

Chemical Analysis Report

SO-DIST-2019-11-19-01

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

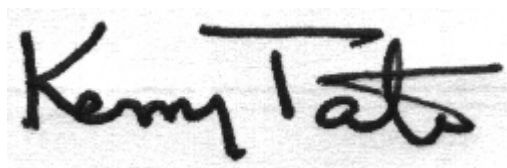
Event Description: **2019 SMP : Keys**
Request ID: **RQ-2019-11-18-64**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 09-DEC-2019 09:56

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: 8080 @ENRG3 Nearshore#1

Collection Date/Time: 11/18/2019 14:00

Field ID: G5SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137077	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P374454	
	EPA 300.0	Bromide	72		mg Br/L	P374771	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P374790	
	SM 2540 D-97	TSS	3	U	mg/L	P375108	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P374793	
2137081	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P374722	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P374746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374570	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P374911	
	SM 5310 B-00	Organic Carbon	1.6	I	mg C/L	P374644	
2137085	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P374448	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: WBID 8080 ENR 3 Site 2

Collection Date/Time: 11/18/2019 14:20

Field ID: G5SD0097

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137078	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P374454	
	EPA 300.0	Bromide	73		mg Br/L	P374771	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P374790	
	SM 2540 D-97	TSS	3	U	mg/L	P375108	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P374793	
2137082	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P374722	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P374746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374570	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P374911	
	SM 5310 B-00	Organic Carbon	1.1	I	mg C/L	P374889	
2137086	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P374448	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: WBID 8080 ENR 6 Site 1

Collection Date/Time: 11/18/2019 14:50

Field ID: G5SD0098

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137079	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P374454	
	EPA 300.0	Bromide	73		mg Br/L	P374771	
	SM 2320 B-97	Total Alkalinity	122	A	mg CaCO3/L	P374790	
	SM 2540 D-97	TSS	3	U	mg/L	P375108	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P374793	
2137083	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P374722	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P374746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374570	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P374911	
	SM 5310 B-00	Organic Carbon	1.5	I	mg C/L	P375007	
2137087	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P374448	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: WBID 8080 ENR 6 Site 1

Collection Date/Time: 11/18/2019 14:55

Field ID: G5SD0098_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137089	EPA 180.1 Rev. 2.0	Turbidity	0.15		NTU	P374455	
	EPA 300.0	Bromide	73		mg Br/L	P374771	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P374790	
	SM 2540 D-97	TSS	3	U	mg/L	P375108	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P374793	
2137091	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P374722	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P374746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374570	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P374911	
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P375007	
2137093	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P374448	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: WBID 8080 ENR 6 Site 2

Collection Date/Time: 11/18/2019 15:10

Field ID: G5SD0099

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137080	EPA 180.1 Rev. 2.0	Turbidity	0.25		NTU	P374454	
	EPA 300.0	Bromide	73		mg Br/L	P374771	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P374790	
	SM 2540 D-97	TSS	3	U	mg/L	P375108	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P374793	
2137084	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P374722	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P374746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374570	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P374911	
	SM 5310 B-00	Organic Carbon	1.0	U	mg C/L	P374889	
2137088	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P374448	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Field Blank

Collection Date/Time: 11/18/2019 15:35

Field ID: FB-11182019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137090	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P374455	
	EPA 300.0	Bromide	0.013	U	mg Br/L	P374771	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P374991	
	SM 2540 D-97	TSS	2	U	mg/L	P375107	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P374674	
2137092	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P374721	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P374784	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374484	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P374912	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P374887	
2137094	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P374447	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374454

