

Chemical Analysis Report

NW-DIST-2019-03-13-01

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

Event Description: **Project Greenshores/Blank**
Request ID: **RQ-2019-02-25-14**
Customer: **NW-DIST**
Project ID: **DISTRICT**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 01-APR-2019 13:36

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 "T" in "Tate".

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: RANGE MARKER E OF TEXAR

Collection Date/Time: 03/12/2019 10:42

Field ID: 1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069187	EPA 180.1 Rev. 2.0	Turbidity	4.0	A	NTU	P360384	
	SM 2120 B	Color (true)	12		PCU	P360402	
	SM 2540 D-97	TSS	4	I	mg/L	P360833	
2069201	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P360538	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.093		mg N/L	P360659	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P360536	

Ref. Method and Comment:

SM 2120 B: 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: 1/2 BRIDGE AND MUSCOGEE

Collection Date/Time: 03/12/2019 10:57

Field ID: 2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069188	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P360384	
	SM 2120 B	Color (true)	15	A	PCU	P360403	
	SM 2540 D-97	TSS	4	I	mg/L	P360834	
2069202	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P360576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P360538	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.087		mg N/L	P360659	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P360536	

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: EAST OF PRIMARY STORM DRAIN PGS 1

Collection Date/Time: 03/12/2019 11:05

Field ID: 3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069189	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P360384	
	SM 2120 B	Color (true)	13		PCU	P360403	
	SM 2540 D-97	TSS	3	U	mg/L	P360834	
2069203	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P360576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P360538	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.085		mg N/L	P360659	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P360536	

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: 100FT SOUTH OF STORMDRAIN

Collection Date/Time: 03/12/2019 11:12

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069190	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P360384	
	SM 2120 B	Color (true)	12		PCU	P360403	
	SM 2540 D-97	TSS	3	U	mg/L	P360834	
2069204	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P360576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P360538	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.084		mg N/L	P360659	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P360536	

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: END OF CHASE ST

Collection Date/Time: 03/12/2019 11:26

Field ID: 5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069191	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P360385	
	SM 2120 B	Color (true)	13		PCU	P360405	
	SM 2540 D-97	TSS	3	U	mg/L	P360834	
2069205	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P360576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.083		mg N/L	P360659	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P360536	

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: 1/2 MUSCOGEE AND HAWKSHAW 400FT
FROM SHORE**

Collection Date/Time: 03/12/2019 11:32

Field ID: 6

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069192	EPA 180.1 Rev. 2.0	Turbidity	3.0	A	NTU	P360385	
	SM 2120 B	Color (true)	14		PCU	P360404	
	SM 2540 D-97	TSS	3	U	mg/L	P360834	
2069206	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.084		mg N/L	P360659	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P360536	

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: 1/2 BRIDGE AND PORT

Collection Date/Time: 03/12/2019 11:41

Field ID: 7

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069193	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P360385	
	SM 2120 B	Color (true)	14		PCU	P360404	
	SM 2540 D-97	TSS	3	I	mg/L	P360834	
2069207	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.086		mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P360536	

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: WEST OF STORMDRAIN INSIDE ROCKS

Collection Date/Time: 03/12/2019 11:19

Field ID: 8

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069194	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P360385	
	SM 2120 B	Color (true)	12		PCU	P360404	
	SM 2540 D-97	TSS	3	U	mg/L	P360834	
2069208	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P360577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.087		mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P360605	

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: WEST END OF HAWKSHAW 100FT SOUTH OF OUTFALL **Collection Date/Time: 03/12/2019 12:12**

Field ID: 9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069195	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P360385	
	SM 2120 B	Color (true)	13		PCU	P360404	
	SM 2540 D-97	TSS	3	UA	mg/L	P360834	
2069209	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P360577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.081		mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P360605	

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: BETWEEN MARINA AND OUTFALL

