

Chemical Analysis Report

CEN-DIST-2016-01-12-01

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

Event Description: **Kissimmee / Tiger**
Request ID: **RQ-2016-01-11-31**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 27-JAN-2016 09:30

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: Kissimmee River

Collection Date/Time: 01/11/2016 13:00

Field ID: G4CE0055-01112016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762006	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P296967	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P297160	
		Sulfate	7.9		mg SO4/L	P297163	
	SM 2120 B	Color (true)	97		PCU	P296952	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P297056	
	SM 2540 C-97	TDS	76		mg/L	P297494	
	SM 2540 D-97	TSS	4	I	mg/L	P297420	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P297059	
1762011	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P297102	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P297064	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P297166	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P297061	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P297069	
1762016	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.088		mg P/L	P296957	

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: Tiger Creek @ 660m

Collection Date/Time: 01/11/2016 12:35

Field ID: G4CE0067-01112016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762007	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P296967	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P297160	
		Sulfate	7.9		mg SO4/L	P297163	
	SM 2120 B	Color (true)	99		PCU	P296952	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P297056	
	SM 2540 C-97	TDS	75		mg/L	P297494	
	SM 2540 D-97	TSS	4	I	mg/L	P297420	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P297059	
1762012	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P297102	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P297064	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P297166	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P297061	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P297069	
1762017	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.089		mg P/L	P296957	

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: Tiger Creek @ 1.2 KM

Collection Date/Time: 01/11/2016 12:00

Field ID: G4CE0069-01112016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762008	EPA 180.1 Rev. 2.0	Turbidity	9.4		NTU	P296967	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P297160	
		Sulfate	7.9		mg SO4/L	P297163	

Field ID: G4CE0069-01112016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762008	SM 2120 B	Color (true)	91		PCU	P296952	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P297056	
	SM 2540 C-97	TDS	72		mg/L	P297494	
	SM 2540 D-97	TSS	18		mg/L	P297420	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P297059	
1762013	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P297102	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P297064	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P297166	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P297061	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P297069	
1762018	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.088		mg P/L	P296957	

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: Tiger Creek @ 915 M

Collection Date/Time: 01/11/2016 12:10

Field ID: G4CE0068-01112016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762009	EPA 180.1 Rev. 2.0	Turbidity	4.0	A	NTU	P296968	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P297160	
		Sulfate	7.7		mg SO4/L	P297163	
	SM 2120 B	Color (true)	160		PCU	P296953	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P297056	
	SM 2540 C-97	TDS	103		mg/L	P297494	
	SM 2540 D-97	TSS	6	I	mg/L	P297420	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P297059	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P297102	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P297064	
1762014	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P297166	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P297061	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P297069	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P296957	

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: Tiger Creek @ 1.45 KM

Collection Date/Time: 01/11/2016 11:55

Field ID: G4CE0070-01112016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762010	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P296968	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P297160	
		Sulfate	7.9		mg SO4/L	P297163	
	SM 2120 B	Color (true)	96	A	PCU	P296953	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P297056	
	SM 2540 C-97	TDS	73		mg/L	P297495	
	SM 2540 D-97	TSS	3	I	mg/L	P297421	

Field ID: G4CE0070-01112016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762010	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P297059	
1762015	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P297102	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P297065	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P297166	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P297061	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P297069	
1762020	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.087		mg P/L	P296957	

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P296967

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P296968

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297160

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297163

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297102

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297064

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297065

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: P297166

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297061

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P296957

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

Reference Method: SM 2120 B
Batch ID: P296952

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P296953

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P297056

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

Reference Method: SM 2540 C-97
Batch ID: P297494

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P297495

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P297420

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P297421

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P297059

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P297069

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: P297160

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297163

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297102

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: P297064

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297065

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297166

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: P297166

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P297061

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P296957

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

Reference Method: SM 2320 B-97
 Batch ID: P297056

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.4		P	95 - 105

Reference Method: SM 4500 F-C-97
 Batch ID: P297059

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	94 - 108

Reference Method: SM 5310 B-00
 Batch ID: P297069

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P297160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1761769	Chloride	98.6		P	90 - 110
1761973	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P297163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1761769	Sulfate	96.3		P	90 - 110
1761973	Sulfate	91.9		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297102

