

Chemical Analysis Report

NW-DIST-2021-11-16-01

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

Event Description: **Perdido Bayou Run**
Request ID: **RQ-2021-11-01-66**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 06-DEC-2021 09:54



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: Bayou Grande near Navy Point Boat Ramp

Collection Date/Time: 11/15/2021 10:09

Field ID: G4NW0501

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289720	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	67		mg CaCO3/L	P406489	
	SM 2540 D-2011	TSS	5	I	mg/L	P406738	
	SM 4500 F-C-2011	Fluoride	0.64		mg F/L	P406491	
2289727	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P406707	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P406475	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P406460	
	SM 5310 B-2011	Organic Carbon	3.5		mg C/L	P406873	
2289734	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

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: Weekly Bayou Creek @ County Rd 293

Collection Date/Time: 11/15/2021 16:15

Field ID: G5NW0163

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289721	EPA 180.1 Rev. 2.0	Turbidity	1.5	A	NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	46		mg CaCO3/L	P406489	
	SM 2540 D-2011	TSS	3	U	mg/L	P406738	
	SM 4500 F-C-2011	Fluoride	0.46	I	mg F/L	P406491	
2289728	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P406707	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P406475	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P406545	
	SM 5310 B-2011	Organic Carbon	5.0		mg C/L	P406873	
2289735	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

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: Bridge Creek near Bridge Creek Landing

Collection Date/Time: 11/15/2021 15:05

Field ID: G5NW0153

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289722	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	17		mg CaCO3/L	P406619	
	SM 2540 D-2011	TSS	3	I	mg/L	P406736	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P406621	
2289729	EPA 350.1 Rev. 2.0	Ammonia-N	0.048		mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P406822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P406476	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P406545	
	SM 5310 B-2011	Organic Carbon	5.4		mg C/L	P406871	
2289736	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

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: Weekly Bayou Middle Portion

Collection Date/Time: 11/15/2021 13:32

Field ID: G5NW0157

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289723	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	23		mg CaCO3/L	P406489	
	SM 2540 D-2011	TSS	3	U	mg/L	P406738	
	SM 4500 F-C-2011	Fluoride	0.22		mg F/L	P406491	
2289730	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P406822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P406476	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P406545	
	SM 5310 B-2011	Organic Carbon	5.7		mg C/L	P406873	
2289737	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

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: Bayou Garcon

Collection Date/Time: 11/15/2021 14:07

Field ID: G5NW0152

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289724	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	54		mg CaCO3/L	P406489	
	SM 2540 D-2011	TSS	4	I	mg/L	P406738	
	SM 4500 F-C-2011	Fluoride	0.55		mg F/L	P406491	
2289731	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P406822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P406476	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P406545	
	SM 5310 B-2011	Organic Carbon	5.9		mg C/L	P406873	
2289738	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

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: Bayou Grande at CR-297

Collection Date/Time: 11/15/2021 11:11

Field ID: G4NW0521

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289725	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	25		mg CaCO3/L	P406489	
	SM 2540 D-2011	TSS	3	I	mg/L	P406738	
	SM 4500 F-C-2011	Fluoride	0.18	I	mg F/L	P406491	
2289732	EPA 350.1 Rev. 2.0	Ammonia-N	0.061		mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P406822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P406476	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P406545	
	SM 5310 B-2011	Organic Carbon	5.5		mg C/L	P406873	
2289739	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

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: Bayou Grande

Collection Date/Time: 11/15/2021 10:29

Field ID: G4NW0500

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289726	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	66		mg CaCO3/L	P406489	
	SM 2540 D-2011	TSS	3	U	mg/L	P406738	
	SM 4500 F-C-2011	Fluoride	0.64		mg F/L	P406491	
2289733	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P406822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P406476	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P406545	
	SM 5310 B-2011	Organic Carbon	3.4		mg C/L	P406873	
2289740	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

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: 11/15/2021 14:16

Field ID: FB_11152021

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289741	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P406387	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P406619	
	SM 2540 D-2011	TSS	2	U	mg/L	P406736	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P406621	
2289742	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P406715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P406792	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406418	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P406543	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P406871	
2289743	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406383	

Ref. Method and Comment:

