P302195	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.080		mg N/L	P302272	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P302580	
1787710	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P302094	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P302356	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P302341	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.083		mg P/L	P301833	

Ref. Method and Comment:

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

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P301860

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P301861

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301861

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302305

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302306

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302311

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302312

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302457

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302272

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302274

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302580

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302091

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302094

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302355

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302356

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301833

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

Reference Method: SM 2120 B
Batch ID: P302069

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P302070

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P302192

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P302608

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P302609

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302328

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302329

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P302195

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P302340

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

Reference Method: SM 5310 B-00
Batch ID: P302341

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: P302305

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302306

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302311

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: P302311

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302312

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302457

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302272

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302274

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: P302580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302091

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: P302094

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302355

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302356

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301833

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

Reference Method: SM 2320 B-97
Batch ID: P302192

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

Reference Method: SM 4500 F-C-97
Batch ID: P302195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P302340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P302341

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787664	Chloride	97.8		P	90 - 110
1787665	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787697	Chloride	95.9		P	90 - 110
1787721	Chloride	98.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787664	Sulfate	95.6		P	90 - 110
1787665	Sulfate	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787697	Sulfate	94.9		P	90 - 110
1787721	Sulfate	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302457

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788790	Chloride	100		P	90 - 110
1788791	Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787508	Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302274

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787672	Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787699	Kjeldahl Nitrogen	99.3	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787668	NO2NO3-N	98.5	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787704	NO2NO3-N	96.8	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302355

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787631	Total-P	99.9	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302356

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787701	Total-P	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787675	O-Phosphate-P	99.6	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P302195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787722	Fluoride	95.5	95.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P302340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787571	Organic Carbon	98.0	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787590	Turbidity	0.236	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787697	Turbidity	2.64	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787664	Chloride	0.0904	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787721	Chloride	0.542	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787664	Sulfate	0.298	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787721	Sulfate	0.767	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788790	Chloride	0.0851	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787508	Ammonia-N	0.608	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787672	Ammonia-N	1.37	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787699	Kjeldahl Nitrogen	0.416	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787668	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787704	NO2NO3-N	0.948	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787631	Total-P	2.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787701	Total-P	2.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787675	O-Phosphate-P	1.25	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787663	Color (true)	3.28	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787696	Color (true)	0.362	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P302192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787722	Total Alkalinity	0.0528	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P302608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787693	TDS	0.581	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P302609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787698	TDS	0.877	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P302195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787722	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P302340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787571	Organic Carbon	0.840	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P302341

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787700	Organic Carbon	0.999	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: A68729
Included Lab Sample IDs: 1787705, 1787706, 1787707, 1787708, 1787709, 1787710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.6	98.9	P/P	90 - 110
O-Phosphate-P	98.9	98.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68738
Included Lab Sample IDs: 1787693, 1787694, 1787695, 1787696, 1787697, 1787698

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105
Turbidity	99.5	98.5	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68804
Included Lab Sample IDs: 1787694, 1787695, 1787696, 1787697, 1787698

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	99.0	99.7	P/P	90 - 110
Sulfate	99.7	95.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68814

Included Lab Sample IDs: 1787704

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

Reference Method: SM 2120 B

Run ID: A68821

Included Lab Sample IDs: 1787693, 1787694, 1787695, 1787696, 1787697, 1787698

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 115
Color (true)	104	106	P/P	85 - 115
Color (true)	106	104	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68825

Included Lab Sample IDs: 1787699, 1787700, 1787701, 1787702, 1787703

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	97.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68859

Included Lab Sample IDs: 1787693, 1787694, 1787695, 1787696, 1787697, 1787698

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	101	P/P	90 - 110
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68859

Included Lab Sample IDs: 1787693, 1787694, 1787695, 1787696, 1787697, 1787698

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68885

Included Lab Sample IDs: 1787699, 1787700, 1787701, 1787702, 1787703, 1787704

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A68901

Included Lab Sample IDs: 1787699, 1787700, 1787701, 1787702, 1787703, 1787704

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68913

Included Lab Sample IDs: 1787699, 1787700, 1787701, 1787703, 1787704

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	103	P/P	90 - 110
Total-P	103	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68939