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762012	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297064

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1761976	Kjeldahl Nitrogen	97.9	94.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762015	Kjeldahl Nitrogen	96.5	95.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762014	NO2NO3-N	94.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297061

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762011	Total-P	99.3	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P296957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762004	O-Phosphate-P	98.9	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P297059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762150	Fluoride	104	103	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P297069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1761785	Organic Carbon	96.8		P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P296967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1761961	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P296968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762009	Turbidity	1.73	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1761769	Chloride	0.0782	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1761769	Sulfate	11.8	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762012	Ammonia-N	0.0	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1761976	Kjeldahl Nitrogen	3.12	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762015	Kjeldahl Nitrogen	0.746	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762014	NO2NO3-N	1.20	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762011	Total-P	0.0753	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P296957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762004	O-Phosphate-P	1.21	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P296952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1761961	Color (true)	1.88	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P296953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762010	Color (true)	0.761	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P297056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762150	Total Alkalinity	0.123	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P297494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762027	TDS	6.48	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P297495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762032	TDS	4.43	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P297059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762150	Fluoride	0.984	Spike	P	0 - 3.7

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P297069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1761785	Organic Carbon	1.06	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A67050
Included Lab Sample IDs: 1762006, 1762007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.7		P	90 - 115

Reference Method: SM 2120 B
Run ID: A67051
Included Lab Sample IDs: 1762009, 1762010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.3	P/P	90 - 115
Color (true)	99.9	99.7	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67052
Included Lab Sample IDs: 1762016, 1762017, 1762018, 1762019, 1762020

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	99.6	P/P	90 - 110
O-Phosphate-P	98.3	98.2	P/P	90 - 110
O-Phosphate-P	98.5	98.3	P/P	90 - 110
O-Phosphate-P	99.2	98.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67056
Included Lab Sample IDs: 1762006, 1762007, 1762008, 1762009, 1762010

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

Reference Method: SM 2320 B-97
Run ID: A67080
Included Lab Sample IDs: 1762006, 1762007, 1762008, 1762009, 1762010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.3	98.7	P/P	90 - 110
Total Alkalinity	98.7	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A67081

Included Lab Sample IDs: 1762006, 1762007, 1762008, 1762009, 1762010

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

Reference Method: SM 5310 B-00

Run ID: A67083

Included Lab Sample IDs: 1762011, 1762012, 1762013, 1762014, 1762015

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67095

Included Lab Sample IDs: 1762011, 1762012, 1762013, 1762014, 1762015

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67098

Included Lab Sample IDs: 1762011, 1762012, 1762013, 1762014, 1762015

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	101	P/P	90 - 110
Kjeldahl Nitrogen	99.6	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67110

Included Lab Sample IDs: 1762011, 1762012, 1762013, 1762015

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A67117

Included Lab Sample IDs: 1762006, 1762007, 1762008, 1762009, 1762010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	102	101	P/P	90 - 110
Sulfate	100	98.3	P/P	90 - 110
Sulfate	98.3	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67118

Included Lab Sample IDs: 1762011, 1762012, 1762013, 1762014, 1762015

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	96.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67120

Included Lab Sample IDs: 1762014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	97.2	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				0.0	
	Turbidity				1.73	
EPA 300.0 Rev. 2.1	Chloride	104	98.6 100		0.0782	
	Sulfate	98.7	96.3 91.9		11.8	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101 101			0.0
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	97.9 94.4			3.12
	Kjeldahl Nitrogen	98.7	96.5 95.4			0.746
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	94.5 96.5			1.20
EPA 365.1 Rev. 2.0	Total-P	97.6	99.3 99.4			0.0753
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	98.9 100			1.21
SM 2120 B	Color (true)				1.88	
	Color (true)				0.761	
SM 2320 B-97	Total Alkalinity	97.4			0.123	
SM 2540 C-97	TDS				6.48	
	TDS				4.43	
SM 4500 F-C-97	Fluoride	95.9	104 103			0.984
SM 5310 B-00	Organic Carbon	99.9	96.8			1.06