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374455

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P374771

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374721

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374722

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374746

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374784

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374484

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374570

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374911

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374912

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374447

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374448

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

Reference Method: SM 2320 B-97
Batch ID: P374790

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

Reference Method: SM 2320 B-97
Batch ID: P374991

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

Reference Method: SM 2540 D-97
Batch ID: P375107

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P375108

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374674

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: P374793

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P374644

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

Reference Method: SM 5310 B-00
Batch ID: P374887

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

Reference Method: SM 5310 B-00
Batch ID: P374889

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

Reference Method: SM 5310 B-00
Batch ID: P375007

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P374771

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374721

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374722

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374746

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374784

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374484

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374570

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374911

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374912

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374447

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374448

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: P374790

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P374991

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P374674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.2		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P374793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P374644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	106		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P374887

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P374889

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P375007

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P374771

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136905	Bromide	99.2	97.9	P/P	90 - 110
2137398	Bromide	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137147	Ammonia-N	99.0	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374722

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137082	Ammonia-N	103	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374746

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137081	Kjeldahl Nitrogen	99.5	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137215	Kjeldahl Nitrogen	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136963	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374570

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136741	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136741	Total-P	92.6	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136983	Total-P	102	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136965	O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137085	O-Phosphate-P	95.7	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P374674

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136908	Fluoride	94.4	95.0	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P374793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137079	Fluoride	94.1	94.9	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P374644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136609	Organic Carbon	106	103	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P374887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137153	Organic Carbon	103	103	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P374889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137468	Organic Carbon	102	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P375007

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137458	Organic Carbon	103	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137041	Turbidity	3.29	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137152	Turbidity	7.47	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P374771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136905	Bromide	1.12	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137147	Ammonia-N	0.433	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374722

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137082	Ammonia-N	2.22	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137081	Kjeldahl Nitrogen	3.52	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137215	Kjeldahl Nitrogen	0.277	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136963	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136741	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136741	Total-P	5.58	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136983	Total-P	2.11	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136965	O-Phosphate-P	0.399	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137085	O-Phosphate-P	0.936	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P374790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137079	Total Alkalinity	0.203	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P374991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136909	Total Alkalinity	0.581	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P374674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136908	Fluoride	0.487	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P374793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137079	Fluoride	0.483	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P374644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136609	Organic Carbon	2.50	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P374887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137153	Organic Carbon	0.234	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P374889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137468	Organic Carbon	0.478	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P375007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137458	Organic Carbon	0.459	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A95827

Included Lab Sample IDs: 2137085, 2137086, 2137087, 2137088, 2137093, 2137094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.8	P/P	90 - 110
O-Phosphate-P	99.7	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A95832

Included Lab Sample IDs: 2137077, 2137078, 2137079, 2137080, 2137089, 2137090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A95842

Included Lab Sample IDs: 2137092

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A95875

Included Lab Sample IDs: 2137081, 2137082, 2137083, 2137084, 2137091

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

Reference Method: SM 5310 B-00

Run ID: A95899

Included Lab Sample IDs: 2137081

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

Reference Method: SM 4500 F-C-97

Run ID: A95902

Included Lab Sample IDs: 2137090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.6	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A95920

Included Lab Sample IDs: 2137081, 2137082, 2137083, 2137084, 2137091, 2137092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.8	P/P	90 - 110
Ammonia-N	98.5	100	P/P	90 - 110
Ammonia-N	99.8	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0

Run ID: A95940

Included Lab Sample IDs: 2137077, 2137078, 2137079, 2137080, 2137089, 2137090

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

Reference Method: SM 2320 B-97

Run ID: A95947

Included Lab Sample IDs: 2137077, 2137078, 2137079, 2137080, 2137089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	106	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A95947

Included Lab Sample IDs: 2137077, 2137078, 2137079, 2137080, 2137089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	105	P/P	90 - 110
Fluoride	102	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A95973

Included Lab Sample IDs: 2137082, 2137084, 2137092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	100	P/P	90 - 110
Organic Carbon	104	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A95977

Included Lab Sample IDs: 2137081, 2137082, 2137083, 2137084, 2137091

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A95999

Included Lab Sample IDs: 2137092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	109	106	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A96025

