

Chemical Analysis Report

NW-DIST-2019-08-23-01

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

Event Description: **Project Greenshores**
Request ID: **RQ-2019-08-19-12**
Customer: **NW-DIST**
Project ID: **DISTRICT**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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

Date Certified: 10-SEP-2019 10:05

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 few letters of the last 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: RANGE MARKER EAST OF TEXAR

Collection Date/Time: 08/22/2019 10:59

Field ID: 1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114212	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P369629	
	SM 2120 B	Color (true)	6.2		PCU	P369661	
	SM 2540 D-97	TSS	10		mg/L	P370076	
2114226	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P370099	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P369794	

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 MUSCOGEE

Collection Date/Time: 08/22/2019 11:15

Field ID: 2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114213	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P369629	
	SM 2120 B	Color (true)	5.1	I	PCU	P369661	
	SM 2540 D-97	TSS	5	I	mg/L	P370076	
2114227	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P370099	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34	I	mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P369794	

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 STORMDRAIN PGS1

Collection Date/Time: 08/22/2019 11:22

Field ID: 3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114214	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P369629	
	SM 2120 B	Color (true)	4.1	I	PCU	P369661	
	SM 2540 D-97	TSS	3	U	mg/L	P370076	
2114228	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P370099	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P369794	

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: 08/22/2019 11:30

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114215	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P369630	
	SM 2120 B	Color (true)	5.7	I	PCU	P369662	
	SM 2540 D-97	TSS	6	I	mg/L	P370076	
2114229	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P370099	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P369794	

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: END OF CHASE STREET

Collection Date/Time: 08/22/2019 11:44

Field ID: 5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114216	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P369630	
	SM 2120 B	Color (true)	4.3	I	PCU	P369662	
	SM 2540 D-97	TSS	7	I	mg/L	P370076	
2114230	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P370099	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P370087	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P369794	

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 MUSCOGEE AND HAWKSHAW 400FT
FROM SHORE**

Collection Date/Time: 08/22/2019 11:52

Field ID: 6

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114217	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P369631	
	SM 2120 B	Color (true)	4.5	I	PCU	P369662	
	SM 2540 D-97	TSS	4	I	mg/L	P370076	
2114231	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P369794	

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 PORT

Collection Date/Time: 08/22/2019 12:00

Field ID: 7

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114218	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P369631	
	SM 2120 B	Color (true)	3.8	IA	PCU	P369662	
	SM 2540 D-97	TSS	3	U	mg/L	P370076	
2114232	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33	I	mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P369795	

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: WEST OF STORMDRAIN INSIDE ROCKS

Collection Date/Time: 08/22/2019 11:36

Field ID: 8

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114219	EPA 180.1 Rev. 2.0	Turbidity	4.1	A	NTU	P369631	
	SM 2120 B	Color (true)	6.3		PCU	P369662	
	SM 2540 D-97	TSS	7	I	mg/L	P370076	
2114233	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P369795	

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: WEST END OF HAWKSHAW 100FT SOUTH OF OUTFALL **Collection Date/Time: 08/22/2019 12:32**

Field ID: 9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114220	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P369631	
	SM 2120 B	Color (true)	4.9	I	PCU	P369663	
	SM 2540 D-97	TSS	7	IA	mg/L	P370076	
2114234	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P369716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P369710	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P369795	

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: 08/22/2019 12:23

Field ID: 10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114221	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P369631	
	SM 2120 B	Color (true)	6.0	I	PCU	P369663	
	SM 2540 D-97	TSS	4	I	mg/L	P370077	
2114235	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P369714	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P369711	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P369795	

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: 08/22/2019 12:15

Field ID: 11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114222	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P369631	
	SM 2120 B	Color (true)	8.2		PCU	P369663	
	SM 2540 D-97	TSS	5	I	mg/L	P370077	
2114236	EPA 350.1 Rev. 2.0	Ammonia-N	0.061		mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P369714	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P369711	
	EPA 365.1 Rev. 2.0	Total-P	0.047		mg P/L	P369795	

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: 08/22/2019 12:05

Field ID: 12

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114223	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P369632	
	SM 2120 B	Color (true)	3.1	I	PCU	P369663	
	SM 2540 D-97	TSS	4	I	mg/L	P370077	
2114237	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P369714	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P369711	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P369795	

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: 08/22/2019 12:48

Field ID: 13

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114224	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P369632	
	SM 2120 B	Color (true)	18	A	PCU	P369663	
	SM 2540 D-97	TSS	6	I	mg/L	P370077	
2114238	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P369714	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P369711	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P369795	

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 SITE 2

Collection Date/Time: 08/22/2019 12:55

Field ID: 14

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114225	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P369632	
	SM 2120 B	Color (true)	6.0		PCU	P369664	
	SM 2540 D-97	TSS	5	IA	mg/L	P370077	
2114239	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P370096	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P369714	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P369711	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P369795	

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: P369629

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369630

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369631

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369632

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370096

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370099

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369714

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369716

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370087

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369710

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369711

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369794

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369795

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

Reference Method: SM 2120 B
Batch ID: P369661

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369662

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369663

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369664

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2540 D-97
Batch ID: P370076

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P370077

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: P370096

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370099

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369716

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370087

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369710

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369711

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.9		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P369661

