Chemical Analysis Report

NW-DIST-2022-08-24-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Hogtown Bayou Run**
Request ID: **RQ-2022-08-22-44**
Customer: **NW-DIST**
Project ID: **SMP**

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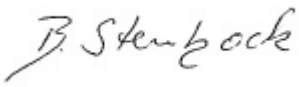
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 14-SEP-2022 16:50



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: Mack Bayou Center **Collection Date/Time: 08/23/2022 11:00**

Field ID: G3NW0185 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2351992	EPA 180.1 Rev. 2.0	Turbidity	4.0	A	NTU	P418622	
	SM 2320 B-2011	Total Alkalinity	81		mg CaCO3/L	P418730	
	SM 2540 D-2011	TSS	5	I A	mg/L	P419151	
	SM 4500-F- C-2011	Fluoride	0.65		mg F/L	P418731	
2351999	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P418940	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P418907	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418864	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	4.0		mg C/L	P419164	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Buck Bayou Center **Collection Date/Time: 08/23/2022 10:35**

Field ID: G3NW0233 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2351993	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P418622	
	SM 2320 B-2011	Total Alkalinity	80		mg CaCO3/L	P418730	
	SM 2540 D-2011	TSS	3	I	mg/L	P419151	
	SM 4500-F- C-2011	Fluoride	0.66		mg F/L	P418731	
2352000	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P418907	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P418864	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	3.5		mg C/L	P419164	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Hewett Bayou Center **Collection Date/Time: 08/23/2022 11:25**

Field ID: G3NW0218 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2351994	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P418622	
	SM 2320 B-2011	Total Alkalinity	80		mg CaCO3/L	P418730	
	SM 2540 D-2011	TSS	4	I	mg/L	P419151	
	SM 4500-F- C-2011	Fluoride	0.66		mg F/L	P418731	
2352001	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P418907	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P418865	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	4.0		mg C/L	P419164	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Churchill Bayou Center **Collection Date/Time: 08/23/2022 12:00**

Field ID: G3NW0235 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2351995	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P418622	
	SM 2320 B-2011	Total Alkalinity	79		mg CaCO3/L	P418730	
	SM 2540 D-2011	TSS	10	I	mg/L	P419151	
	SM 4500-F- C-2011	Fluoride	0.66		mg F/L	P418731	
2352002	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P418907	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P418865	
	EPA 365.1 Rev. 2.0	Total-P	0.045		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	5.5		mg C/L	P419164	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Mussett Bayou Center **Collection Date/Time: 08/23/2022 11:45**

Field ID: G3NW0234 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2351996	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P418622	
	SM 2320 B-2011	Total Alkalinity	78		mg CaCO3/L	P418730	
	SM 2540 D-2011	TSS	7	I	mg/L	P419151	
	SM 4500-F- C-2011	Fluoride	0.68		mg F/L	P418731	
2352003	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P418907	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P418865	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	4.0		mg C/L	P419164	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Hogtown Bayou at Cessna Park **Collection Date/Time: 08/23/2022 12:10**

Field ID: G3NW0152 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2351997	EPA 180.1 Rev. 2.0	Turbidity	7.6		NTU	P418622	
	SM 2320 B-2011	Total Alkalinity	82		mg CaCO3/L	P418730	
	SM 2540 D-2011	TSS	10		mg/L	P419151	
	SM 4500-F- C-2011	Fluoride	0.70		mg F/L	P418731	
2352004	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P418819	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418865	
	EPA 365.1 Rev. 2.0	Total-P	0.097		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	6.5		mg C/L	P419164	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB **Collection Date/Time: 08/23/2022 10:48**

Field ID: FB_08232022 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2351998	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P418622	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P419054	
	SM 2540 D-2011	TSS	2	U	mg/L	P419149	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P418861	
2352005	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P418811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P418777	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418938	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P418893	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P419026	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418622

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418940

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419067

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418777

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418819

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418907

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418864

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418865

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418938

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418893

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

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

Reference Method: SM 2320 B-2011
Batch ID: P418730

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

Reference Method: SM 2320 B-2011
Batch ID: P419054

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

Reference Method: SM 2540 D-2011
Batch ID: P419149

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P419151

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P418731

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P418861

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P419026

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

Reference Method: SM 5310 B-2011
Batch ID: P419164

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418622

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418940

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418777

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418819

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418907

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418864

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418865

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418938

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418893

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

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

Reference Method: SM 2320 B-2011
Batch ID: P418730

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P419054

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P418731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P418861

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P419026

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P419164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352114	Ammonia-N	97.4	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351888	Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352000	Ammonia-N	96.2	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351887	Kjeldahl Nitrogen	108	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351886	Kjeldahl Nitrogen	101	96.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351889	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418865

