

Chemical Analysis Report

NW-DIST-2018-03-22-01

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-2018-02-26-14**

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: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 10-APR-2018 14:17



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Range Marker E. of Texar

Collection Date/Time: 03/21/2018 11:12

Field ID: #1 - Pensacola Bay-3302H32GS1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976586	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P342046	
	SM 2120 B	Color (true)	6.0	I	PCU	P342026	
	SM 2540 D-97	TSS	3	U	mg/L	P342225	
1976600	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P342523	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P342189	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P342111	

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: 03/21/2018 11:29

Field ID: #2 - Pensacola Bay-3302J8GS2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976587	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P342046	
	SM 2120 B	Color (true)	6.8		PCU	P342027	
	SM 2540 D-97	TSS	3	U	mg/L	P342225	
1976601	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P342523	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P342189	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P342111	

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: 03/21/2018 11:39

Field ID: #3 - Pensacola Bay-3302J2GS3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976588	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P342047	
	SM 2120 B	Color (true)	4.2	I	PCU	P342026	
	SM 2540 D-97	TSS	3	U	mg/L	P342225	
1976602	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P342523	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P342189	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P342111	

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: 100 ft. South of Stormdrain

Collection Date/Time: 03/21/2018 11:46

Field ID: #4 - Pensacola Bay-3302J2GS4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976589	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P342045	
	SM 2120 B	Color (true)	3.1	I	PCU	P342053	
	SM 2540 D-97	TSS	3	U	mg/L	P342225	
1976603	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P342588	

Field ID: #4 - Pensacola Bay-3302J2GS4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976603	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P342189	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P342111	

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 Street**Collection Date/Time: 03/21/2018 12:04****Field ID: #5 - Pensacola Bay-3302J2GS5**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976590	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P342047	
	SM 2120 B	Color (true)	4.0	I	PCU	P342026	
	SM 2540 D-97	TSS	3	U	mg/L	P342225	
1976604	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P342189	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P342111	

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: 03/21/2018 12:11****Field ID: #6 - Pensacola Bay-3302J1GS6**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976591	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P342047	
	SM 2120 B	Color (true)	4.2	I	PCU	P342026	
	SM 2540 D-97	TSS	3	U	mg/L	P342225	
1976605	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P342189	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P342111	

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: 03/21/2018 12:18****Field ID: #7 - Pensacola Bay-3302J8GS7**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976592	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P342047	
	SM 2120 B	Color (true)	5.8	I	PCU	P342027	
	SM 2540 D-97	TSS	4	I	mg/L	P342225	
1976606	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P342189	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P342111	

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: 03/21/2018 11:54**

Field ID: #8 - Pensacola Bay-3302J2GS8

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976593	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P342045	
	SM 2120 B	Color (true)	2.5	U	PCU	P342053	
	SM 2540 D-97	TSS	3	UA	mg/L	P342225	
1976607	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P342190	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P342111	

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 S. of Outfall

Collection Date/Time: 03/21/2018 12:53

Field ID: #9 - Pensacola Bay-3302J1GS9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976594	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P342047	
	SM 2120 B	Color (true)	4.4	I	PCU	P342027	
	SM 2540 D-97	TSS	3	U	mg/L	P342226	
1976608	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P342068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P342190	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P342112	

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: 03/21/2018 12:45

Field ID: #10 - Pensacola Bay-3302J7GS10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976595	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P342047	
	SM 2120 B	Color (true)	4.3	I	PCU	P342025	
	SM 2540 D-97	TSS	3	U	mg/L	P342226	
1976609	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P342069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P342190	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P342112	

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: 03/21/2018 12:38

Field ID: #11 - Pensacola Bay-3302J7GS11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976596	EPA 180.1 Rev. 2.0	Turbidity	1.6	A	NTU	P342047	
	SM 2120 B	Color (true)	2.5	U	PCU	P342027	
	SM 2540 D-97	TSS	3	U	mg/L	P342226	
1976610	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P342069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P342190	

Field ID: #11 - Pensacola Bay-3302J7GS11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976610	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P342112	

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: 03/21/2018 12:27**

Field ID: #12 - Pensacola Bay-3302J7GS12

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976597	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P342047	
	SM 2120 B	Color (true)	4.2	I	PCU	P342026	
	SM 2540 D-97	TSS	4	I	mg/L	P342226	
1976611	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P342069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P342190	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P342112	

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: 03/21/2018 12:29**

Field ID: Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976614	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P342048	
	SM 2120 B	Color (true)	2.5	U	PCU	P342027	
	SM 2540 D-97	TSS	2	U	mg/L	P342220	
1976615	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P342593	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P342066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342161	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P342109	

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 04/03/2018.