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

Reference Method: SM 2120 B
Batch ID: P369662

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

Reference Method: SM 2120 B
Batch ID: P369663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P369664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370096

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114235	Ammonia-N	96.4	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113603	Ammonia-N	99.9	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114235	Kjeldahl Nitrogen	97.9	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114226	Kjeldahl Nitrogen	96.4	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370087

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115121	Kjeldahl Nitrogen	99.2	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113778	NO2NO3-N	98.5	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114235	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113775	Total-P	93.3	93.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114232	Total-P	92.4	90.3	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114199	Turbidity	5.65	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114415	Turbidity	1.83	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114219	Turbidity	11.1	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114344	Turbidity	5.29	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114235	Ammonia-N	0.00908	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113603	Ammonia-N	1.14	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114235	Kjeldahl Nitrogen	0.339	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114226	Kjeldahl Nitrogen	1.68	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115121	Kjeldahl Nitrogen	3.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113778	NO2NO3-N	1.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114235	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113775	Total-P	0.603	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114232	Total-P	2.27	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114198	Color (true)	2.72	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114224	Color (true)	7.06	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114341	Color (true)	4.53	Sample	P	0 - 20

Quality Assurance Report

Precision

* 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: A93768

Included Lab Sample IDs: 2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A93782

Included Lab Sample IDs: 2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115
Color (true)	101	103	P/P	90 - 115
Color (true)	99.1	101	P/P	90 - 115
Color (true)	99.9	99.1	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93803

Included Lab Sample IDs: 2114226, 2114227, 2114228, 2114229, 2114230, 2114231, 2114232, 2114233, 2114234, 2114235, 2114236, 2114237, 2114238, 2114239

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93877

Included Lab Sample IDs: 2114226, 2114227, 2114228, 2114229, 2114230, 2114231, 2114232, 2114233, 2114234, 2114235, 2114236, 2114237, 2114238, 2114239

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93884

Included Lab Sample IDs: 2114235, 2114236, 2114237, 2114238, 2114239

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	98.3	P/P	90 - 110
Kjeldahl Nitrogen	95.6	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93886

Included Lab Sample IDs: 2114226, 2114227, 2114228, 2114229, 2114231, 2114232, 2114233, 2114234

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.7	98.4	P/P	90 - 110
Kjeldahl Nitrogen	96.3	93.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93962

Included Lab Sample IDs: 2114226, 2114227, 2114228, 2114229, 2114230, 2114231, 2114232, 2114233, 2114234, 2114235, 2114236, 2114237, 2114238, 2114239

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.4	98.3	P/P	90 - 110
Ammonia-N	99.1	99.7	P/P	90 - 110
Ammonia-N	99.7	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93985

Included Lab Sample IDs: 2114230

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	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		
				LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				5.65	
	Turbidity				1.83	
	Turbidity				11.1	
	Turbidity				5.29	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	96.4 96.4			0.0090
	Ammonia-N	97.2	99.9 101			1.14
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.5	97.9 98.3			0.339
	Kjeldahl Nitrogen	96.7	96.4 98.3			1.68
	Kjeldahl Nitrogen	97.7	99.2 105			3.56
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	98.5 97.5			1.02
	NO2NO3-N	101	101 101			0.480
EPA 365.1 Rev. 2.0	Total-P	96.7	93.3 93.9			0.603
	Total-P	95.9	92.4 90.3			2.27
SM 2120 B	Color (true)	101			2.72	
	Color (true)	101				
	Color (true)	103			7.06	
	Color (true)	103			4.53	

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2114226, 2114227, 2114228, 2114229, 2114230, 2114231, 2114232, 2114233, 2114234, 2114235, 2114236, 2114237, 2114238, 2114239
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2114226, 2114227, 2114228, 2114229, 2114230, 2114231, 2114232, 2114233, 2114234, 2114235, 2114236, 2114237, 2114238, 2114239
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2114226, 2114227, 2114228, 2114229, 2114230, 2114231, 2114232, 2114233, 2114234, 2114235, 2114236, 2114237, 2114238, 2114239
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2114226, 2114227, 2114228, 2114229, 2114230, 2114231, 2114232, 2114233, 2114234, 2114235, 2114236, 2114237, 2114238, 2114239
SM 2120 B / E31780	True Color measured at 450 nm	2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225

