

Chemical Analysis Report

NE-DIST-2016-03-02-01

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

Event Description: **Nassau West**
Request ID: **RQ-2016-02-29-35**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 21-MAR-2016 15:58

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: 19010135 Cedar at 127

Collection Date/Time: 03/01/2016 09:45

Field ID: 19010135 Cedar at 127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776127	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P299615	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P299819	
		Sulfate	0.89		mg SO4/L	P299821	
	SM 2120 B	Color (true)	350		PCU	P299619	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	94		mg/L	P300122	
	SM 2540 D-97	TSS	2	I	mg/L	P300003	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P300249	
1776133	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P300155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P299902	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.061		mg N/L	P299803	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P300001	
	SM 5310 B-00	Organic Carbon	36		mg C/L	P299916	
1776139	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P299609	

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: 19010042 Calkins trib Hamp reg

Collection Date/Time: 03/01/2016 10:15

Field ID: 19010042 Calkins trib Hamp reg

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776128	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P299615	
	EPA 300.0 Rev. 2.1	Chloride	8.5		mg Cl/L	P299819	
		Sulfate	0.76		mg SO4/L	P299821	
	SM 2120 B	Color (true)	220		PCU	P299619	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	71		mg/L	P300122	
	SM 2540 D-97	TSS	2	I	mg/L	P300003	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P300249	
1776134	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P300155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P299902	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P299803	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P300001	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P299916	
1776140	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P299609	

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: 19010071 Cedar Hamp register

Collection Date/Time: 03/01/2016 10:35

Field ID: 19010071 Cedar Hamp register

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776129	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P299616	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P299819	
		Sulfate	1.0		mg SO4/L	P299821	

Field ID: 19010071 Cedar Hamp register

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776129	SM 2120 B	Color (true)	290		PCU	P299619	
	SM 2320 B-97	Total Alkalinity	5.3		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	97		mg/L	P300122	
	SM 2540 D-97	TSS	2	I	mg/L	P300003	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P300249	
1776135	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P300155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P299902	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P299936	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P300005	
	SM 5310 B-00	Organic Carbon	30		mg C/L	P299916	
1776141	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P299609	

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: 19010123 Un.Branch at 125

Collection Date/Time: 03/01/2016 10:55

Field ID: 19010123 Un.Branch at 125

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776130	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P299616	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P299819	
		Sulfate	1.3		mg SO4/L	P299821	
	SM 2120 B	Color (true)	190		PCU	P299619	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	73		mg/L	P300122	
	SM 2540 D-97	TSS	3	I	mg/L	P300003	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P300249	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P300155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P299903	
1776136	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P299936	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P300005	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P299916	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P299609	

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: 19010023 SMR at 23C

Collection Date/Time: 03/01/2016 11:20

Field ID: 19010023 SMR at 23C

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776131	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P299616	
	EPA 300.0 Rev. 2.1	Chloride	14	A	mg Cl/L	P299819	
		Sulfate	2.3	A	mg SO4/L	P299821	
	SM 2120 B	Color (true)	230		PCU	P299619	
	SM 2320 B-97	Total Alkalinity	9.9		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	97		mg/L	P300122	
	SM 2540 D-97	TSS	3	I	mg/L	P300003	

Field ID: 19010023 SMR at 23C

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776131	SM 4500 F-C-97	Fluoride	0.062	I	mg F/L	P300249	
1776137	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P300155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P299903	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P299936	
	EPA 365.1 Rev. 2.0	Total-P	0.065		mg P/L	P300005	
	SM 5310 B-00	Organic Carbon	26		mg C/L	P299916	
1776143	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P299609	

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: 19010021 SMR S at 90

Collection Date/Time: 03/01/2016 11:40

Field ID: 19010021 SMR S at 90

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776132	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P299616	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P299819	
		Sulfate	2.4		mg SO4/L	P299821	
	SM 2120 B	Color (true)	250		PCU	P299619	
	SM 2320 B-97	Total Alkalinity	6.8		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	95		mg/L	P300119	
	SM 2540 D-97	TSS	2	I	mg/L	P299999	
	SM 4500 F-C-97	Fluoride	0.062	I	mg F/L	P300249	
1776138	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P300155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P299903	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P299936	
	EPA 365.1 Rev. 2.0	Total-P	0.098		mg P/L	P300005	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P299917	
1776144	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.075		mg P/L	P299609	

