Chemical Analysis Report

WQAP-2017-05-04-03

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

Event Description: **RUN 5**
Request ID: **RQ-2017-05-01-36**
Customer: **WQAP**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 01-JUN-2017 16:18

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: Skinner **Collection Date/Time: 05/03/2017 10:10**

Field ID: G5SW0043 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896394	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P324689	
	EPA 300.0 Rev. 2.1	Chloride	2.5	A	mg Cl/L	P325109	
		Sulfate	0.20	UA	mg SO4/L	P325112	
	SM 2120 B	Color (true)	15		PCU	P324632	
	SM 2320 B-97	Total Alkalinity	43		mg CaCO3/L	P325400	
	SM 2540 C-97	TDS	62		mg/L	P325501	
	SM 2540 D-97	TSS	2	U	mg/L	P325304	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P325739	RPD
1896398	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P324640	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P324983	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324973	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P324808	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P324766	
1896402	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324707	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Tookie **Collection Date/Time: 05/03/2017 11:30**

Field ID: G5SW0121 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896395	EPA 180.1 Rev. 2.0	Turbidity	6.4		NTU	P324689	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P325109	
		Sulfate	5.9		mg SO4/L	P325112	
	SM 2120 B	Color (true)	19		PCU	P324632	
	SM 2320 B-97	Total Alkalinity	8.4		mg CaCO3/L	P325400	
	SM 2540 C-97	TDS	61		mg/L	P325501	
	SM 2540 D-97	TSS	8	I	mg/L	P325304	
	SM 4500 F-C-97	Fluoride	0.058	I	mg F/L	P325739	RPD
1896399	EPA 350.1 Rev. 2.0	Ammonia-N	0.072		mg N/L	P324640	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P324983	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324973	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P324808	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P324766	
1896403	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324707	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Neff **Collection Date/Time: 05/03/2017 12:30**

Field ID: G4SW0087 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896396	EPA 180.1 Rev. 2.0	Turbidity	55		NTU	P324690	

Field ID: G4SW0087 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896396	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P325109	
		Sulfate	3.9		mg SO4/L	P325112	
	SM 2120 B	Color (true)	110	A	PCU	P324646	
	SM 2320 B-97	Total Alkalinity	7.8	J	mg CaCO3/L	P325401	
	SM 2540 C-97	TDS	92		mg/L	P325501	
	SM 2540 D-97	TSS	144		mg/L	P325304	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P325404	RPD
1896400	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P324640	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	6.9		mg N/L	P324984	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324973	
	EPA 365.1 Rev. 2.0	Total-P	0.54		mg P/L	P324808	
	SM 5310 B-00	Organic Carbon	35		mg C/L	P324766	
1896404	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P324707	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2320 B-97: The result may be biased high due to background contamination.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lola-West **Collection Date/Time: 05/03/2017 13:20**

Field ID: G5SW0018 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896397	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P324689	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P325109	
		Sulfate	6.2		mg SO4/L	P325112	
	SM 2120 B	Color (true)	8.3		PCU	P324633	
	SM 2320 B-97	Total Alkalinity	37	A	mg CaCO3/L	P325401	
	SM 2540 C-97	TDS	103		mg/L	P325501	
	SM 2540 D-97	TSS	2	I	mg/L	P325304	
	SM 4500 F-C-97	Fluoride	0.10	J	mg F/L	P325404	RPD
1896401	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P324640	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P324984	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324973	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P324808	
	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P324766	
1896405	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324707	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324689

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324689

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324690

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325109

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325112

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324640

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324983

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324984

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324973

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324808

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: P324707

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

Reference Method: SM 2120 B
Batch ID: P324632

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P324633

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P324646

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P325400

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

Reference Method: SM 2320 B-97
Batch ID: P325401

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

Reference Method: SM 2540 C-97
Batch ID: P325501

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P325304

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P324766

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: P325109

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325112

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324640

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324983

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324984

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324973

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324808

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324707

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

Reference Method: SM 2320 B-97
Batch ID: P325400

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P325401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.3		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P324766

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896394	Chloride	105		P	90 - 110
1896473	Chloride	105		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896394	Sulfate	99.2		P	90 - 110
1896473	Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896178	Ammonia-N	106	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896339	Kjeldahl Nitrogen	97.7	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896401	Kjeldahl Nitrogen	101	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896420	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896398	Total-P	104	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896156	O-Phosphate-P	98.1	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896397	Fluoride	97.0	101	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896078	Fluoride	99.7	104	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P324766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896398	Organic Carbon	97.8	97.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896338	Turbidity	5.08	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896426	Turbidity	0.324	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896394	Chloride	0.356	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896178	Ammonia-N	0.447	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896339	Kjeldahl Nitrogen	1.16	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896401	Kjeldahl Nitrogen	2.70	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896420	NO2NO3-N	1.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896398	Total-P	3.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896156	O-Phosphate-P	0.213	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P324632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896338	Color (true)	1.18	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P324633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896475	Color (true)	1.26	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P324646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896396	Color (true)	1.01	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896144	Total Alkalinity	0.0829	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P325401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896397	Total Alkalinity	0.451	Sample	P	0 - 4.8

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P325501

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896345	TDS	2.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896397	Fluoride	3.56	Spike	F	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896078	Fluoride	3.49	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P324766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896398	Organic Carbon	0.391	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: A76192
Included Lab Sample IDs: 1896394, 1896395, 1896397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.7	P/P	85 - 115
Color (true)	101	101	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A76193
Included Lab Sample IDs: 1896398, 1896399, 1896400, 1896401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	106	105	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A76194
Included Lab Sample IDs: 1896396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76202
Included Lab Sample IDs: 1896394, 1896395, 1896396, 1896397