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1762006, 1762007, 1762008, 1762009, 1762010
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1762006, 1762007, 1762008, 1762009, 1762010
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1762006, 1762007, 1762008, 1762009, 1762010
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1762011, 1762012, 1762013, 1762014, 1762015
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1762011, 1762012, 1762013, 1762014, 1762015
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1762011, 1762012, 1762013, 1762014, 1762015
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1762011, 1762012, 1762013, 1762014, 1762015
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1762016, 1762017, 1762018, 1762019, 1762020
SM 2120 B / E31780	True Color measured at 450 nm	1762006, 1762007, 1762008, 1762009, 1762010

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1762006, 1762007, 1762008, 1762009, 1762010
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1762006, 1762007, 1762008, 1762009, 1762010
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1762006, 1762007, 1762008, 1762009, 1762010
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1762006, 1762007, 1762008, 1762009, 1762010
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1762011, 1762012, 1762013, 1762014, 1762015

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	01/12/2016			01/12/2016 14:43	Sima Feizi	1762006, 1762007, 1762008, 1762009, 1762010
EPA 300.0 Rev. 2.1	01/12/2016			01/15/2016	Ping Hua	1762006, 1762007, 1762008, 1762009, 1762010
EPA 350.1 Rev. 2.0	01/12/2016			01/14/2016	Diana M. Turner	1762011, 1762012, 1762013, 1762014, 1762015
EPA 351.2 Rev. 2.0	01/12/2016	01/14/2016	Christopher Armour	01/14/2016	Bryan A. Werth	1762011, 1762012, 1762013, 1762014, 1762015
EPA 353.2 Rev. 2.0	01/12/2016			01/15/2016	Diana M. Turner	1762011, 1762012, 1762013, 1762014, 1762015
EPA 365.1 Rev. 2.0	01/12/2016	01/14/2016	Christopher Armour	01/15/2016	Lipi Saha	1762011, 1762012, 1762013, 1762014, 1762015
EPA 365.1 Rev. 2.0 dissolved	01/12/2016			01/12/2016 13:02	Julia Storbeck	1762016
	01/12/2016			01/12/2016 13:08	Julia Storbeck	1762020
	01/12/2016			01/12/2016 13:14	Julia Storbeck	1762017
	01/12/2016			01/12/2016 13:19	Julia Storbeck	1762019
	01/12/2016			01/12/2016 13:52	Julia Storbeck	1762018
SM 2120 B	01/12/2016			01/12/2016 13:48	Rochelle Y Jackson	1762006
	01/12/2016			01/12/2016 13:49	Rochelle Y Jackson	1762007
	01/12/2016			01/12/2016 13:50	Rochelle Y Jackson	1762008
	01/12/2016			01/12/2016 13:54	Rochelle Y Jackson	1762010
	01/12/2016			01/12/2016 14:25	Rochelle Y Jackson	1762009
SM 2320 B-97	01/12/2016			01/14/2016	Dale L. Simmons	1762006, 1762007, 1762008, 1762009, 1762010
SM 2540 C-97	01/12/2016			01/15/2016	Yijie Li	1762006, 1762007, 1762008, 1762009, 1762010
SM 2540 D-97	01/12/2016			01/15/2016	Yijie Li	1762006, 1762007, 1762008, 1762009, 1762010
SM 4500 F-C-97	01/12/2016			01/13/2016	Dale L. Simmons	1762006, 1762007, 1762008, 1762009, 1762010
SM 5310 B-00	01/12/2016			01/13/2016	Sofia Elnemr	1762011, 1762012, 1762013, 1762014, 1762015