Chemical Analysis Report

NW-DIST-2018-09-14-01

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

Event Description: **Laurel Hill East**
Request ID: **RQ-2018-09-10-31**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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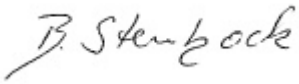
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 03-OCT-2018 16:34



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: GUM CREEK **Collection Date/Time: 09/13/2018 11:50**

Field ID: G4NW0382 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025452	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P351844	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P352243	
		Sulfate	0.45	I	mg SO4/L	P352246	
	SM 2120 B	Color (true)	160		PCU	P351992	
	SM 2320 B-97	Total Alkalinity	0.88	I	mg CaCO3/L	P351903	
	SM 2540 C-97	TDS	33		mg/L	P352128	
	SM 2540 D-97	TSS	18		mg/L	P352130	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351906	
2025457	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P351825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P351921	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P351999	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P351791	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P352092	
2025462	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P351689	

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: CANEY CREEK ABOVE HWY 2A **Collection Date/Time: 09/13/2018 12:40**

Field ID: G4NW0397 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025453	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P351844	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P352243	
		Sulfate	0.36	I	mg SO4/L	P352246	
	SM 2120 B	Color (true)	81		PCU	P351992	
	SM 2320 B-97	Total Alkalinity	9.3		mg CaCO3/L	P351903	
	SM 2540 C-97	TDS	45		mg/L	P352128	
	SM 2540 D-97	TSS	4	I	mg/L	P352130	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P351906	
2025458	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P351825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P351949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P351999	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P351802	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P352092	
2025463	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.058		mg P/L	P351689	

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: Eightmile Creek upstream of CR 181 (South of) **Collection Date/Time: 09/13/2018 13:05**

Field ID: G3NW0136 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025454	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P351844	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P352243	
		Sulfate	0.70		mg SO4/L	P352246	
	SM 2120 B	Color (true)	95		PCU	P351992	
	SM 2320 B-97	Total Alkalinity	20		mg CaCO3/L	P351903	
	SM 2540 C-97	TDS	46		mg/L	P352128	
	SM 2540 D-97	TSS	4	I	mg/L	P352130	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351906	
2025459	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P351825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P351949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.094		mg N/L	P351999	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P351802	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P352092	
2025464	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P351689	

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: HUCKLEBERRY CREEK **Collection Date/Time: 09/13/2018 13:35**

Field ID: G3NW0135 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025455	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P351844	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P352243	
		Sulfate	0.53	I	mg SO4/L	P352246	
	SM 2120 B	Color (true)	110		PCU	P351992	
	SM 2320 B-97	Total Alkalinity	4.2		mg CaCO3/L	P351903	
	SM 2540 C-97	TDS	36		mg/L	P352129	
	SM 2540 D-97	TSS	10	I	mg/L	P352131	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351906	
2025460	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P351825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P351949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P351999	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P351802	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P352092	
2025465	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P351689	

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 SANDY CREEK **Collection Date/Time: 09/13/2018 13:50**

Field ID: G3NW0053 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025456	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P351844	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P352243	
		Sulfate	0.75		mg SO4/L	P352246	
	SM 2120 B	Color (true)	80		PCU	P351993	
	SM 2320 B-97	Total Alkalinity	5.0		mg CaCO3/L	P351903	
	SM 2540 C-97	TDS	27		mg/L	P352129	
	SM 2540 D-97	TSS	5	I	mg/L	P352131	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351906	
2025461	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P352034	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P351949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P352000	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P351802	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P352092	
2025466	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P351689	

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: P351844

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352243

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352246

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352034

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351949

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352000

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351802

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

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

Reference Method: SM 2120 B
Batch ID: P351992

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P351993

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P351903

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

Reference Method: SM 2540 C-97
Batch ID: P352128

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P352129

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P352130

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P352131

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351906

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352092

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352243

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352246

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352034

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351949

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352000

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351802

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

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

Reference Method: SM 2120 B
Batch ID: P351992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.8		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P351993

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.6		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P351903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P351906

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

Reference Method: SM 5310 B-00
Batch ID: P352092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025426	Chloride	98.7		P	90 - 110
2025489	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025426	Sulfate	98.6		P	90 - 110
2025489	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025457	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025461	Ammonia-N	101	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025409	Kjeldahl Nitrogen	109	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025460	Kjeldahl Nitrogen	109	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025427	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352000