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: P299615

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P299616

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: P299819

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299821

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300155

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299902

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299903

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299803

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299936

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300001

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300005

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: P299609

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

Reference Method: SM 2120 B
Batch ID: P299619

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300245

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

Reference Method: SM 2540 C-97
Batch ID: P300119

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P300122

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299999

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300003

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299916

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P299917

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: P299819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299821

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300155

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299902

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299903

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299936

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: P300001

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299609

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

Reference Method: SM 2320 B-97
Batch ID: P300245

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

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.7		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P299917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776131	Chloride	104		P	90 - 110
1776132	Chloride	106		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776131	Sulfate	101		P	90 - 110
1776132	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776105	Ammonia-N	97.3	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776103	Kjeldahl Nitrogen	93.2	94.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776136	Kjeldahl Nitrogen	104	94.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776052	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299936

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776135	NO2NO3-N	95.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300001

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776052	Total-P	97.8	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776135	Total-P	96.9	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776110	O-Phosphate-P	96.9	97.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776724	Fluoride	98.5	99.1	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P299916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776049	Organic Carbon	92.9	93.2	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P299917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776138	Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776010	Turbidity	3.08	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776129	Turbidity	1.65	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776131	Chloride	0.924	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776131	Sulfate	4.05	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776105	Ammonia-N	0.566	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776103	Kjeldahl Nitrogen	0.888	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776136	Kjeldahl Nitrogen	6.66	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776052	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776135	NO2NO3-N	0.495	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776052	Total-P	1.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776135	Total-P	0.819	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776110	O-Phosphate-P	0.617	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776147	Color (true)	0.261	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P300245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776724	Total Alkalinity	1.16	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P300119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775849	TDS	7.62	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P300122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776100	TDS	5.19	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776724	Fluoride	0.490	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776049	Organic Carbon	0.312	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P299917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776138	Organic Carbon	0.459	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 300.0 Rev. 2.1
Run ID: A67933
Included Lab Sample IDs: 1776127, 1776128, 1776129, 1776130, 1776131, 1776132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	102	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A67933

Included Lab Sample IDs: 1776127, 1776128, 1776129, 1776130, 1776131, 1776132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	100	96.8	P/P	90 - 110
Sulfate	96.8	101	P/P	90 - 110
Sulfate	97.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A67950

Included Lab Sample IDs: 1776139, 1776140, 1776141, 1776142, 1776143, 1776144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.5	P/P	90 - 110
O-Phosphate-P	98.6	98.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67951

Included Lab Sample IDs: 1776127, 1776128, 1776129, 1776130, 1776131, 1776132

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 2120 B

Run ID: A67952

Included Lab Sample IDs: 1776127, 1776128, 1776129, 1776130, 1776131, 1776132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.2	96.8	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68011

Included Lab Sample IDs: 1776133, 1776134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A68073

Included Lab Sample IDs: 1776133, 1776134, 1776135, 1776136, 1776137, 1776138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	95.4	P/P	90 - 110
Organic Carbon	95.2	94.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68079

Included Lab Sample IDs: 1776135, 1776136, 1776137, 1776138

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68121

Included Lab Sample IDs: 1776137, 1776138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68141

Included Lab Sample IDs: 1776133, 1776134

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68144

Included Lab Sample IDs: 1776133, 1776134, 1776135, 1776136, 1776137, 1776138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.8	P/P	90 - 110
Ammonia-N	99.8	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68166

Included Lab Sample IDs: 1776135, 1776136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68179

Included Lab Sample IDs: 1776127, 1776128, 1776129, 1776130, 1776131, 1776132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68179

Included Lab Sample IDs: 1776127, 1776128, 1776129, 1776130, 1776131, 1776132

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68196

Included Lab Sample IDs: 1776133, 1776134, 1776135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.5	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68240

Included Lab Sample IDs: 1776136, 1776137, 1776138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.9	95.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68240