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76210
Included Lab Sample IDs: 1896402, 1896403, 1896404, 1896405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.2	P/P	90 - 110
O-Phosphate-P	99.5	98.5	P/P	90 - 110
O-Phosphate-P	99.9	99.3	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A76230
Included Lab Sample IDs: 1896398, 1896399, 1896400, 1896401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76259
Included Lab Sample IDs: 1896400

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A76269
Included Lab Sample IDs: 1896394, 1896395, 1896396, 1896397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	102	103	P/P	90 - 110
Sulfate	95.2	96.5	P/P	90 - 110
Sulfate	98.5	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76286
Included Lab Sample IDs: 1896398, 1896399, 1896401

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76313
Included Lab Sample IDs: 1896398, 1896399, 1896400, 1896401

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 351.2 Rev. 2.0
Run ID: A76391
Included Lab Sample IDs: 1896398, 1896399, 1896400, 1896401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	105	P/P	90 - 110
Kjeldahl Nitrogen	104	100	P/P	90 - 110
Kjeldahl Nitrogen	105	105	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A76469
Included Lab Sample IDs: 1896394, 1896395, 1896396, 1896397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110
Total Alkalinity	102	101	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A76469
Included Lab Sample IDs: 1896396, 1896397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A76633
Included Lab Sample IDs: 1896394, 1896395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.0	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					5.08	
	Turbidity					0.324	
EPA 300.0 Rev. 2.1	Chloride	106	105	105		0.356	
	Sulfate	98.5	99.2	98.7			
EPA 350.1 Rev. 2.0	Ammonia-N	106	106	105			0.447
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.4	97.7	99.4			1.16
	Kjeldahl Nitrogen	100	101	97.2			2.70
EPA 353.2 Rev. 2.0	NO2NO3-N	103	101	102			1.47
EPA 365.1 Rev. 2.0	Total-P	102	104	108			3.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	98.1	97.8			0.213
SM 2120 B	Color (true)					1.18	
	Color (true)					1.26	
	Color (true)					1.01	
SM 2320 B-97	Total Alkalinity	103				0.0829	

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
SM 2320 B-97	Total Alkalinity	103				0.451	
SM 2540 C-97	TDS					2.16	
SM 4500 F-C-97	Fluoride	94.3	97.0	101			3.56
	Fluoride	101	99.7	104			3.49
SM 5310 B-00	Organic Carbon	98.4	97.8	97.3			0.391

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1896394, 1896395, 1896396, 1896397
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1896394, 1896395, 1896396, 1896397
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1896394, 1896395, 1896396, 1896397
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1896398, 1896399, 1896400, 1896401
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1896398, 1896399, 1896400, 1896401
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1896398, 1896399, 1896400, 1896401
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1896398, 1896399, 1896400, 1896401
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1896402, 1896403, 1896404, 1896405
SM 2120 B / E31780	True Color measured at 450 nm	1896394, 1896395, 1896396, 1896397
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1896394, 1896395, 1896396, 1896397
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1896394, 1896395, 1896396, 1896397
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1896394, 1896395, 1896396, 1896397
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1896394, 1896395, 1896396, 1896397
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1896398, 1896399, 1896400, 1896401

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/04/2017			05/04/2017 17:05	Sima Feizi	1896394, 1896395, 1896396, 1896397
EPA 300.0 Rev. 2.1	05/04/2017			05/11/2017	Ping Hua	1896394, 1896395, 1896396, 1896397
EPA 350.1 Rev. 2.0	05/04/2017			05/04/2017	Julie Michelle Frank	1896398, 1896399, 1896400, 1896401
EPA 351.2 Rev. 2.0	05/04/2017	05/10/2017	Adrian Shelby	05/12/2017	Joseph Suarez	1896398, 1896399, 1896400, 1896401
EPA 353.2 Rev. 2.0	05/04/2017			05/09/2017	Beverly Y. Sanders	1896398, 1896399, 1896400, 1896401
EPA 365.1 Rev. 2.0	05/04/2017	05/08/2017	Vijayalakshmi Reddy	05/09/2017	Christopher Armour	1896400
	05/04/2017	05/08/2017	Vijayalakshmi Reddy	05/09/2017	Lipi Saha	1896398, 1896399, 1896401
EPA 365.1 Rev. 2.0 dissolved	05/04/2017			05/04/2017 15:12	Anthony C. Onicha	1896402
	05/04/2017			05/04/2017 16:10	Anthony C. Onicha	1896403
	05/04/2017			05/04/2017 16:28	Anthony C. Onicha	1896404
	05/04/2017			05/04/2017 16:29	Anthony C. Onicha	1896405
SM 2120 B	05/04/2017			05/04/2017 15:49	Julia Storbeck	1896394
	05/04/2017			05/04/2017 15:50	Julia Storbeck	1896395
	05/04/2017			05/04/2017 15:54	Julia Storbeck	1896397
	05/04/2017			05/04/2017 16:39	Julia Storbeck	1896396
SM 2320 B-97	05/04/2017			05/15/2017	Dale L. Simmons	1896394
	05/04/2017			05/16/2017	Dale L. Simmons	1896395, 1896396, 1896397
SM 2540 C-97	05/04/2017			05/08/2017	Sima Feizi	1896394, 1896395, 1896396, 1896397
SM 2540 D-97	05/04/2017			05/08/2017	Sima Feizi	1896394, 1896395, 1896396, 1896397
SM 4500 F-C-97	05/04/2017			05/16/2017	Dale L. Simmons	1896396, 1896397
	05/04/2017			05/23/2017	Dale L. Simmons	1896394, 1896395
SM 5310 B-00	05/04/2017			05/05/2017	Julie Michelle Frank	1896398, 1896399, 1896400, 1896401