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352001	NO2NO3-N	98.8	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351951	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352114	Total-P	105	104	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352301	Total-P	99.8	98.4	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P418731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351804	Fluoride	98.4	98.4	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P418861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351596	Fluoride	100	99.6	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P419026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351836	Organic Carbon	92.6	96.2	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P419164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352545	Organic Carbon	91.6	88.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351992	Turbidity	16.9	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352114	Ammonia-N	2.74	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351888	Ammonia-N	1.69	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352000	Ammonia-N	1.62	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351462	Kjeldahl Nitrogen	1.47	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351887	Kjeldahl Nitrogen	6.99	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351886	Kjeldahl Nitrogen	3.42	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351889	NO2NO3-N	0.990	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418865

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352001	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351951	NO2NO3-N	0.462	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352114	Total-P	0.668	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352301	Total-P	1.27	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P418730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351804	Total Alkalinity	0.0235	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011
Batch ID: P419054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351596	Total Alkalinity	0.281	Sample	P	0 - 3.8

Reference Method: SM 2540 D-2011
Batch ID: P419149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352243	TSS	3.97	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P418731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351804	Fluoride	0.0	Spike	P	0 - 1.6

Quality Assurance Report
Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P418861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351596	Fluoride	0.484	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P419026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351836	Organic Carbon	1.88	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P419164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352545	Organic Carbon	2.83	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A114306
Included Lab Sample IDs: 2351992, 2351993, 2351994, 2351995, 2351996, 2351997, 2351998

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

Reference Method: SM 2320 B-2011
Run ID: A114366
Included Lab Sample IDs: 2351992, 2351993, 2351994, 2351995, 2351996, 2351997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.0	P/P	90 - 110
Total Alkalinity	97.7	100	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A114366
Included Lab Sample IDs: 2351992, 2351993, 2351994, 2351995, 2351996, 2351997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A114406
Included Lab Sample IDs: 2352005

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

Reference Method: SM 4500-F- C-2011
Run ID: A114426
Included Lab Sample IDs: 2351998

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A114428
Included Lab Sample IDs: 2351999, 2352000, 2352001, 2352002, 2352003, 2352004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	99.5	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A114456
Included Lab Sample IDs: 2352005

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A114457
Included Lab Sample IDs: 2352005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	96.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A114458
Included Lab Sample IDs: 2351999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.0	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A114469
Included Lab Sample IDs: 2352004

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114488
Included Lab Sample IDs: 2352005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	97.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A114498
Included Lab Sample IDs: 2352005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	96.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A114513
Included Lab Sample IDs: 2351998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A114517
Included Lab Sample IDs: 2352000, 2352001, 2352002, 2352003, 2352004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.9	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114523
Included Lab Sample IDs: 2351999, 2352000, 2352001, 2352002, 2352003, 2352004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	98.0	P/P	90 - 110
Total-P	98.0	99.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A114532
Included Lab Sample IDs: 2351999, 2352000, 2352001, 2352002, 2352003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.1	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A114556
Included Lab Sample IDs: 2351999, 2352000, 2352001, 2352002, 2352003, 2352004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	90.7	94.5	P/P	90 - 110
Organic Carbon	96.2	90.7	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	97.7				16.9	
EPA 350.1 Rev. 2.0	Ammonia-N	100	97.4	101			2.74
	Ammonia-N	99.0	103	105			1.69
	Ammonia-N	95.8	96.2	98.0			1.62
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105					1.47
	Kjeldahl Nitrogen	107	108	99.1			6.99
	Kjeldahl Nitrogen	103	101	96.3			3.42
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	100	102			0.990
	NO2NO3-N	99.0	98.8	99.3			0.491
	NO2NO3-N	103	102	102			0.462
EPA 365.1 Rev. 2.0	Total-P	103	105	104			0.668
	Total-P	103	99.8	98.4			1.27
SM 2320 B-2011	Total Alkalinity	101				0.0235	
	Total Alkalinity	100				0.281	
SM 2540 D-2011	TSS					3.97	
SM 4500-F- C-2011	Fluoride	101	98.4	98.4			0.0
	Fluoride	102	100	99.6			0.484
SM 5310 B-2011	Organic Carbon	95.8	92.6	96.2			1.88
	Organic Carbon	97.2	91.6	88.0			2.83

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2351992, 2351993, 2351994, 2351995, 2351996, 2351997, 2351998
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2351999, 2352000, 2352001, 2352002, 2352003, 2352004, 2352005
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2351999, 2352000, 2352001, 2352002, 2352003, 2352004, 2352005
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2351999, 2352000, 2352001, 2352002, 2352003, 2352004, 2352005
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2351999, 2352000, 2352001, 2352002, 2352003, 2352004, 2352005
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2351992, 2351993, 2351994, 2351995, 2351996, 2351997, 2351998
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2351992, 2351993, 2351994, 2351995, 2351996, 2351997, 2351998
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2351992, 2351993, 2351994, 2351995, 2351996, 2351997, 2351998
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2351999, 2352000, 2352001, 2352002, 2352003, 2352004, 2352005