SM 2540 D-2011: 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: P406387

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406715

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406803

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406707

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406792

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406822

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406418

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406475

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406476

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: P406460

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406543

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406545

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406383

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

Reference Method: SM 2320 B-2011
Batch ID: P406489

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

Reference Method: SM 2320 B-2011
Batch ID: P406619

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

Reference Method: SM 2540 D-2011
Batch ID: P406736

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406738

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P406491

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P406621

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P406871

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

Reference Method: SM 5310 B-2011
Batch ID: P406873

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406803

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: P406707

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406792

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: P406822

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406418

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: P406475

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406476

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406460

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406543

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: P406545

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406383

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

Reference Method: SM 2320 B-2011
Batch ID: P406489

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

Reference Method: SM 2320 B-2011
Batch ID: P406619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P406491

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P406621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P406871

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.3		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P406873

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289695	Ammonia-N	96.4	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289727	Ammonia-N	99.4	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289633	Kjeldahl Nitrogen	107	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289708	Kjeldahl Nitrogen	110	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289730	Kjeldahl Nitrogen	98.2	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406418

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289708	NO2NO3-N	99.0	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289631	NO2NO3-N	92.5	93.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289729	NO2NO3-N	96.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406460

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289239	Total-P	99.9	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289866	Total-P	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406545

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289732	Total-P	107	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289737	O-Phosphate-P	97.7	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P406491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289664	Fluoride	104	104	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P406621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289929	Fluoride	101	101	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P406871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289729	Organic Carbon	95.7	95.9	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P406873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289665	Organic Carbon	97.6	95.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P406387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289721	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289695	Ammonia-N	1.91	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289727	Ammonia-N	0.731	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289633	Kjeldahl Nitrogen	1.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289708	Kjeldahl Nitrogen	3.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289730	Kjeldahl Nitrogen	0.413	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289708	NO2NO3-N	2.47	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289631	NO2NO3-N	0.939	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P406476

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289729	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P406460

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289239	Total-P	0.0957	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P406543

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289866	Total-P	0.341	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P406545

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289732	Total-P	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P406383

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289737	O-Phosphate-P	0.510	Spike	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P406489

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289664	Total Alkalinity	0.543	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011

Batch ID: P406619

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289929	Total Alkalinity	0.0923	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011

Batch ID: P406491

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289664	Fluoride	0.477	Spike	P	0 - 2.1

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P406621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289929	Fluoride	0.487	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P406871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289729	Organic Carbon	0.163	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P406873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289665	Organic Carbon	1.79	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108925

Included Lab Sample IDs: 2289734, 2289735, 2289736, 2289737, 2289738, 2289739, 2289740, 2289743

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.4	P/P	90 - 110
O-Phosphate-P	99.0	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108927

Included Lab Sample IDs: 2289720, 2289721, 2289722, 2289723, 2289724, 2289725, 2289726, 2289741

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108938

Included Lab Sample IDs: 2289742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108963

Included Lab Sample IDs: 2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733

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

Reference Method: SM 2320 B-2011

Run ID: A108970

Included Lab Sample IDs: 2289720, 2289721, 2289723, 2289724, 2289725, 2289726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A108970

Included Lab Sample IDs: 2289720, 2289721, 2289723, 2289724, 2289725, 2289726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	102	P/P	90 - 110
Fluoride	103	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A109022

Included Lab Sample IDs: 2289722, 2289741

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	96.8	P/P	90 - 110
Total Alkalinity	96.8	98.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A109022

Included Lab Sample IDs: 2289722, 2289741

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109042

Included Lab Sample IDs: 2289727

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109059

Included Lab Sample IDs: 2289742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	93.6	94.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109063

Included Lab Sample IDs: 2289728, 2289729, 2289730, 2289731, 2289732, 2289733, 2289742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.5	P/P	90 - 110
Total-P	99.2	99.2	P/P	90 - 110
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109088

Included Lab Sample IDs: 2289727, 2289728

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109123

Included Lab Sample IDs: 2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	98.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109141

Included Lab Sample IDs: 2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733, 2289742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.7	97.6	P/P	90 - 110
Organic Carbon	97.3	96.4	P/P	90 - 110
Organic Carbon	97.6	98.2	P/P	90 - 110
Organic Carbon	98.2	97.3	P/P	90 - 110
Organic Carbon	98.4	96.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109155