Collection Date/Time: 03/12/2019 12:02

Field ID: 10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069196	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P360385	
	SM 2120 B	Color (true)	13		PCU	P360404	
	SM 2540 D-97	TSS	3	UA	mg/L	P360835	
2069210	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P360577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.079		mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P360605	

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: ENTRANCE OF MARINA

Collection Date/Time: 03/12/2019 11:55

Field ID: 11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069197	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P360385	
	SM 2120 B	Color (true)	13		PCU	P360404	
	SM 2540 D-97	TSS	3	I	mg/L	P360833	
2069211	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P360577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.083		mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P360605	

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: 1/4 BETWEEN BRIDGE AND PORT 400FT
 FROM SHORE**

Collection Date/Time: 03/12/2019 11:48

Field ID: 12

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069198	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P360385	
	SM 2120 B	Color (true)	13		PCU	P360404	
	SM 2540 D-97	TSS	3	U	mg/L	P360835	
2069212	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P360577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.078		mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P360605	

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: INSIDE HAWKSHAW LAGOON

Collection Date/Time: 03/12/2019 12:26

Field ID: 13

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069199	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P360385	
	SM 2120 B	Color (true)	11		PCU	P360404	
	SM 2540 D-97	TSS	8	I	mg/L	P360833	
2069213	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P360577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P360605	

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: EAST OF STORMDRAIN INSIDE PGS 2

Collection Date/Time: 03/12/2019 12:35

Field ID: 14

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069200	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P360385	
	SM 2120 B	Color (true)	13		PCU	P360404	
	SM 2540 D-97	TSS	3	U	mg/L	P360835	
2069214	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P360577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P360540	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.088		mg N/L	P360661	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P360605	

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: P360384

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360385

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360576

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360577

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360538

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360540

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360659

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360661

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360536

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
Batch ID: P360605

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

Reference Method: SM 2120 B
Batch ID: P360402

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P360403

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P360404

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P360405

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2540 D-97
Batch ID: P360833

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360834

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360835

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360576

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: P360577

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360538

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360540

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360659

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360661

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: P360536

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: P360605

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

Reference Method: SM 2120 B
Batch ID: P360402

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P360403

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

Reference Method: SM 2120 B
Batch ID: P360404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P360405

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068850	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069208	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068850	Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360540

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069208	Kjeldahl Nitrogen	102	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068850	NO2NO3-N	98.1	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360661

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069207	NO2NO3-N	98.2	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068850	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069208	Total-P	104	99.6	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069187	Turbidity	5.94	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069192	Turbidity	9.11	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068850	Ammonia-N	1.08	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069208	Ammonia-N	0.997	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068850	Kjeldahl Nitrogen	1.62	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069208	Kjeldahl Nitrogen	5.28	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068850	NO2NO3-N	1.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069207	NO2NO3-N	2.11	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P360536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068850	Total-P	1.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P360605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069208	Total-P	4.61	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P360403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069188	Color (true)	0.679	Sample	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P360404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069331	Color (true)	0.101	Sample	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P360405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069257	Color (true)	3.39	Sample	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 180.1 Rev. 2.0

Run ID: A89988

Included Lab Sample IDs: 2069187, 2069188, 2069189, 2069190, 2069191, 2069192, 2069193, 2069194, 2069195, 2069196, 2069197, 2069198, 2069199, 2069200

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

Reference Method: SM 2120 B

Run ID: A89998

Included Lab Sample IDs: 2069187, 2069188, 2069189, 2069190, 2069191, 2069192, 2069193, 2069194, 2069195, 2069196, 2069197, 2069198, 2069199, 2069200

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	102	103	P/P	90 - 115
Color (true)	102	102	P/P	90 - 115
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90054

Included Lab Sample IDs: 2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207, 2069208, 2069209, 2069210, 2069211, 2069212, 2069213, 2069214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	101	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90090

Included Lab Sample IDs: 2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207, 2069208, 2069209, 2069210, 2069211, 2069212, 2069213, 2069214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	106	P/P	90 - 110
Kjeldahl Nitrogen	104	102	P/P	90 - 110
Kjeldahl Nitrogen	98.5	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90092