Included Lab Sample IDs: 2137090

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A96030

Included Lab Sample IDs: 2137081, 2137082, 2137083, 2137084, 2137091, 2137092

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

Reference Method: SM 5310 B-00

Run ID: A96031

Included Lab Sample IDs: 2137083, 2137091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	105	103	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					3.29	
	Turbidity					7.47	
EPA 300.0	Bromide	99.2	99.2	97.9	95.7		1.12
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.0	99.6			0.433
	Ammonia-N	99.1	103	106			2.22
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	99.5	95.8			3.52
	Kjeldahl Nitrogen	99.0	102	103			0.277
EPA 353.2 Rev. 2.0	NO2NO3-N	101	101	101			0.0
	NO2NO3-N	99.5	102	102			0.491
EPA 365.1 Rev. 2.0	Total-P	105	92.6	98.3			5.58
	Total-P	102	102	105			2.11
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	100	100			0.399
	O-Phosphate-P	98.7	95.7	96.6			0.936
SM 2320 B-97	Total Alkalinity	101				0.203	
	Total Alkalinity	104				0.581	
SM 4500 F-C-97	Fluoride	94.2	94.4	95.0			0.487
	Fluoride	98.4	94.1	94.9			0.483
SM 5310 B-00	Organic Carbon	106	106	103			2.50
	Organic Carbon	102	103	103			0.234
	Organic Carbon	102	102	102			0.478
	Organic Carbon	105	103	104			0.459

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2137077, 2137078, 2137079, 2137080, 2137089, 2137090
EPA 300.0 / E31780	Bromide in aqueous matrices	2137077, 2137078, 2137079, 2137080, 2137089, 2137090
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2137081, 2137082, 2137083, 2137084, 2137091, 2137092
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2137081, 2137082, 2137083, 2137084, 2137091, 2137092
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2137081, 2137082, 2137083, 2137084, 2137091, 2137092
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2137081, 2137082, 2137083, 2137084, 2137091, 2137092
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2137085, 2137086, 2137087, 2137088, 2137093, 2137094
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2137077, 2137078, 2137079, 2137080, 2137089, 2137090
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2137077, 2137078, 2137079, 2137080, 2137089, 2137090
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2137077, 2137078, 2137079, 2137080, 2137089, 2137090
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2137081, 2137082, 2137083, 2137084, 2137091, 2137092

