

Chemical Analysis Report

CEN-DIST-2019-01-25-02

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

Event Description: **Crane Crk / Eau X2**
Request ID: **RQ-2019-01-21-26**
Customer: **CEN-DIST**
Project ID: **SMP**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 15-FEB-2019 15:19



NON-CONFORMANCE REPORT INCLUDED

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: EAU GALLIE RIVER @ BOAT RAMP

Collection Date/Time: 01/23/2019 12:38

Field ID: G5CE0088

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056832	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P357872	
	EPA 300.0	Bromide	35		mg Br/L	P358982	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P358272	
	SM 2540 D-97	TSS	8	I	mg/L	P358200	
	SM 4500 F-C-97	Fluoride	0.82		mg F/L	P358275	
2056835	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P357947	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P357929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P357963	
	EPA 365.1 Rev. 2.0	Total-P	0.087		mg P/L	P357935	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P357978	
2056838	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P357852	

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: EAU GALLIE RIVER DOWNSTREAM OF US
 HWY 1 BRIDGE**

Collection Date/Time: 01/23/2019 12:27

Field ID: G5CE0096

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056833	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P357872	
	EPA 300.0	Bromide	31		mg Br/L	P358168	
	SM 2320 B-97	Total Alkalinity	124		mg CaCO3/L	P358272	
	SM 2540 D-97	TSS	13		mg/L	P358200	
	SM 4500 F-C-97	Fluoride	0.82		mg F/L	P358275	
2056836	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P357947	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P357929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.060		mg N/L	P357963	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P357935	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P357978	
2056839	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	IQ	mg P/L	P357852	

Ref. Method and Comment:

EPA 300.0: Bromide: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Sample Location: CRANE CREEK @ 200M UPSTREAM OF RR BRIDGE

Collection Date/Time: 01/23/2019 11:43

Field ID: G5CE0097

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056834	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P357872	
	EPA 300.0	Bromide	23		mg Br/L	P358025	
	SM 2320 B-97	Total Alkalinity	150		mg CaCO3/L	P358272	
	SM 2540 D-97	TSS	6	I	mg/L	P358200	
	SM 4500 F-C-97	Fluoride	0.58		mg F/L	P358559	
2056837	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P358209	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P357929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P357963	
	EPA 365.1 Rev. 2.0	Total-P	0.080		mg P/L	P357935	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P357978	
2056840	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027	Q	mg P/L	P357852	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: The result was confirmed on 01/31/2019.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Sample Location: CRANE CREEK @ 200M UPSTREAM OF RR BRIDGE

Collection Date/Time: 01/23/2019 11:48

Field ID: G5CE0097_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056841	EPA 180.1 Rev. 2.0	Turbidity	5.1	A	NTU	P357872	
	EPA 300.0	Bromide	25		mg Br/L	P358025	
	SM 2320 B-97	Total Alkalinity	147		mg CaCO3/L	P358272	
	SM 2540 D-97	TSS	5	I	mg/L	P358200	
	SM 4500 F-C-97	Fluoride	0.61		mg F/L	P358559	
2056842	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P358190	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P357929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P357963	
	EPA 365.1 Rev. 2.0	Total-P	0.082		mg P/L	P357935	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P357978	
2056843	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030	Q	mg P/L	P357852	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: The result was confirmed on 01/31/2019.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Sample Location: WASHROOM

Collection Date/Time: 01/23/2019 12:00

Field ID: BLANK_01232019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056844	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P357872	
	EPA 300.0	Bromide	0.013	U	mg Br/L	P358025	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P358238	
	SM 2540 D-97	TSS	2	U	mg/L	P358198	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358242	
2056845	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P358185	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P357993	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P357917	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P358006	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P357977	
2056846	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P357851	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Non-Conformance Report

NCR ID: 7462

Event(s)

CEN-DIST-2019-01-25-02

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Samples arrived late

Observation: Samples arrived one or more days late by FedEx, samples received within the acceptable temperature range.