Included Lab Sample IDs: 2069211

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.4	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90095

Included Lab Sample IDs: 2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207, 2069208, 2069209, 2069210, 2069211, 2069212, 2069213, 2069214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.5	P/P	90 - 110
NO2NO3-N	98.5	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90159

Included Lab Sample IDs: 2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90185

Included Lab Sample IDs: 2069208, 2069209, 2069210, 2069212, 2069213, 2069214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	101	P/P	90 - 110
Total-P	102	102	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	MS
EPA 180.1 Rev. 2.0	Turbidity				5.94	
	Turbidity				9.11	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	103		1.08
	Ammonia-N	99.8	101	102		0.997
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	102	104		1.62
	Kjeldahl Nitrogen	98.3	102	108		5.28
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.1	101		1.83
	NO ₂ NO ₃ -N	99.0	98.2	101		2.11
EPA 365.1 Rev. 2.0	Total-P	100	102	103		1.07
	Total-P	99.0	104	99.6		4.61
SM 2120 B	Color (true)	102				
	Color (true)	101			0.679	
	Color (true)	104			0.101	
	Color (true)	102			3.39	

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2069187, 2069188, 2069189, 2069190, 2069191, 2069192, 2069193, 2069194, 2069195, 2069196, 2069197, 2069198, 2069199, 2069200
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207, 2069208, 2069209, 2069210, 2069211, 2069212, 2069213, 2069214
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207, 2069208, 2069209, 2069210, 2069211, 2069212, 2069213, 2069214
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207, 2069208, 2069209, 2069210, 2069211, 2069212, 2069213, 2069214
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2069201, 2069202, 2069203, 2069204, 2069205, 2069206, 2069207, 2069208, 2069209, 2069210, 2069211, 2069212, 2069213, 2069214
SM 2120 B / E31780	True Color measured at 450 nm	2069187, 2069188, 2069189, 2069190, 2069191, 2069192, 2069193, 2069194, 2069195, 2069196, 2069197, 2069198, 2069199, 2069200
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2069187, 2069188, 2069189, 2069190, 2069191, 2069192, 2069193, 2069194, 2069195, 2069196, 2069197, 2069198, 2069199, 2069200

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/13/2019			03/13/2019 16:52	Adrian Shelby	2069187, 2069188, 2069189, 2069190, 2069191, 2069192, 2069193, 2069194, 2069195, 2069196, 2069197, 2069198, 2069199, 2069200
EPA 350.1 Rev. 2.0	03/13/2019			03/14/2019 11:54	Ping Hua	2069201
	03/13/2019			03/14/2019 11:55	Ping Hua	2069202
	03/13/2019			03/14/2019 11:57	Ping Hua	2069203
	03/13/2019			03/14/2019 11:58	Ping Hua	2069204
	03/13/2019			03/14/2019 12:06	Ping Hua	2069205
	03/13/2019			03/14/2019 12:07	Ping Hua	2069206
	03/13/2019			03/14/2019 12:09	Ping Hua	2069207
	03/13/2019			03/14/2019 12:13	Ping Hua	2069208
	03/13/2019			03/14/2019 12:18	Ping Hua	2069209
	03/13/2019			03/14/2019 12:25	Ping Hua	2069210
	03/13/2019			03/14/2019 12:27	Ping Hua	2069211
	03/13/2019			03/14/2019 12:28	Ping Hua	2069212
	03/13/2019			03/14/2019 12:30	Ping Hua	2069213
	03/13/2019			03/14/2019 12:32	Ping Hua	2069214
EPA 351.2 Rev. 2.0	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 10:53	Joseph Suarez	2069201
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 10:54	Joseph Suarez	2069202
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 10:56	Joseph Suarez	2069203
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 10:57	Joseph Suarez	2069204
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:30	Joseph Suarez	2069205
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:32	Joseph Suarez	2069206
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:33	Joseph Suarez	2069207
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:35	Joseph Suarez	2069208
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:43	Joseph Suarez	2069209
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:44	Joseph Suarez	2069210
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:46	Joseph Suarez	2069211
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:47	Joseph Suarez	2069212
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:49	Joseph Suarez	2069213
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:50	Joseph Suarez	2069214
EPA 353.2 Rev. 2.0	03/13/2019			03/18/2019 12:18	Lauren Lees	2069201
	03/13/2019			03/18/2019 12:19	Lauren Lees	2069202
	03/13/2019			03/18/2019 12:20	Lauren Lees	2069203
	03/13/2019			03/18/2019 12:21	Lauren Lees	2069204
	03/13/2019			03/18/2019 12:22	Lauren Lees	2069205
	03/13/2019			03/18/2019 12:24	Lauren Lees	2069206
	03/13/2019			03/18/2019 12:31	Lauren Lees	2069207
	03/13/2019			03/18/2019 12:37	Lauren Lees	2069208