Included Lab Sample IDs: 1787693

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68978

Included Lab Sample IDs: 1787702

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69049

Included Lab Sample IDs: 1787699, 1787700, 1787701, 1787702, 1787703, 1787704

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	97.1	P/P	90 - 110
Kjeldahl Nitrogen	97.1	99.0	P/P	90 - 110
Kjeldahl Nitrogen	99.0	97.1	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				0.236	
	Turbidity				2.64	
EPA 300.0 Rev. 2.1	Chloride	99.1	97.8 98.3		0.0904	
	Chloride	104	98.3 95.9		0.542	
	Chloride	101	100 101		0.0851	
	Sulfate	97.8	95.6 95.9		0.298	
	Sulfate	97.8	95.9 94.9		0.767	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.8 100			0.608
	Ammonia-N	101	101 103			1.37
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	99.3 100			0.416
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.5 99.5			1.01
	NO2NO3-N	99.0	96.8 95.8			0.948
EPA 365.1 Rev. 2.0	Total-P	101	102 99.9			2.31
	Total-P	103	101 104			2.54
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.6 101			1.25

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 2120 B	Color (true)	101			3.28	
	Color (true)				0.362	
SM 2320 B-97	Total Alkalinity				0.0528	
SM 2540 C-97	TDS				0.581	
	TDS				0.877	
SM 4500 F-C-97	Fluoride	98.7	95.5	95.5		0.0
SM 5310 B-00	Organic Carbon	98.1	98.0	96.6		0.840
	Organic Carbon	96.8				0.999

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1787699, 1787700, 1787701, 1787702, 1787703, 1787704
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1787699, 1787700, 1787701, 1787702, 1787703, 1787704
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1787699, 1787700, 1787701, 1787702, 1787703, 1787704
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1787699, 1787700, 1787701, 1787702, 1787703, 1787704
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1787705, 1787706, 1787707, 1787708, 1787709, 1787710
SM 2120 B / E31780	True Color measured at 450 nm	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1787699, 1787700, 1787701, 1787702, 1787703, 1787704

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	04/07/2016			04/07/2016 17:11	Sima Feizi	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
EPA 300.0 Rev. 2.1	04/07/2016			04/13/2016	Ping Hua	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
	04/07/2016			04/18/2016	Julia Storbeck	1787693
EPA 350.1 Rev. 2.0	04/07/2016			04/14/2016	Diana M. Turner	1787699, 1787700, 1787701, 1787702, 1787703, 1787704
EPA 351.2 Rev. 2.0	04/07/2016	04/20/2016	Sofia Elnemr	04/21/2016	Christopher Armour	1787699, 1787700, 1787701, 1787702, 1787703, 1787704
EPA 353.2 Rev. 2.0	04/07/2016			04/12/2016	Peter D. Kaus	1787699, 1787700, 1787701, 1787702, 1787703, 1787704
EPA 365.1 Rev. 2.0	04/07/2016	04/15/2016	Lipi Saha	04/15/2016	Lipi Saha	1787699, 1787700, 1787701, 1787703, 1787704
	04/07/2016	04/15/2016	Lipi Saha	04/18/2016	Lipi Saha	1787702
EPA 365.1 Rev. 2.0 dissolved	04/07/2016			04/07/2016 14:24	Ping Hua	1787705
	04/07/2016			04/07/2016 14:32	Ping Hua	1787706
	04/07/2016			04/07/2016 14:33	Ping Hua	1787707, 1787708
	04/07/2016			04/07/2016 14:34	Ping Hua	1787709
	04/07/2016			04/07/2016 14:35	Ping Hua	1787710
SM 2120 B	04/07/2016			04/07/2016 15:29	Blanca Fach	1787693
	04/07/2016			04/07/2016 15:33	Blanca Fach	1787696
	04/07/2016			04/07/2016 15:34	Blanca Fach	1787694
	04/07/2016			04/07/2016 15:35	Blanca Fach	1787697
	04/07/2016			04/07/2016 15:36	Blanca Fach	1787698
	04/07/2016			04/07/2016 15:56	Blanca Fach	1787695
SM 2320 B-97	04/07/2016			04/13/2016	Dale L. Simmons	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 2540 C-97	04/07/2016			04/11/2016	Sima Feizi	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 2540 D-97	04/07/2016			04/11/2016	Sima Feizi	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 4500 F-C-97	04/07/2016			04/13/2016	Dale L. Simmons	1787693, 1787694, 1787695, 1787696, 1787697, 1787698
SM 5310 B-00	04/07/2016			04/13/2016	Sofia Elnemr	1787699
	04/07/2016			04/14/2016	Sofia Elnemr	1787700, 1787701, 1787702, 1787703, 1787704