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025491	NO2NO3-N	99.3	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025428	Total-P	100	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025458	Total-P	99.5	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025465	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P351906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025343	Fluoride	96.3	95.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025362	Organic Carbon	101	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025452	Turbidity	0.905	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025426	Chloride	1.98	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025426	Sulfate	1.80	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025457	Ammonia-N	0.904	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025461	Ammonia-N	1.39	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025409	Kjeldahl Nitrogen	2.98	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025460	Kjeldahl Nitrogen	3.31	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025427	NO2NO3-N	0.583	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025491	NO2NO3-N	0.442	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025428	Total-P	0.0735	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025458	Total-P	1.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025465	O-Phosphate-P	0.977	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P351992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025426	Color (true)	0.0626	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P351993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025489	Color (true)	1.21	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P351903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025343	Total Alkalinity	0.145	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P352128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025418	TDS	1.95	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P352129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025490	TDS	5.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P351906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025343	Fluoride	0.487	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P352092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025362	Organic Carbon	0.149	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A86502
Included Lab Sample IDs: 2025452, 2025453, 2025454, 2025455, 2025456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.6	99.7	P/P	90 - 115
Color (true)	99.7	97.8	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86504
Included Lab Sample IDs: 2025462, 2025463, 2025464, 2025465, 2025466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86557
Included Lab Sample IDs: 2025457, 2025458, 2025459, 2025460

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86561
Included Lab Sample IDs: 2025452, 2025453, 2025454, 2025455, 2025456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	103	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86577
Included Lab Sample IDs: 2025458

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86578
Included Lab Sample IDs: 2025457, 2025459, 2025460, 2025461

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

Reference Method: SM 2320 B-97
Run ID: A86586
Included Lab Sample IDs: 2025452, 2025453, 2025454, 2025455, 2025456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A86586
Included Lab Sample IDs: 2025452, 2025453, 2025454, 2025455, 2025456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86611
Included Lab Sample IDs: 2025457

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86615
Included Lab Sample IDs: 2025457, 2025458, 2025459, 2025460, 2025461

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86626
Included Lab Sample IDs: 2025461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86630
Included Lab Sample IDs: 2025458, 2025459, 2025460, 2025461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	103	P/P	90 - 110
Kjeldahl Nitrogen	99.3	101	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A86647
Included Lab Sample IDs: 2025457, 2025458, 2025459, 2025460, 2025461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.1	96.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86718
Included Lab Sample IDs: 2025452, 2025453, 2025454, 2025455, 2025456

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.905	
EPA 300.0 Rev. 2.1	Chloride	102	98.7	102		1.98	
	Sulfate	101	98.6	101		1.80	
EPA 350.1 Rev. 2.0	Ammonia-N	105	103	102			0.904
	Ammonia-N	98.8	101	99.3			1.39
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.2	109	104			2.98
	Kjeldahl Nitrogen	96.8	109	104			3.31
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	100			0.583
	NO2NO3-N	100	99.3	99.8			0.442
EPA 365.1 Rev. 2.0	Total-P	98.4	100	100			0.0735
	Total-P	101	99.5	97.4			1.77
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	103			0.977
SM 2120 B	Color (true)	97.8				0.0626	
	Color (true)	96.6				1.21	
SM 2320 B-97	Total Alkalinity	100				0.145	
SM 2540 C-97	TDS					1.95	
	TDS					5.17	
SM 4500 F-C-97	Fluoride	97.6	96.3	95.8			0.487
SM 5310 B-00	Organic Carbon	98.0	101	101			0.149

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2025452, 2025453, 2025454, 2025455, 2025456
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2025452, 2025453, 2025454, 2025455, 2025456
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2025452, 2025453, 2025454, 2025455, 2025456
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2025457, 2025458, 2025459, 2025460, 2025461
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2025457, 2025458, 2025459, 2025460, 2025461
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2025457, 2025458, 2025459, 2025460, 2025461
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2025457, 2025458, 2025459, 2025460, 2025461
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2025462, 2025463, 2025464, 2025465, 2025466
SM 2120 B / E31780	True Color measured at 450 nm	2025452, 2025453, 2025454, 2025455, 2025456
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2025452, 2025453, 2025454, 2025455, 2025456
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2025452, 2025453, 2025454, 2025455, 2025456
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2025452, 2025453, 2025454, 2025455, 2025456
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2025452, 2025453, 2025454, 2025455, 2025456
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2025457, 2025458, 2025459, 2025460, 2025461