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	03/13/2019			03/18/2019 12:38	Lauren Lees	2069209
	03/13/2019			03/18/2019 12:39	Lauren Lees	2069210
	03/13/2019			03/18/2019 12:40	Lauren Lees	2069211
	03/13/2019			03/18/2019 12:41	Lauren Lees	2069212
	03/13/2019			03/18/2019 12:42	Lauren Lees	2069213
	03/13/2019			03/18/2019 12:44	Lauren Lees	2069214
EPA 365.1 Rev. 2.0	03/13/2019	03/15/2019 14:20	Sima Feizi	03/21/2019 11:00	Beverly Y. Sanders	2069201
	03/13/2019	03/15/2019 14:20	Sima Feizi	03/21/2019 11:01	Beverly Y. Sanders	2069202, 2069203
	03/13/2019	03/15/2019 14:20	Sima Feizi	03/21/2019 11:02	Beverly Y. Sanders	2069204
	03/13/2019	03/15/2019 14:20	Sima Feizi	03/21/2019 11:03	Beverly Y. Sanders	2069205
	03/13/2019	03/15/2019 14:20	Sima Feizi	03/21/2019 11:04	Beverly Y. Sanders	2069206
	03/13/2019	03/15/2019 14:20	Sima Feizi	03/21/2019 11:12	Beverly Y. Sanders	2069207
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/19/2019 10:36	Beverly Y. Sanders	2069211
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:14	Beverly Y. Sanders	2069208, 2069209
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:15	Beverly Y. Sanders	2069210
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:16	Beverly Y. Sanders	2069212
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:24	Beverly Y. Sanders	2069213
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:25	Beverly Y. Sanders	2069214
SM 2120 B	03/13/2019			03/13/2019 16:22	Mariam Hanna	2069187
	03/13/2019			03/13/2019 16:32	Mariam Hanna	2069188, 2069189
	03/13/2019			03/13/2019 16:33	Mariam Hanna	2069190
	03/13/2019			03/13/2019 16:39	Mariam Hanna	2069192, 2069193
	03/13/2019			03/13/2019 16:40	Mariam Hanna	2069194
	03/13/2019			03/13/2019 16:41	Mariam Hanna	2069195
	03/13/2019			03/13/2019 16:42	Mariam Hanna	2069196, 2069197
	03/13/2019			03/13/2019 16:43	Mariam Hanna	2069198
	03/13/2019			03/13/2019 16:44	Mariam Hanna	2069199
	03/13/2019			03/13/2019 16:45	Mariam Hanna	2069200
	03/13/2019			03/13/2019 16:52	Mariam Hanna	2069191
	03/13/2019			03/18/2019 14:58	Yijie Li	2069187, 2069188, 2069189, 2069190, 2069191, 2069192, 2069193, 2069194, 2069195, 2069196, 2069197, 2069198, 2069199, 2069200
SM 2540 D-97	03/13/2019			03/18/2019 14:58	Yijie Li	