Sample Location: Inside Hawkshaw Lagoon

Collection Date/Time: 03/21/2018 13:05

Field ID: #13-PenBay/Hawkshaw-3302J1HL1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976598	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P342047	
	SM 2120 B	Color (true)	14	A	PCU	P342026	
	SM 2540 D-97	TSS	3	U	mg/L	P342226	
1976612	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P342588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P342069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P342190	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P342112	

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 or Stormdrain Inside PGS Site 2

Collection Date/Time: 03/21/2018 13:16

Field ID: #14 - Pensacola Bay -3302J1GS7

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976599	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P342047	
	SM 2120 B	Color (true)	4.0	I	PCU	P342027	
	SM 2540 D-97	TSS	3	UA	mg/L	P342226	
1976613	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P342680	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P342069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P342190	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P342112	

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: P342045

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P342046

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P342047

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P342048

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P342523

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P342588

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P342593

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342680

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342066

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342068

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342189

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342190

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342109

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342111

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: P342112

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

Reference Method: SM 2120 B
Batch ID: P342025

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P342026

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P342027

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P342053

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2540 D-97
Batch ID: P342220

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342225

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342226

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: P342523

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342523

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: P342588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342593

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342680

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: P342066

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342068

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P342190

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P342109

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P342111

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P342112

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P342523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975923	Ammonia-N	99.0	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P342588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976603	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P342593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976535	Ammonia-N	97.9	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P342680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976613	Ammonia-N	97.3	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P342066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976527	Kjeldahl Nitrogen	98.4	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976601	Kjeldahl Nitrogen	96.5	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976611	Kjeldahl Nitrogen	103	97.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976534	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975408	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976607	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976536	Total-P	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976600	Total-P	97.3	94.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976608	Total-P	95.2	95.9	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976437	Turbidity	2.51	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976465	Turbidity	1.01	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976596	Turbidity	3.66	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976631	Turbidity	2.80	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975923	Ammonia-N	2.92	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976603	Ammonia-N	0.285	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976535	Ammonia-N	0.0957	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976613	Ammonia-N	0.428	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976527	Kjeldahl Nitrogen	1.39	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976601	Kjeldahl Nitrogen	0.277	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976611	Kjeldahl Nitrogen	4.98	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976534	NO2NO3-N	0.458	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975408	NO2NO3-N	1.38	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976607	NO2NO3-N	1.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976536	Total-P	1.69	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976600	Total-P	2.73	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976608	Total-P	0.680	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976532	Color (true)	0.426	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976598	Color (true)	19.4	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976437	Color (true)	0.348	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976465	Color (true)	0.683	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: SM 2120 B
Run ID: A82789

Included Lab Sample IDs: 1976586, 1976587, 1976588, 1976590, 1976591, 1976592, 1976594, 1976595, 1976596, 1976597, 1976598, 1976599, 1976614

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115
Color (true)	99.0	99.8	P/P	85 - 115
Color (true)	99.8	100	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A82792

Included Lab Sample IDs: 1976586, 1976587, 1976588, 1976589, 1976590, 1976591, 1976592, 1976593, 1976594, 1976595, 1976596, 1976597, 1976598, 1976599, 1976614

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

Reference Method: SM 2120 B

Run ID: A82793

Included Lab Sample IDs: 1976589, 1976593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.3	99.5	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82832

Included Lab Sample IDs: 1976615

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82837

Included Lab Sample IDs: 1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613, 1976615

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.8	P/P	90 - 110
Total-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82845

Included Lab Sample IDs: 1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82864

Included Lab Sample IDs: 1976615

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.2	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82869

Included Lab Sample IDs: 1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.4	99.1	P/P	90 - 110
Kjeldahl Nitrogen	99.1	93.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82880

Included Lab Sample IDs: 1976609, 1976610, 1976611, 1976612, 1976613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.0	97.6	P/P	90 - 110
Kjeldahl Nitrogen	97.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82966

Included Lab Sample IDs: 1976600, 1976601, 1976602

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82997

Included Lab Sample IDs: 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976615