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	09/14/2018			09/14/2018 16:35	Megan Treadwell	2025452, 2025453, 2025454, 2025455, 2025456
EPA 300.0 Rev. 2.1	09/14/2018			09/25/2018 10:53	Lipi Saha	2025452
	09/14/2018			09/25/2018 11:05	Lipi Saha	2025453
	09/14/2018			09/25/2018 11:17	Lipi Saha	2025454
	09/14/2018			09/25/2018 11:29	Lipi Saha	2025455
	09/14/2018			09/25/2018 11:41	Lipi Saha	2025456
EPA 350.1 Rev. 2.0	09/14/2018			09/18/2018 14:21	Ping Hua	2025457
	09/14/2018			09/18/2018 14:22	Ping Hua	2025458
	09/14/2018			09/18/2018 14:24	Ping Hua	2025459
	09/14/2018			09/18/2018 14:25	Ping Hua	2025460
	09/14/2018			09/20/2018 11:38	Ping Hua	2025461
EPA 351.2 Rev. 2.0	09/14/2018	09/19/2018 15:55	Adrian Shelby	09/20/2018 13:18	Joseph Suarez	2025457
	09/14/2018	09/20/2018 10:50	Adrian Shelby	09/21/2018 09:11	Joseph Suarez	2025458
	09/14/2018	09/20/2018 10:50	Adrian Shelby	09/21/2018 09:13	Joseph Suarez	2025459
	09/14/2018	09/20/2018 10:50	Adrian Shelby	09/21/2018 09:17	Joseph Suarez	2025460
	09/14/2018	09/20/2018 10:50	Adrian Shelby	09/21/2018 09:22	Joseph Suarez	2025461
EPA 353.2 Rev. 2.0	09/14/2018			09/20/2018 13:24	Lauren Bottorf	2025457
	09/14/2018			09/20/2018 13:25	Lauren Bottorf	2025458
	09/14/2018			09/20/2018 13:26	Lauren Bottorf	2025459
	09/14/2018			09/20/2018 13:28	Lauren Bottorf	2025460
	09/14/2018			09/20/2018 13:42	Lauren Bottorf	2025461
EPA 365.1 Rev. 2.0	09/14/2018	09/18/2018 12:30	Sima Feizi	09/19/2018 10:27	Beverly Y. Sanders	2025458
	09/14/2018	09/18/2018 12:30	Sima Feizi	09/19/2018 11:12	Beverly Y. Sanders	2025459
	09/14/2018	09/18/2018 12:30	Sima Feizi	09/19/2018 11:13	Beverly Y. Sanders	2025460
	09/14/2018	09/18/2018 12:30	Sima Feizi	09/19/2018 11:14	Beverly Y. Sanders	2025461
	09/14/2018	09/18/2018 12:30	Sima Feizi	09/19/2018 11:20	Beverly Y. Sanders	2025457
EPA 365.1 Rev. 2.0 dissolved	09/14/2018			09/14/2018 15:48	Julia Storbeck	2025465
	09/14/2018			09/14/2018 15:52	Julia Storbeck	2025462, 2025463
	09/14/2018			09/14/2018 15:53	Julia Storbeck	2025464
	09/14/2018			09/14/2018 15:54	Julia Storbeck	2025466
SM 2120 B	09/14/2018			09/14/2018 15:31	DeAsia Armster	2025453
	09/14/2018			09/14/2018 15:32	DeAsia Armster	2025454, 2025455
	09/14/2018			09/14/2018 15:36	DeAsia Armster	2025456
	09/14/2018			09/14/2018 15:44	DeAsia Armster	2025452
SM 2320 B-97	09/14/2018			09/19/2018 03:04	Dale L. Simmons	2025452
	09/14/2018			09/19/2018 03:14	Dale L. Simmons	2025453
	09/14/2018			09/19/2018 03:24	Dale L. Simmons	2025454
	09/14/2018			09/19/2018 03:36	Dale L. Simmons	2025455
	09/14/2018			09/19/2018 03:48	Dale L. Simmons	2025456

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-97	09/14/2018			09/18/2018 14:02	Yijie Li	2025452, 2025453, 2025454, 2025455, 2025456
SM 2540 D-97	09/14/2018			09/18/2018 14:02	Yijie Li	2025452, 2025453, 2025454, 2025455, 2025456
SM 4500 F-C-97	09/14/2018			09/19/2018 03:04	Dale L. Simmons	2025452
	09/14/2018			09/19/2018 03:14	Dale L. Simmons	2025453
	09/14/2018			09/19/2018 03:24	Dale L. Simmons	2025454
	09/14/2018			09/19/2018 03:36	Dale L. Simmons	2025455
	09/14/2018			09/19/2018 03:48	Dale L. Simmons	2025456
SM 5310 B-00	09/14/2018			09/21/2018 04:56	Megan Treadwell	2025457
	09/14/2018			09/21/2018 05:08	Megan Treadwell	2025458
	09/14/2018			09/21/2018 05:20	Megan Treadwell	2025459
	09/14/2018			09/21/2018 05:32	Megan Treadwell	2025460
	09/14/2018			09/21/2018 05:45	Megan Treadwell	2025461