

Chemical Analysis Report

NW-DIST-2022-12-13-04

Florida DEP Laboratory
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Tallahassee, FL 32399-2400
DOH Accreditation E31780

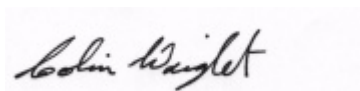
Event Description: **Pensacola Estuary Run**
Request ID: **RQ-2022-12-12-17**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
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Pensacola, FL 32502-5794
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Certified by: Colin Wright, Program Administrator

Date Certified: 06-JAN-2023 15:20

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light pink rectangular background.

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 at CR-297

Collection Date/Time: 12/12/2022 09:40

Field ID: G4NW0521

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374816	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P423468	
	SM 2320 B-2011	Total Alkalinity	60		mg CaCO3/L	P423575	
	SM 2540 D-2015	TSS	3	U	mg/L	P423788	
	SM 4500-F- C-2011	Fluoride	0.57		mg F/L	P423584	
2374819	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P424101	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P423558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P423769	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P423484	
	SM 5310 B-2011	Organic Carbon	4.0		mg C/L	P423744	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Tea Lake (Center)

Collection Date/Time: 12/12/2022 11:50

Field ID: G5NW0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374814	EPA 180.1 Rev. 2.0	Turbidity	2.7	A	NTU	P423468	
	SM 2320 B-2011	Total Alkalinity	29	A	mg CaCO3/L	P423575	
	SM 2540 D-2015	TSS	3	I	mg/L	P423787	
	SM 4500-F- C-2011	Fluoride	0.24		mg F/L	P423584	
2374815	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P424101	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34	I	mg N/L	P423558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P423768	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P423484	
	SM 5310 B-2011	Organic Carbon	5.2		mg C/L	P423708	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Bayou Grande

Collection Date/Time: 12/12/2022 10:15

Field ID: G4NW0500

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374817	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P423468	
	SM 2320 B-2011	Total Alkalinity	69		mg CaCO3/L	P423575	
	SM 2540 D-2015	TSS	8	I	mg/L	P423788	
	SM 4500-F- C-2011	Fluoride	0.70		mg F/L	P423584	
2374820	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P424101	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P423558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P423769	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P423484	
	SM 5310 B-2011	Organic Carbon	4.3		mg C/L	P423744	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Bayou Grande near Navy Point Boat Ramp

Collection Date/Time: 12/12/2022 10:30

Field ID: G4NW0501

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374818	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P423468	
	SM 2320 B-2011	Total Alkalinity	67		mg CaCO3/L	P423575	
	SM 2540 D-2015	TSS	4	I	mg/L	P423788	
	SM 4500-F- C-2011	Fluoride	0.71		mg F/L	P423584	
2374821	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P424101	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P423558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P423770	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P423484	
	SM 5310 B-2011	Organic Carbon	4.6		mg C/L	P423744	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB

Collection Date/Time: 12/12/2022 10:35

Field ID: FB_12122022

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374822	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P423468	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P423927	
	SM 2540 D-2015	TSS	2	U	mg/L	P423787	
	SM 4500-F- C-2011	Fluoride	0.025	U	mg F/L	P423931	

Ref. Method and Comment:

SM 2540 D-2015: 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: P423468

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424101

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423558

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423768

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423769

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423770

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423484

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

Reference Method: SM 2320 B-2011
Batch ID: P423575

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

Reference Method: SM 2320 B-2011
Batch ID: P423927

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2015
Batch ID: P423787

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P423788

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P423584

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P423708

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

Reference Method: SM 5310 B-2011
Batch ID: P423744

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: P423468

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424101

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423558

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423768

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: P423769

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	95.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423770

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	95.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423484

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

Reference Method: SM 2320 B-2011
Batch ID: P423575

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	94.3		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P423927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.6		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2540 D-2015
Batch ID: P423787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	92.7		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P423788

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	102		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P423584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	103		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

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

Reference Method: SM 5310 B-2011
Batch ID: P423708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P423744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424101

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374815	Ammonia-N	98.4	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374815	Kjeldahl Nitrogen	98.9	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375165	NO2NO3-N	99.2	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2376054	NO2NO3-N	97.0	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423770

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374821	NO2NO3-N	95.1	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374717	Total-P	97.3	95.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P423584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374814	Fluoride	103	104	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374629	Fluoride	98.1	97.5	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P423708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374775	Organic Carbon	99.2	99.4	P/P	85 - 115

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P423744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375182	Organic Carbon	94.2	95.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374814	Turbidity	8.99	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374815	Ammonia-N	0.135	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374815	Kjeldahl Nitrogen	3.50	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375165	NO2NO3-N	1.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376054	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374821	NO2NO3-N	1.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374717	Total-P	1.82	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P423575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374814	Total Alkalinity	3.45	Sample	P	0 - 3.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P423927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374629	Total Alkalinity	1.30	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P423584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374814	Fluoride	0.470	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374629	Fluoride	0.472	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P423708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374775	Organic Carbon	0.176	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P423744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375182	Organic Carbon	0.805	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: A116410

Included Lab Sample IDs: 2374814, 2374816, 2374817, 2374818, 2374822

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

Reference Method: SM 2320 B-2011

Run ID: A116456

Included Lab Sample IDs: 2374814, 2374816, 2374817, 2374818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.7	96.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A116456

Included Lab Sample IDs: 2374814, 2374816, 2374817, 2374818

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A116467

Included Lab Sample IDs: 2374815, 2374819, 2374820, 2374821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.8	P/P	90 - 110
Total-P	98.8	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A116501

Included Lab Sample IDs: 2374815, 2374819, 2374820, 2374821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	94.9	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A116546