Resolution: Customer MIKE LINGER was contacted, email correspondence attached to sample submittal forms.

Authorized by/Date: Joshua Ayres 1/31/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357872

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P358025

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0
Batch ID: P358168

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0
Batch ID: P358982

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357947

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358190

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358209

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357929

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357963

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357935

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358006

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357852

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

Reference Method: SM 2320 B-97
Batch ID: P358238

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

Reference Method: SM 2320 B-97
Batch ID: P358272

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P358198

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358200

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P358242

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P358275

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P358559

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P357977

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

Reference Method: SM 5310 B-00
Batch ID: P357978

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: P358025

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

Reference Method: EPA 300.0
Batch ID: P358168

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

Reference Method: EPA 300.0
Batch ID: P358982

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357947

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358190

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358209

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357929

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357963

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: P357935

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358006

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357852

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

Reference Method: SM 2320 B-97
Batch ID: P358238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P358272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P358242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	91 - 105

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P358275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P358559

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357977

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P357978

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P358025

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054875	Bromide	107	92.9	P/P	90 - 110
2056871	Bromide	104	103	P/P	90 - 110

Reference Method: EPA 300.0
Batch ID: P358168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2058121	Bromide	92.8	96.2	P/P	90 - 110

Reference Method: EPA 300.0
Batch ID: P358982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2058620	Bromide	96.0		P	90 - 110
2061372	Bromide	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056121	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056819	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056842	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358209

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2058025	Ammonia-N	104	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055570	Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056875	Kjeldahl Nitrogen	98.9	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056817	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357963

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056835	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056835	Total-P	98.6	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056869	Total-P	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056947	O-Phosphate-P	92.6	92.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357852

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056839	O-Phosphate-P	92.1	93.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P358242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056815	Fluoride	95.4	94.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P358275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2058033	Fluoride	95.9	96.6	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P358559

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056834	Fluoride	98.6	98.6	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P357977

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056818	Organic Carbon	98.3		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P357978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056955	Organic Carbon	97.4	96.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056841	Turbidity	17.1	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P358025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054875	Bromide	14.1	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P358168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058121	Bromide	2.27	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P358982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058620	Bromide	0.790	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056121	Ammonia-N	0.326	Spike	P	0 - 15

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056819	Ammonia-N	0.674	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056842	Ammonia-N	0.0360	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358209

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058025	Ammonia-N	0.689	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055570	Kjeldahl Nitrogen	1.34	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056875	Kjeldahl Nitrogen	1.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056817	NO2NO3-N	0.447	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357963

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056835	NO2NO3-N	0.406	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056835	Total-P	0.232	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056869	Total-P	1.85	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056947	O-Phosphate-P	0.103	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056839	O-Phosphate-P	1.09	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P358238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056815	Total Alkalinity	0.921	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
 Batch ID: P358272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058033	Total Alkalinity	1.13	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
 Batch ID: P358242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056815	Fluoride	0.516	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
 Batch ID: P358275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058033	Fluoride	0.516	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
 Batch ID: P358559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056834	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P357977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056818	Organic Carbon	0.0911	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P357978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056955	Organic Carbon	0.425	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89025

Included Lab Sample IDs: 2056838, 2056839, 2056840, 2056843, 2056846

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.2	P/P	90 - 110
O-Phosphate-P	99.2	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89028

Included Lab Sample IDs: 2056832, 2056833, 2056834, 2056841, 2056844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89046

Included Lab Sample IDs: 2056845

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89059

Included Lab Sample IDs: 2056835, 2056836

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89063

Included Lab Sample IDs: 2056835, 2056836, 2056837, 2056842

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89065

Included Lab Sample IDs: 2056835, 2056836, 2056837, 2056842

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89070

Included Lab Sample IDs: 2056835, 2056836, 2056837, 2056842, 2056845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	100	P/P	90 - 110
Organic Carbon	102	99.4	P/P	90 - 110
Organic Carbon	99.4	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89076