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	08/24/2022			08/24/2022 15:17	Khloe J Berg	2351992
	08/24/2022			08/24/2022 15:24	Khloe J Berg	2351993
	08/24/2022			08/24/2022 15:25	Khloe J Berg	2351994
	08/24/2022			08/24/2022 15:26	Khloe J Berg	2351995
	08/24/2022			08/24/2022 15:27	Khloe J Berg	2351996
	08/24/2022			08/24/2022 15:28	Khloe J Berg	2351997
	08/24/2022			08/24/2022 15:32	Khloe J Berg	2351998
EPA 350.1 Rev. 2.0	08/24/2022			08/29/2022 15:32	Ping Hua	2352005
	08/24/2022			08/31/2022 13:42	Judith K. Clark	2351999
	08/24/2022			09/02/2022 11:14	Ping Hua	2352000
	08/24/2022			09/02/2022 11:18	Ping Hua	2352001
	08/24/2022			09/02/2022 11:19	Ping Hua	2352002
	08/24/2022			09/02/2022 11:20	Ping Hua	2352003
	08/24/2022			09/02/2022 11:22	Ping Hua	2352004
EPA 351.2 Rev. 2.0	08/24/2022	08/30/2022 09:19	Samantha L Bates	08/31/2022 13:18	Alexandra J Mattheus	2352005
	08/24/2022	08/30/2022 14:31	Samantha L Bates	08/31/2022 16:36	Alexandra J Mattheus	2352004
	08/24/2022	09/01/2022 12:27	Samantha L Bates	09/02/2022 14:11	Alexandra J Mattheus	2351999
	08/24/2022	09/01/2022 12:27	Samantha L Bates	09/02/2022 14:12	Alexandra J Mattheus	2352000
	08/24/2022	09/01/2022 12:27	Samantha L Bates	09/02/2022 14:14	Alexandra J Mattheus	2352001
	08/24/2022	09/01/2022 12:27	Samantha L Bates	09/02/2022 14:16	Alexandra J Mattheus	2352002
	08/24/2022	09/01/2022 12:27	Samantha L Bates	09/02/2022 14:17	Alexandra J Mattheus	2352003
EPA 353.2 Rev. 2.0	08/24/2022			08/30/2022 11:11	Beverly Y. Sanders	2351999
	08/24/2022			08/30/2022 11:12	Beverly Y. Sanders	2352000
	08/24/2022			08/30/2022 11:29	Beverly Y. Sanders	2352001
	08/24/2022			08/30/2022 11:35	Beverly Y. Sanders	2352002
	08/24/2022			08/30/2022 11:36	Beverly Y. Sanders	2352003
	08/24/2022			08/30/2022 11:37	Beverly Y. Sanders	2352004
	08/24/2022			08/31/2022 12:21	Beverly Y. Sanders	2352005
EPA 365.1 Rev. 2.0	08/24/2022	08/30/2022 16:33	Adam P Silver	09/01/2022 14:40	James L Waggerby	2352005
	08/24/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 13:57	James L Waggerby	2351999
	08/24/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 13:58	James L Waggerby	2352000
	08/24/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:05	James L Waggerby	2352001
	08/24/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:06	James L Waggerby	2352002
	08/24/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:07	James L Waggerby	2352003
	08/24/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:08	James L Waggerby	2352004
SM 2320 B-2011	08/24/2022			08/26/2022 00:12	Adam P Silver	2351992
	08/24/2022			08/26/2022 00:25	Adam P Silver	2351993
	08/24/2022			08/26/2022 00:39	Adam P Silver	2351994
	08/24/2022			08/26/2022 00:53	Adam P Silver	2351995
	08/24/2022			08/26/2022 01:42	Adam P Silver	2351996

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-2011	08/24/2022			08/26/2022 01:55	Adam P Silver	2351997
	08/24/2022			08/31/2022 21:38	Dale L. Simmons	2351998
SM 2540 D-2011	08/24/2022			08/29/2022 16:08	Yijie Li	2351992, 2351993, 2351994, 2351995, 2351996, 2351997, 2351998
SM 4500-F- C-2011	08/24/2022			08/25/2022 20:40	Adam P Silver	2351992
	08/24/2022			08/25/2022 20:46	Adam P Silver	2351993
	08/24/2022			08/25/2022 20:51	Adam P Silver	2351994
	08/24/2022			08/25/2022 20:56	Adam P Silver	2351995
	08/24/2022			08/25/2022 21:56	Adam P Silver	2351996
	08/24/2022			08/25/2022 22:01	Adam P Silver	2351997
	08/24/2022			08/30/2022 04:35	Adam P Silver	2351998
SM 5310 B-2011	08/24/2022			09/01/2022 19:41	Khloe J Berg	2352005
	08/24/2022			09/02/2022 18:28	Khloe J Berg	2351999
	08/24/2022			09/02/2022 18:46	Khloe J Berg	2352000
	08/24/2022			09/02/2022 19:31	Khloe J Berg	2352001
	08/24/2022			09/02/2022 19:46	Khloe J Berg	2352002
	08/24/2022			09/02/2022 20:00	Khloe J Berg	2352003
	08/24/2022			09/02/2022 20:33	Khloe J Berg	2352004