Included Lab Sample IDs: 2374815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	98.0	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A116560

Included Lab Sample IDs: 2374819, 2374820, 2374821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A116570

Included Lab Sample IDs: 2374815, 2374819, 2374820, 2374821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A116570

Included Lab Sample IDs: 2374815, 2374819, 2374820, 2374821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.5	95.5	P/P	90 - 110
NO2NO3-N	97.5	95.5	P/P	90 - 110
NO2NO3-N	99.0	97.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A116645

Included Lab Sample IDs: 2374822

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.6	101	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A116645

Included Lab Sample IDs: 2374822

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A116722

Included Lab Sample IDs: 2374815, 2374819, 2374820, 2374821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	98.3	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	MS
EPA 180.1 Rev. 2.0	Turbidity	101			8.99	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	98.4	98.6		0.135
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	98.9	103		3.50
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	99.2	101		1.41
	NO2NO3-N	95.5	97.0	95.5		1.52
	NO2NO3-N	95.5	95.1	96.6		1.57
	Total-P	103	97.3	95.5		1.82
SM 2320 B-2011	Total Alkalinity	94.3			3.45	
	Total Alkalinity	97.6			1.30	
SM 2540 D-2015	TSS	92.7				
	TSS	102				
SM 4500-F- C-2011	Fluoride	103	103	104		0.470
	Fluoride	101	98.1	97.5		0.472
SM 5310 B-2011	Organic Carbon	95.4	99.2	99.4		0.176
	Organic Carbon	97.4	94.2	95.2		0.805

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2374814, 2374816, 2374817, 2374818, 2374822
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2374815, 2374819, 2374820, 2374821
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2374815, 2374819, 2374820, 2374821
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2374815, 2374819, 2374820, 2374821
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2374815, 2374819, 2374820, 2374821
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2374814, 2374816, 2374817, 2374818, 2374822
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2374814, 2374816, 2374817, 2374818, 2374822
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2374814, 2374816, 2374817, 2374818, 2374822
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2374815, 2374819, 2374820, 2374821

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	12/13/2022			12/13/2022 14:41	Chandler E Cox	2374814
	12/13/2022			12/13/2022 15:12	Chandler E Cox	2374816
	12/13/2022			12/13/2022 15:13	Chandler E Cox	2374817
	12/13/2022			12/13/2022 15:14	Chandler E Cox	2374818
	12/13/2022			12/13/2022 15:15	Chandler E Cox	2374822
EPA 350.1 Rev. 2.0	12/13/2022			01/04/2023 12:39	Ping Hua	2374815
	12/13/2022			01/04/2023 12:47	Ping Hua	2374819
	12/13/2022			01/04/2023 12:48	Ping Hua	2374820
	12/13/2022			01/04/2023 12:49	Ping Hua	2374821
EPA 351.2 Rev. 2.0	12/13/2022	12/15/2022 15:28	Judith K. Clark	12/16/2022 10:50	Samantha L Bates	2374815
	12/13/2022	12/15/2022 15:28	Judith K. Clark	12/16/2022 10:55	Samantha L Bates	2374819
	12/13/2022	12/15/2022 15:28	Judith K. Clark	12/16/2022 10:56	Samantha L Bates	2374820
	12/13/2022	12/15/2022 15:28	Judith K. Clark	12/16/2022 10:58	Samantha L Bates	2374821
EPA 353.2 Rev. 2.0	12/13/2022			12/19/2022 16:57	Touraj Touran	2374815
	12/13/2022			12/19/2022 17:25	Touraj Touran	2374819
	12/13/2022			12/19/2022 17:26	Touraj Touran	2374820
	12/13/2022			12/19/2022 17:33	Touraj Touran	2374821
EPA 365.1 Rev. 2.0	12/13/2022	12/14/2022 13:07	Adam P Silver	12/15/2022 12:54	Simonne.V. Calhoun	2374815
	12/13/2022	12/14/2022 13:07	Adam P Silver	12/15/2022 12:55	Simonne.V. Calhoun	2374819
	12/13/2022	12/14/2022 13:07	Adam P Silver	12/15/2022 13:03	Simonne.V. Calhoun	2374820
	12/13/2022	12/14/2022 13:07	Adam P Silver	12/15/2022 13:04	Simonne.V. Calhoun	2374821
SM 2320 B-2011	12/13/2022			12/15/2022 05:31	Dale L. Simmons	2374814
	12/13/2022			12/15/2022 06:11	Dale L. Simmons	2374816
	12/13/2022			12/15/2022 06:24	Dale L. Simmons	2374817
	12/13/2022			12/15/2022 06:37	Dale L. Simmons	2374818
	12/13/2022			12/22/2022 10:41	Dale L. Simmons	2374822
SM 2540 D-2015	12/13/2022			12/15/2022 16:01	Yijie Li	2374814, 2374816, 2374817, 2374818, 2374822
SM 4500-F- C-2011	12/13/2022			12/15/2022 03:46	Dale L. Simmons	2374814
	12/13/2022			12/15/2022 04:11	Dale L. Simmons	2374816
	12/13/2022			12/15/2022 04:17	Dale L. Simmons	2374817
	12/13/2022			12/15/2022 04:23	Dale L. Simmons	2374818
	12/13/2022			12/22/2022 10:41	Dale L. Simmons	2374822
SM 5310 B-2011	12/13/2022			12/16/2022 23:35	Elise M. Gillis	2374815
	12/13/2022			12/20/2022 02:15	Elise M. Gillis	2374819
	12/13/2022			12/20/2022 02:34	Elise M. Gillis	2374820
	12/13/2022			12/20/2022 03:06	Elise M. Gillis	2374821