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	08/23/2019			08/23/2019 17:45	Samantha Davila	2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225
EPA 350.1 Rev. 2.0	08/23/2019			09/03/2019 10:52	Ping Hua	2114235
	08/23/2019			09/03/2019 10:57	Ping Hua	2114231
	08/23/2019			09/03/2019 11:04	Ping Hua	2114232
	08/23/2019			09/03/2019 11:06	Ping Hua	2114233
	08/23/2019			09/03/2019 11:07	Ping Hua	2114234
	08/23/2019			09/03/2019 11:09	Ping Hua	2114236
	08/23/2019			09/03/2019 11:10	Ping Hua	2114237
	08/23/2019			09/03/2019 11:12	Ping Hua	2114238
	08/23/2019			09/03/2019 11:13	Ping Hua	2114239
	08/23/2019			09/03/2019 12:42	Ping Hua	2114226
	08/23/2019			09/03/2019 12:44	Ping Hua	2114227
	08/23/2019			09/03/2019 12:45	Ping Hua	2114228
	08/23/2019			09/03/2019 12:47	Ping Hua	2114229
	08/23/2019			09/03/2019 12:48	Ping Hua	2114230
EPA 351.2 Rev. 2.0	08/23/2019	08/27/2019 11:30	Sima Feizi	08/28/2019 16:30	Julia Storbeck	2114235
	08/23/2019	08/27/2019 11:30	Sima Feizi	08/28/2019 16:35	Julia Storbeck	2114236
	08/23/2019	08/27/2019 11:30	Sima Feizi	08/28/2019 16:37	Julia Storbeck	2114237
	08/23/2019	08/27/2019 11:30	Sima Feizi	08/28/2019 16:38	Julia Storbeck	2114238
	08/23/2019	08/27/2019 11:30	Sima Feizi	08/28/2019 16:43	Julia Storbeck	2114239
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:33	Julia Storbeck	2114226
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:39	Julia Storbeck	2114227
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:41	Julia Storbeck	2114228
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:42	Julia Storbeck	2114229
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:45	Julia Storbeck	2114231
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:47	Julia Storbeck	2114232
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:51	Julia Storbeck	2114233
	08/23/2019	08/27/2019 13:00	Sima Feizi	08/28/2019 19:53	Julia Storbeck	2114234
	08/23/2019	09/03/2019 16:50	Jhamieka S. Greenwood	09/04/2019 18:52	Julia Storbeck	2114230
EPA 353.2 Rev. 2.0	08/23/2019			08/27/2019 09:10	Beverly Y. Sanders	2114226
	08/23/2019			08/27/2019 09:12	Beverly Y. Sanders	2114227
	08/23/2019			08/27/2019 09:13	Beverly Y. Sanders	2114228
	08/23/2019			08/27/2019 09:14	Beverly Y. Sanders	2114229
	08/23/2019			08/27/2019 09:15	Beverly Y. Sanders	2114230
	08/23/2019			08/27/2019 09:16	Beverly Y. Sanders	2114231
	08/23/2019			08/27/2019 09:18	Beverly Y. Sanders	2114232
	08/23/2019			08/27/2019 09:19	Beverly Y. Sanders	2114233

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	08/23/2019			08/27/2019 09:20	Beverly Y. Sanders	2114234
	08/23/2019			08/27/2019 09:27	Beverly Y. Sanders	2114235
	08/23/2019			08/27/2019 09:33	Beverly Y. Sanders	2114236
	08/23/2019			08/27/2019 09:34	Beverly Y. Sanders	2114237
	08/23/2019			08/27/2019 09:35	Beverly Y. Sanders	2114238
	08/23/2019			08/27/2019 09:36	Beverly Y. Sanders	2114239
	08/23/2019			08/27/2019 09:36	Beverly Y. Sanders	2114239
EPA 365.1 Rev. 2.0	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:11	Lipi Saha	2114226
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:19	Lipi Saha	2114227
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:20	Lipi Saha	2114228
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:21	Lipi Saha	2114229
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:22	Lipi Saha	2114230
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:23	Lipi Saha	2114231
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:25	Lipi Saha	2114232
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:26	Lipi Saha	2114233
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:27	Lipi Saha	2114234
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:28	Lipi Saha	2114235
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:36	Lipi Saha	2114236
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:37	Lipi Saha	2114237, 2114238
	08/23/2019	08/28/2019 09:14	Joseph Suarez	08/29/2019 14:38	Lipi Saha	2114239
SM 2120 B	08/23/2019			08/23/2019 18:08	Madeline Funaro	2114212, 2114213
	08/23/2019			08/23/2019 18:09	Madeline Funaro	2114214
	08/23/2019			08/23/2019 18:21	Madeline Funaro	2114215, 2114216
	08/23/2019			08/23/2019 18:22	Madeline Funaro	2114217
	08/23/2019			08/23/2019 18:24	Madeline Funaro	2114218, 2114219
	08/23/2019			08/23/2019 18:30	Madeline Funaro	2114220
	08/23/2019			08/23/2019 18:31	Madeline Funaro	2114221
	08/23/2019			08/23/2019 18:32	Madeline Funaro	2114222
	08/23/2019			08/23/2019 18:33	Madeline Funaro	2114223
	08/23/2019			08/23/2019 18:34	Madeline Funaro	2114224
	08/23/2019			08/23/2019 18:40	Madeline Funaro	2114225
	08/23/2019			08/28/2019 14:52	Yijie Li	2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225
	08/23/2019			08/28/2019 14:52	Yijie Li	2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225
SM 2540 D-97	08/23/2019			08/28/2019 14:52	Yijie Li	2114212, 2114213, 2114214, 2114215, 2114216, 2114217, 2114218, 2114219, 2114220, 2114221, 2114222, 2114223, 2114224, 2114225