

Chemical Analysis Report

NW-DIST-2023-09-06-02

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

Event Description: **Lake Powell Continuous Monitoring Recovery**
Request ID: **RQ-2023-08-28-12**
Customer: **NW-DIST**
Project ID: **SMP**

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Date Certified: 26-SEP-2023 10:36



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: POWELL LAKE CENTER N OF CAIN RD AREA Collection Date/Time: 09/05/2023 12:15

Field ID: G3NW0012

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2434261	DEP SOP: NU-094-1	Color (true)	12		PCU	P434630	
	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P434624	
	EPA 300.0 Rev. 2.1	Chloride	1.7E+04		mg Cl/L	P434876	
		Sulfate	2.2E+03		mg SO4/L	P434879	
	SM 2320 B-2011	Total Alkalinity	95		mg CaCO3/L	P434708	
	SM 2540 C-2015	TDS	2.84E+04		mg/L	P435123	
	SM 2540 D-2015	TSS	4	I	mg/L	P435049	
	SM 4500-F- C-2011	Fluoride	0.99		mg F/L	P434711	
2434263	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P434683	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P434813	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P435162	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P434848	
	SM 5310 B-2011	Organic Carbon	4.2		mg C/L	P434972	

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: LAKE POWELL DRAIN EAST ARM

Collection Date/Time: 09/05/2023 11:40

Field ID: G3NW0009

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2434262	DEP SOP: NU-094-1	Color (true)	15		PCU	P434630	
	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P434624	
	EPA 300.0 Rev. 2.1	Chloride	1.6E+04		mg Cl/L	P434876	
		Sulfate	2.1E+03		mg SO4/L	P434879	
	SM 2320 B-2011	Total Alkalinity	90		mg CaCO3/L	P434708	
	SM 2540 C-2015	TDS	2.60E+04		mg/L	P435123	
	SM 2540 D-2015	TSS	9	I	mg/L	P435049	
2434264	SM 4500-F- C-2011	Fluoride	0.91		mg F/L	P434711	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P434683	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P434813	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P435162	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P434848	
	SM 5310 B-2011	Organic Carbon	4.4		mg C/L	P434972	

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: Lake Powell West North of Yolo Park

Collection Date/Time: 09/05/2023 12:40

Field ID: G3NW0250

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2434267	DEP SOP: NU-094-1	Color (true)	24		PCU	P434631	
	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P434624	
	EPA 300.0 Rev. 2.1	Chloride	1.4E+04		mg Cl/L	P434876	
		Sulfate	1.9E+03		mg SO4/L	P434879	
	SM 2320 B-2011	Total Alkalinity	84		mg CaCO3/L	P434708	
	SM 2540 C-2015	TDS	2.36E+04		mg/L	P435123	
	SM 2540 D-2015	TSS	3	U	mg/L	P435049	
	SM 4500-F- C-2011	Fluoride	0.84		mg F/L	P434711	
2434269	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P435068	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P434813	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P435162	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P434848	
	SM 5310 B-2011	Organic Carbon	6.0		mg C/L	P435118	

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: TUCKER BAYOU E CHOCTAWHATCHEE BAY Collection Date/Time: 09/05/2023 13:45

Field ID: G3NW0010

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2434265	DEP SOP: NU-094-1	Color (true)	18		PCU	P434631	
	EPA 180.1 Rev. 2.0	Turbidity	6.3		NTU	P434624	
	EPA 300.0 Rev. 2.1	Chloride	1.4E+04		mg Cl/L	P434876	
		Sulfate	1.9E+03		mg SO4/L	P434879	
	SM 2320 B-2011	Total Alkalinity	86		mg CaCO3/L	P434708	
	SM 2540 C-2015	TDS	2.46E+04		mg/L	P435123	
	SM 2540 D-2015	TSS	7	I	mg/L	P435049	
	SM 4500-F- C-2011	Fluoride	0.79		mg F/L	P434711	
2434266	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P435068	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P434813	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P435162	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P434848	
	SM 5310 B-2011	Organic Carbon	5.1		mg C/L	P435118	

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: Lake Powell West

Collection Date/Time: 09/05/2023 12:55

Field ID: G3NW0251

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2434268	DEP SOP: NU-094-1	Color (true)	23		PCU	P434631	
	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P434624	
	EPA 300.0 Rev. 2.1	Chloride	1.3E+04		mg Cl/L	P434876	
		Sulfate	1.8E+03		mg SO4/L	P434879	
	SM 2320 B-2011	Total Alkalinity	81		mg CaCO3/L	P434708	
	SM 2540 C-2015	TDS	2.25E+04		mg/L	P435123	
	SM 2540 D-2015	TSS	6	IA	mg/L	P435049	
	SM 4500-F- C-2011	Fluoride	0.78		mg F/L	P434711	
2434270	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P435068	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P434813	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P435162	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P434768	
	SM 5310 B-2011	Organic Carbon	5.2		mg C/L	P435118	

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: DEP SOP: NU-094-1
Batch ID: P434630

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P434631

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434624

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434876

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434879

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434683

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435068

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434813

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435162

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: P434768

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434848

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

Reference Method: SM 2320 B-2011
Batch ID: P434708

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

Reference Method: SM 2540 C-2015
Batch ID: P435123

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P435049

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P434711

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P434972

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

Reference Method: SM 5310 B-2011
Batch ID: P435118

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P434630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P434631

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.2		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434624