Included Lab Sample IDs: 1776136, 1776137, 1776138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.5	94.4	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				3.08	
	Turbidity				1.65	
EPA 300.0 Rev. 2.1	Chloride	106	104 106		0.924	
	Sulfate	102	101 101		4.05	
EPA 350.1 Rev. 2.0	Ammonia-N	98.3	97.3 98.0			0.566
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.2	93.2 94.2			0.888
	Kjeldahl Nitrogen	110	104 94.4			6.66
EPA 353.2 Rev. 2.0	NO2NO3-N	105	105 105			0.0
	NO2NO3-N	99.0	95.5			0.495
EPA 365.1 Rev. 2.0	Total-P	95.5	97.8 96.8			1.05
	Total-P	96.8	96.9 96.0			0.819
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.9 97.5			0.617
SM 2120 B	Color (true)				0.261	
SM 2320 B-97	Total Alkalinity	101			1.16	
SM 2540 C-97	TDS				7.62	
	TDS				5.19	
SM 4500 F-C-97	Fluoride	98.4	98.5 99.1			0.490
SM 5310 B-00	Organic Carbon	93.7	92.9 93.2			0.312
	Organic Carbon	94.0	96.4			0.459

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1776133, 1776134, 1776135, 1776136, 1776137, 1776138
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1776133, 1776134, 1776135, 1776136, 1776137, 1776138
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1776133, 1776134, 1776135, 1776136, 1776137, 1776138
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1776133, 1776134, 1776135, 1776136, 1776137, 1776138
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1776139, 1776140, 1776141, 1776142, 1776143, 1776144

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1776133, 1776134, 1776135, 1776136, 1776137, 1776138

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/02/2016			03/02/2016 15:05	Sima Feizi	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
EPA 300.0 Rev. 2.1	03/02/2016			03/04/2016	Ping Hua	1776131, 1776132
	03/02/2016			03/05/2016	Ping Hua	1776127, 1776128, 1776129, 1776130
EPA 350.1 Rev. 2.0	03/02/2016			03/10/2016	Diana M. Turner	1776133, 1776134, 1776135, 1776136, 1776137, 1776138
EPA 351.2 Rev. 2.0	03/02/2016	03/08/2016	Sofia Elnemr	03/14/2016	Rochelle Y Jackson	1776133, 1776134, 1776135, 1776136, 1776137, 1776138
EPA 353.2 Rev. 2.0	03/02/2016			03/04/2016	Virginia P. Brown	1776133, 1776134
	03/02/2016			03/08/2016	Peter D. Kaus	1776135, 1776136, 1776137, 1776138
EPA 365.1 Rev. 2.0	03/02/2016	03/09/2016	Christopher Armour	03/09/2016	Lipi Saha	1776137, 1776138
	03/02/2016	03/09/2016	Christopher Armour	03/10/2016	Lipi Saha	1776133, 1776134, 1776135, 1776136
EPA 365.1 Rev. 2.0 dissolved	03/02/2016			03/02/2016 14:58	Julia Storbeck	1776140
	03/02/2016			03/02/2016 14:59	Julia Storbeck	1776141
	03/02/2016			03/02/2016 15:00	Julia Storbeck	1776142
	03/02/2016			03/02/2016 15:01	Julia Storbeck	1776143
	03/02/2016			03/02/2016 15:02	Julia Storbeck	1776144
	03/02/2016			03/02/2016 15:28	Julia Storbeck	1776139
SM 2120 B	03/02/2016			03/02/2016 16:51	Rochelle Y Jackson	1776127
	03/02/2016			03/02/2016 16:52	Rochelle Y Jackson	1776128
	03/02/2016			03/02/2016 16:53	Rochelle Y Jackson	1776129, 1776130
	03/02/2016			03/02/2016 16:54	Rochelle Y Jackson	1776131
	03/02/2016			03/02/2016 16:55	Rochelle Y Jackson	1776132
SM 2320 B-97	03/02/2016			03/10/2016	Dale L. Simmons	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 2540 C-97	03/02/2016			03/04/2016	Yijie Li	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 2540 D-97	03/02/2016			03/04/2016	Yijie Li	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 4500 F-C-97	03/02/2016			03/10/2016	Dale L. Simmons	1776127, 1776128, 1776129, 1776130, 1776131, 1776132
SM 5310 B-00	03/02/2016			03/05/2016	Sofia Elnemr	1776133, 1776134, 1776135, 1776136, 1776137, 1776138