Included Lab Sample IDs: 2289742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109176

Included Lab Sample IDs: 2289729, 2289730, 2289731, 2289732, 2289733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.1	99.0	P/P	90 - 110
Kjeldahl Nitrogen	98.0	97.1	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.0	
EPA 350.1 Rev. 2.0	Ammonia-N	93.6	96.4	94.2			1.91
	Ammonia-N	98.8	99.4	98.6			0.731
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	107	104			1.89
	Kjeldahl Nitrogen	105	110	103			3.89
	Kjeldahl Nitrogen	101	98.2	98.7			0.413
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	99.0	96.5			2.47
	NO ₂ NO ₃ -N	98.0	92.5	93.5			0.939
	NO ₂ NO ₃ -N	98.0	96.5	96.5			0.0
EPA 365.1 Rev. 2.0	Total-P	103	99.9	100			0.0957
	Total-P	103	103	103			0.341
	Total-P	107	107	105			1.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	97.7	98.2			0.510
SM 2320 B-2011	Total Alkalinity	101				0.543	
	Total Alkalinity	99.8				0.0923	
SM 4500 F-C-2011	Fluoride	101	104	104			0.477
	Fluoride	101	101	101			0.487
SM 5310 B-2011	Organic Carbon	96.3	95.7	95.9			0.163
	Organic Carbon	97.3	97.6	95.5			1.79

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2289720, 2289721, 2289722, 2289723, 2289724, 2289725, 2289726, 2289741
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733, 2289742
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733, 2289742
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733, 2289742
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733, 2289742
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2289734, 2289735, 2289736, 2289737, 2289738, 2289739, 2289740, 2289743
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2289720, 2289721, 2289722, 2289723, 2289724, 2289725, 2289726, 2289741
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2289720, 2289721, 2289722, 2289723, 2289724, 2289725, 2289726, 2289741
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2289720, 2289721, 2289722, 2289723, 2289724, 2289725, 2289726, 2289741
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2289727, 2289728, 2289729, 2289730, 2289731, 2289732, 2289733, 2289742

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	11/16/2021			11/16/2021 16:53	Khloe J Berg	2289720, 2289721, 2289722, 2289723, 2289724, 2289725, 2289726, 2289741
EPA 350.1 Rev. 2.0	11/16/2021			11/23/2021 13:55	Roberta Tatti	2289742
	11/16/2021			11/29/2021 14:32	Ping Hua	2289727
	11/16/2021			11/29/2021 14:38	Ping Hua	2289728
	11/16/2021			11/29/2021 14:40	Ping Hua	2289729
	11/16/2021			11/29/2021 14:41	Ping Hua	2289730
	11/16/2021			11/29/2021 14:42	Ping Hua	2289731
	11/16/2021			11/29/2021 14:44	Ping Hua	2289732
	11/16/2021			11/29/2021 14:45	Ping Hua	2289733
EPA 351.2 Rev. 2.0	11/16/2021	11/23/2021 14:23	Benjamin T. Nordmann	11/24/2021 11:20	Alexandra J Mattheus	2289727
	11/16/2021	11/23/2021 14:23	Benjamin T. Nordmann	11/24/2021 11:21	Alexandra J Mattheus	2289728
	11/16/2021	11/29/2021 13:13	Benjamin T. Nordmann	11/30/2021 14:09	Alexandra J Mattheus	2289742
	11/16/2021	11/30/2021 12:32	Benjamin T. Nordmann	12/02/2021 11:17	Alexandra J Mattheus	2289729
	11/16/2021	11/30/2021 12:32	Benjamin T. Nordmann	12/02/2021 11:19	Alexandra J Mattheus	2289730
	11/16/2021	11/30/2021 12:32	Benjamin T. Nordmann	12/02/2021 11:24	Alexandra J Mattheus	2289731
	11/16/2021	11/30/2021 12:32	Benjamin T. Nordmann	12/02/2021 11:25	Alexandra J Mattheus	2289732
	11/16/2021	11/30/2021 12:32	Benjamin T. Nordmann	12/02/2021 11:30	Alexandra J Mattheus	2289733
EPA 353.2 Rev. 2.0	11/16/2021			11/17/2021 10:04	Beverly Y. Sanders	2289742
	11/16/2021			11/18/2021 09:04	Beverly Y. Sanders	2289727
	11/16/2021			11/18/2021 09:05	Beverly Y. Sanders	2289728
	11/16/2021			11/18/2021 09:12	Beverly Y. Sanders	2289729
	11/16/2021			11/18/2021 09:18	Beverly Y. Sanders	2289730
	11/16/2021			11/18/2021 09:19	Beverly Y. Sanders	2289731
	11/16/2021			11/18/2021 09:20	Beverly Y. Sanders	2289732
	11/16/2021			11/18/2021 09:21	Beverly Y. Sanders	2289733
EPA 365.1 Rev. 2.0	11/16/2021	11/17/2021 16:55	Simonne.V. Calhoun	11/18/2021 16:50	Sarah A Nixon	2289727
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:03	Sarah A Nixon	2289742
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:19	Sarah A Nixon	2289732
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:20	Sarah A Nixon	2289728
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:27	Sarah A Nixon	2289729
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:28	Sarah A Nixon	2289730
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:29	Sarah A Nixon	2289731
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:30	Sarah A Nixon	2289733
EPA 365.1 Rev. 2.0 dissolved	11/16/2021			11/16/2021 15:41	James L Waggeberby	2289737
	11/16/2021			11/16/2021 15:44	James L Waggeberby	2289734
	11/16/2021			11/16/2021 15:45	James L Waggeberby	2289735
	11/16/2021			11/16/2021 15:46	James L Waggeberby	2289736
	11/16/2021			11/16/2021 15:47	James L Waggeberby	2289738
	11/16/2021			11/16/2021 15:48	James L Waggeberby	2289739, 2289740