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	11/19/2019			11/19/2019 16:22	Samantha Davila	2137077, 2137078, 2137079, 2137080, 2137089, 2137090
EPA 300.0	11/19/2019			11/22/2019 16:17	Lipi Saha	2137077
	11/19/2019			11/22/2019 16:34	Lipi Saha	2137078
	11/19/2019			11/22/2019 16:51	Lipi Saha	2137079
	11/19/2019			11/22/2019 17:08	Lipi Saha	2137080
	11/19/2019			11/22/2019 17:25	Lipi Saha	2137089
EPA 350.1 Rev. 2.0	11/19/2019			11/22/2019 17:42	Lipi Saha	2137090
	11/19/2019			11/22/2019 11:36	Ping Hua	2137092
	11/19/2019			11/22/2019 11:52	Ping Hua	2137082
	11/19/2019			11/22/2019 12:03	Ping Hua	2137081
	11/19/2019			11/22/2019 12:04	Ping Hua	2137083
EPA 351.2 Rev. 2.0	11/19/2019			11/22/2019 12:06	Ping Hua	2137084
	11/19/2019			11/22/2019 12:07	Ping Hua	2137091
	11/19/2019	11/25/2019 11:47	Sima Feizi	11/26/2019 15:03	Jhamieka S. Greenwood	2137081
	11/19/2019	11/25/2019 11:47	Sima Feizi	11/26/2019 15:16	Jhamieka S. Greenwood	2137082
	11/19/2019	11/25/2019 11:47	Sima Feizi	11/26/2019 15:17	Jhamieka S. Greenwood	2137083
EPA 353.2 Rev. 2.0	11/19/2019	11/25/2019 11:47	Sima Feizi	11/26/2019 15:19	Jhamieka S. Greenwood	2137084
	11/19/2019	11/25/2019 11:47	Sima Feizi	11/26/2019 15:20	Jhamieka S. Greenwood	2137091
	11/19/2019	11/25/2019 16:50	Jhamieka S. Greenwood	11/26/2019 18:06	Jhamieka S. Greenwood	2137092
	11/19/2019			11/20/2019 09:51	Beverly Y. Sanders	2137092
	11/19/2019			11/21/2019 10:42	Beverly Y. Sanders	2137081
EPA 365.1 Rev. 2.0	11/19/2019			11/21/2019 10:43	Beverly Y. Sanders	2137082
	11/19/2019			11/21/2019 10:44	Beverly Y. Sanders	2137083
	11/19/2019			11/21/2019 10:45	Beverly Y. Sanders	2137091
	11/19/2019			11/21/2019 10:46	Beverly Y. Sanders	2137084
	11/19/2019	11/26/2019 14:09	Yen Ta	11/27/2019 14:07	Benjamin T. Nordmann	2137081
EPA 365.1 Rev. 2.0 dissolved	11/19/2019	11/26/2019 14:09	Yen Ta	11/27/2019 14:08	Benjamin T. Nordmann	2137082
	11/19/2019	11/26/2019 14:09	Yen Ta	11/27/2019 14:09	Benjamin T. Nordmann	2137083
	11/19/2019	11/26/2019 14:09	Yen Ta	11/27/2019 14:10	Benjamin T. Nordmann	2137084
	11/19/2019	11/26/2019 14:09	Yen Ta	11/27/2019 14:11	Benjamin T. Nordmann	2137091
	11/19/2019	11/26/2019 14:09	Yen Ta	11/27/2019 14:25	Benjamin T. Nordmann	2137092
SM 2320 B-97	11/19/2019			11/19/2019 13:59	Lipi Saha	2137085
	11/19/2019			11/19/2019 14:24	Lipi Saha	2137086
	11/19/2019			11/19/2019 14:25	Lipi Saha	2137087
	11/19/2019			11/19/2019 14:26	Lipi Saha	2137088, 2137093
	11/19/2019			11/19/2019 14:27	Lipi Saha	2137094
	11/19/2019			11/25/2019 05:11	Dale L. Simmons	2137079
	11/19/2019			11/25/2019 05:23	Dale L. Simmons	2137077
	11/19/2019			11/25/2019 05:34	Dale L. Simmons	2137078

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	11/19/2019			11/25/2019 05:46	Dale L. Simmons	2137080
	11/19/2019			11/25/2019 05:58	Dale L. Simmons	2137089
	11/19/2019			11/28/2019 00:48	Dale L. Simmons	2137090
SM 2540 D-97	11/19/2019			11/22/2019 15:21	Yijie Li	2137077, 2137078, 2137079, 2137080, 2137089, 2137090
SM 4500 F-C-97	11/19/2019			11/22/2019 05:32	Dale L. Simmons	2137090
	11/19/2019			11/25/2019 02:13	Dale L. Simmons	2137079
	11/19/2019			11/25/2019 03:03	Dale L. Simmons	2137077
	11/19/2019			11/25/2019 03:07	Dale L. Simmons	2137078
	11/19/2019			11/25/2019 03:11	Dale L. Simmons	2137080
SM 5310 B-00	11/19/2019			11/25/2019 03:16	Dale L. Simmons	2137089
	11/19/2019			11/22/2019 07:30	Lauren Lees	2137081
	11/19/2019			11/25/2019 20:26	Lauren Lees	2137092
	11/19/2019			11/26/2019 09:59	Lauren Lees	2137082
	11/19/2019			11/26/2019 10:13	Lauren Lees	2137084
	11/19/2019			11/27/2019 10:55	Lauren Lees	2137083
	11/19/2019			11/27/2019 11:10	Lauren Lees	2137091