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	101	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83017

Included Lab Sample IDs: 1976613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				2.51	
	Turbidity				1.01	
	Turbidity				3.66	
	Turbidity				2.80	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	99.0 102			2.92
	Ammonia-N	95.6	101 100			0.285
	Ammonia-N	97.7	97.9 98.0			0.0957
	Ammonia-N	97.2	97.3 96.8			0.428
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	98.4 96.8			1.39
	Kjeldahl Nitrogen	97.9	96.5 96.2			0.277
	Kjeldahl Nitrogen	102	103 97.3			4.98
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102 103			0.458
	NO2NO3-N	104	104 105			1.38
	NO2NO3-N	104	104 105			1.31
EPA 365.1 Rev. 2.0	Total-P	102	101 103			1.69

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0	Total-P	101	97.3	94.7		2.73
	Total-P	103	95.2	95.9		0.680
SM 2120 B	Color (true)				0.426	
	Color (true)				19.4	
	Color (true)				0.348	
	Color (true)				0.683	

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1976586, 1976587, 1976588, 1976589, 1976590, 1976591, 1976592, 1976593, 1976594, 1976595, 1976596, 1976597, 1976598, 1976599, 1976614
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613, 1976615
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613, 1976615
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613, 1976615
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613, 1976615
SM 2120 B / E31780	True Color measured at 450 nm	1976586, 1976587, 1976588, 1976589, 1976590, 1976591, 1976592, 1976593, 1976594, 1976595, 1976596, 1976597, 1976598, 1976599, 1976614
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1976586, 1976587, 1976588, 1976589, 1976590, 1976591, 1976592, 1976593, 1976594, 1976595, 1976596, 1976597, 1976598, 1976599, 1976614

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	03/22/2018			03/22/2018 16:28	DeAsia Armster	1976586, 1976587, 1976588, 1976589, 1976590, 1976591, 1976592, 1976593, 1976594, 1976595, 1976596, 1976597, 1976598, 1976599, 1976614
EPA 350.1 Rev. 2.0	03/22/2018			03/30/2018	Ping Hua	1976600, 1976601, 1976602
	03/22/2018			04/02/2018	Ping Hua	1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976615
EPA 351.2 Rev. 2.0	03/22/2018	03/23/2018	Adrian Shelby	04/03/2018	Ping Hua	1976613
	03/22/2018			03/27/2018	Joseph Suarez	1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613, 1976615
EPA 353.2 Rev. 2.0	03/22/2018			03/23/2018	Beverly Y. Sanders	1976615
	03/22/2018			03/26/2018	Lauren Bottorf	1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613
EPA 365.1 Rev. 2.0	03/22/2018	03/23/2018	Sima Feizi	03/26/2018	Beverly Y. Sanders	1976600, 1976601, 1976602, 1976603, 1976604, 1976605, 1976606, 1976607, 1976608, 1976609, 1976610, 1976611, 1976612, 1976613, 1976615
SM 2120 B	03/22/2018			03/22/2018 12:51	Tanya Welborn	1976595
	03/22/2018			03/22/2018 12:56	Tanya Welborn	1976598
	03/22/2018			03/22/2018 13:00	Tanya Welborn	1976586
	03/22/2018			03/22/2018 13:01	Tanya Welborn	1976588, 1976590
	03/22/2018			03/22/2018 13:02	Tanya Welborn	1976597
	03/22/2018			03/22/2018 13:03	Tanya Welborn	1976591
	03/22/2018			03/22/2018 13:08	Tanya Welborn	1976587
	03/22/2018			03/22/2018 13:09	Tanya Welborn	1976599
	03/22/2018			03/22/2018 13:10	Tanya Welborn	1976596
	03/22/2018			03/22/2018 13:11	Tanya Welborn	1976592, 1976614
	03/22/2018			03/22/2018 13:12	Tanya Welborn	1976594
	03/22/2018			03/22/2018 16:41	Tanya Welborn	1976589
	03/22/2018			03/22/2018 16:42	Tanya Welborn	1976593
SM 2540 D-97	03/22/2018			03/23/2018	DeAsia Armster	1976586, 1976587, 1976588, 1976589, 1976590, 1976591, 1976592, 1976593, 1976594, 1976595, 1976596, 1976597, 1976598, 1976599, 1976614