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved SM 2320 B-2011	11/16/2021			11/16/2021 15:54	James L Waggeberby	2289743
	11/16/2021			11/18/2021 00:46	Dale L. Simmons	2289723
	11/16/2021			11/18/2021 00:58	Dale L. Simmons	2289725
	11/16/2021			11/18/2021 01:25	Dale L. Simmons	2289720
	11/16/2021			11/18/2021 01:37	Dale L. Simmons	2289721
	11/16/2021			11/18/2021 01:49	Dale L. Simmons	2289724
	11/16/2021			11/18/2021 02:02	Dale L. Simmons	2289726
	11/16/2021			11/18/2021 18:59	Dale L. Simmons	2289722
	11/16/2021			11/18/2021 20:10	Dale L. Simmons	2289741
	11/16/2021			11/18/2021 15:56	Yijie Li	2289720, 2289721, 2289722, 2289723, 2289724, 2289725, 2289726, 2289741
SM 2540 D-2011						
SM 4500 F-C-2011	11/16/2021			11/17/2021 22:42	Dale L. Simmons	2289723
	11/16/2021			11/17/2021 22:48	Dale L. Simmons	2289725
	11/16/2021			11/17/2021 22:58	Dale L. Simmons	2289720
	11/16/2021			11/17/2021 23:46	Dale L. Simmons	2289721
	11/16/2021			11/17/2021 23:51	Dale L. Simmons	2289724
	11/16/2021			11/17/2021 23:56	Dale L. Simmons	2289726
	11/16/2021			11/18/2021 18:59	Dale L. Simmons	2289722
	11/16/2021			11/18/2021 20:10	Dale L. Simmons	2289741
SM 5310 B-2011	11/16/2021			11/29/2021 21:58	Khloe J Berg	2289729
	11/16/2021			11/30/2021 02:39	Khloe J Berg	2289742
	11/16/2021			11/30/2021 13:55	Khloe J Berg	2289727
	11/16/2021			11/30/2021 14:51	Khloe J Berg	2289728
	11/16/2021			11/30/2021 16:00	Khloe J Berg	2289730
	11/16/2021			11/30/2021 16:58	Khloe J Berg	2289731
	11/16/2021			11/30/2021 17:48	Khloe J Berg	2289732
	11/16/2021			11/30/2021 18:57	Khloe J Berg	2289733