Included Lab Sample IDs: 2056835, 2056836, 2056837, 2056842

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

Reference Method: EPA 300.0

Run ID: A89080

Included Lab Sample IDs: 2056833, 2056834, 2056841, 2056844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	104	93.6	P/P	90 - 110
Bromide	90.8	96.4	P/P	90 - 110
Bromide	93.6	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89096

Included Lab Sample IDs: 2056845

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89115

Included Lab Sample IDs: 2056845

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89123

Included Lab Sample IDs: 2056842, 2056845

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89146

Included Lab Sample IDs: 2056837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	97.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89154

Included Lab Sample IDs: 2056844

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A89154

Included Lab Sample IDs: 2056844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	98.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89166

Included Lab Sample IDs: 2056832, 2056833, 2056834, 2056841

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89166

Included Lab Sample IDs: 2056832, 2056833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89272

Included Lab Sample IDs: 2056834, 2056841

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	98.6	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A89435

Included Lab Sample IDs: 2056832

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	96.0	98.5	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					17.1	
EPA 300.0	Bromide	106	107	92.9	104		14.1
			103				
	Bromide	99.5	92.8	96.2			2.27
	Bromide	100	96.0	96.0		0.790	
EPA 350.1 Rev. 2.0	Ammonia-N	102	104	104			0.326
	Ammonia-N	97.5	102	103			0.674
	Ammonia-N	99.2	101	101			0.0360
	Ammonia-N	97.3	104	105			0.689
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	105	103			1.34
	Kjeldahl Nitrogen	109	98.9	101			1.27
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	102	102			0.447
	NO ₂ NO ₃ -N	99.0	101	100			0.406
EPA 365.1 Rev. 2.0	Total-P	100	98.6	98.4			0.232
	Total-P	107	105	103			1.85
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.8	92.6	92.7			0.103
	O-Phosphate-P	98.6	92.1	93.2			1.09
SM 2320 B-97	Total Alkalinity	101				0.921	
	Total Alkalinity	102				1.13	
SM 4500 F-C-97	Fluoride	96.7	95.4	94.9			0.516
	Fluoride	97.6	95.9	96.6			0.516
	Fluoride	99.4	98.6	98.6			0.0
SM 5310 B-00	Organic Carbon	97.4	98.3				0.0911
	Organic Carbon	96.2	97.4	96.9			0.425

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2056832, 2056833, 2056834, 2056841, 2056844
EPA 300.0 / E31780	Bromide in aqueous matrices	2056832, 2056833, 2056834, 2056841, 2056844
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2056835, 2056836, 2056837, 2056842, 2056845
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2056835, 2056836, 2056837, 2056842, 2056845
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2056835, 2056836, 2056837, 2056842, 2056845
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2056835, 2056836, 2056837, 2056842, 2056845
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2056838, 2056839, 2056840, 2056843, 2056846
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2056832, 2056833, 2056834, 2056841, 2056844
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2056832, 2056833, 2056834, 2056841, 2056844
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2056832, 2056833, 2056834, 2056841, 2056844
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2056835, 2056836, 2056837, 2056842, 2056845

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/25/2019			01/25/2019 11:26	Megan Treadwell	2056834
	01/25/2019			01/25/2019 11:34	Megan Treadwell	2056844
	01/25/2019			01/25/2019 11:35	Megan Treadwell	2056832
	01/25/2019			01/25/2019 11:36	Megan Treadwell	2056833
	01/25/2019			01/25/2019 11:38	Megan Treadwell	2056841
EPA 300.0	01/25/2019			01/29/2019 20:21	Lipi Saha	2056844
	01/25/2019			01/29/2019 23:11	Lipi Saha	2056834
	01/25/2019			01/29/2019 23:28	Lipi Saha	2056841
	01/25/2019			01/31/2019 17:59	Lipi Saha	2056833
	01/25/2019			02/14/2019 15:21	Lipi Saha	2056832
EPA 350.1 Rev. 2.0	01/25/2019			01/28/2019 14:04	Ping Hua	2056835
	01/25/2019			01/28/2019 14:06	Ping Hua	2056836
	01/25/2019			01/31/2019 11:03	Ping Hua	2056845
	01/25/2019			01/31/2019 12:57	Ping Hua	2056842
	01/25/2019			02/01/2019 14:37	Ping Hua	2056837
EPA 351.2 Rev. 2.0	01/25/2019	01/28/2019 12:15	Adrian Shelby	01/29/2019 11:07	Joseph Suarez	2056835
	01/25/2019	01/28/2019 12:15	Adrian Shelby	01/29/2019 11:09	Joseph Suarez	2056836
	01/25/2019	01/28/2019 12:15	Adrian Shelby	01/29/2019 11:10	Joseph Suarez	2056837
	01/25/2019	01/28/2019 12:15	Adrian Shelby	01/29/2019 11:12	Joseph Suarez	2056842
	01/25/2019	01/29/2019 12:30	Adrian Shelby	01/31/2019 09:39	Joseph Suarez	2056845
EPA 353.2 Rev. 2.0	01/25/2019			01/28/2019 10:34	Beverly Y. Sanders	2056845
	01/25/2019			01/29/2019 10:21	Beverly Y. Sanders	2056835
	01/25/2019			01/29/2019 10:22	Beverly Y. Sanders	2056836
	01/25/2019			01/29/2019 10:23	Beverly Y. Sanders	2056837
	01/25/2019			01/29/2019 10:25	Beverly Y. Sanders	2056842
EPA 365.1 Rev. 2.0	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 16:48	Julia Storbeck	2056835
	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 16:56	Julia Storbeck	2056836
	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 16:57	Julia Storbeck	2056837
	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 16:58	Julia Storbeck	2056842
	01/25/2019	01/29/2019 14:25	Sima Feizi	01/30/2019 15:28	Julia Storbeck	2056845
EPA 365.1 Rev. 2.0 dissolved	01/25/2019			01/25/2019 12:28	Jhamieka S. Greenwood	2056839
	01/25/2019			01/25/2019 12:35	Jhamieka S. Greenwood	2056838
	01/25/2019			01/25/2019 12:40	Jhamieka S. Greenwood	2056846
	01/25/2019			01/25/2019 12:41	Jhamieka S. Greenwood	2056840
	01/25/2019			01/25/2019 12:42	Jhamieka S. Greenwood	2056843
SM 2320 B-97	01/25/2019			02/02/2019 17:09	Dale L. Simmons	2056844
	01/25/2019			02/04/2019 06:38	Dale L. Simmons	2056834
	01/25/2019			02/04/2019 06:50	Dale L. Simmons	2056841
	01/25/2019			02/04/2019 07:15	Dale L. Simmons	2056832
	01/25/2019			02/04/2019 07:27	Dale L. Simmons	2056833

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-97	01/25/2019			01/28/2019 14:20	Yijie Li	2056832, 2056833, 2056834, 2056841, 2056844
SM 4500 F-C-97	01/25/2019			02/02/2019 17:09	Dale L. Simmons	2056844
	01/25/2019			02/04/2019 04:31	Dale L. Simmons	2056832
	01/25/2019			02/04/2019 04:36	Dale L. Simmons	2056833
	01/25/2019			02/07/2019 17:15	Dale L. Simmons	2056834
	01/25/2019			02/07/2019 17:27	Dale L. Simmons	2056841
SM 5310 B-00	01/25/2019			01/29/2019 02:55	Chelsea Hernandez	2056845
	01/25/2019			01/29/2019 08:33	Chelsea Hernandez	2056835
	01/25/2019			01/29/2019 09:10	Chelsea Hernandez	2056836
	01/25/2019			01/29/2019 09:34	Chelsea Hernandez	2056837
	01/25/2019			01/29/2019 09:47	Chelsea Hernandez	2056842