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434876

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434879

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	91.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434683

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435068

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: P434813

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435162

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P434708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.0		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P435123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	95.7		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P435049

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	98.2		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P434711

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

Reference Method: SM 5310 B-2011
Batch ID: P434972

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P435118

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434257	Chloride	97.4		P	90 - 110
2434511	Chloride	95.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434257	Sulfate	94.0		P	90 - 110
2434511	Sulfate	91.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434683

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434152	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2435329	Ammonia-N	98.4	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434263	Kjeldahl Nitrogen	99.8	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435162

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434243	NO2NO3-N	97.4	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434597	Total-P	96.1	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434386	Total-P	103	101	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P434711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434149	Fluoride	99.8	100	P/P	94 - 106

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P434972

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434155	Organic Carbon	94.2	94.3	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P435118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434266	Organic Carbon	87.9	88.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P434630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434151	Color (true)	10.7	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P434631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434358	Color (true)	9.77	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434141	Turbidity	1.21	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434257	Chloride	1.43	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434257	Sulfate	1.55	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434152	Ammonia-N	0.742	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2435329	Ammonia-N	2.84	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434263	Kjeldahl Nitrogen	4.34	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434243	NO2NO3-N	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434597	Total-P	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434386	Total-P	2.09	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P434708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434149	Total Alkalinity	1.24	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P435123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2435178	TDS	0.851	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P434711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434149	Fluoride	0.480	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P434972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434155	Organic Carbon	0.0410	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P435118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434266	Organic Carbon	0.424	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A121379

Included Lab Sample IDs: 2434261, 2434262, 2434265, 2434267, 2434268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.0	97.5	P/P	95 - 105
Turbidity	97.5	97.0	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1

Run ID: A121382

Included Lab Sample IDs: 2434261, 2434262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	99.2	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A121384

Included Lab Sample IDs: 2434265, 2434267, 2434268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A121407

Included Lab Sample IDs: 2434263, 2434264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.0	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A121417

Included Lab Sample IDs: 2434261, 2434262, 2434265, 2434267, 2434268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.6	100	P/P	90 - 110
Total Alkalinity	99.2	96.6	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A121417

Included Lab Sample IDs: 2434261, 2434262, 2434265, 2434267, 2434268

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A121483

Included Lab Sample IDs: 2434270

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A121485

Included Lab Sample IDs: 2434261, 2434262, 2434265, 2434267, 2434268

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A121485

Included Lab Sample IDs: 2434261, 2434262, 2434265, 2434267, 2434268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A121508

Included Lab Sample IDs: 2434263, 2434264, 2434266, 2434269

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A121510

Included Lab Sample IDs: 2434263, 2434264, 2434266, 2434269, 2434270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A121525

Included Lab Sample IDs: 2434263, 2434264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	94.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A121562

Included Lab Sample IDs: 2434266, 2434269, 2434270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	99.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A121588

Included Lab Sample IDs: 2434266, 2434269, 2434270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.6	93.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A121612

Included Lab Sample IDs: 2434263, 2434264, 2434266, 2434269, 2434270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.0	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
DEP SOP: NU-094-1	Color (true)	100			10.7	
	Color (true)	99.2			9.77	
EPA 180.1 Rev. 2.0	Turbidity	100			1.21	
EPA 300.0 Rev. 2.1	Chloride	94.6	97.4	95.8	1.43	
	Sulfate	91.0	94.0	91.8	1.55	
EPA 350.1 Rev. 2.0	Ammonia-N	97.6	103	102		0.742
	Ammonia-N	98.4	98.4	102		2.84
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	99.8	95.2		4.34
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	97.4	99.0		1.09
EPA 365.1 Rev. 2.0	Total-P	106	96.1	97.5		1.45
	Total-P	106	103	101		2.09
SM 2320 B-2011	Total Alkalinity	98.0			1.24	
SM 2540 C-2015	TDS	95.7			0.851	
SM 2540 D-2015	TSS	98.2				
SM 4500-F- C-2011	Fluoride	99.8	99.8	100		0.480
SM 5310 B-2011	Organic Carbon	95.6	94.2	94.3		0.0410
	Organic Carbon	92.8	87.9	88.3		0.424

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2434261, 2434262, 2434265, 2434267, 2434268
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2434261, 2434262, 2434265, 2434267, 2434268
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2434261, 2434262, 2434265, 2434267, 2434268
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2434261, 2434262, 2434265, 2434267, 2434268
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2434263, 2434264, 2434266, 2434269, 2434270
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2434263, 2434264, 2434266, 2434269, 2434270
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2434263, 2434264, 2434266, 2434269, 2434270
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2434263, 2434264, 2434266, 2434269, 2434270
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2434261, 2434262, 2434265, 2434267, 2434268
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2434261, 2434262, 2434265, 2434267, 2434268
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2434261, 2434262, 2434265, 2434267, 2434268
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2434261, 2434262, 2434265, 2434267, 2434268
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2434263, 2434264, 2434266, 2434269, 2434270

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	09/06/2023			09/06/2023 15:39	Chandler E Cox	2434261
	09/06/2023			09/06/2023 15:40	Chandler E Cox	2434262
	09/06/2023			09/06/2023 17:11	Chandler E Cox	2434265, 2434267
	09/06/2023			09/06/2023 17:12	Chandler E Cox	2434268
EPA 180.1 Rev. 2.0	09/06/2023			09/06/2023 14:40	Khloe J Berg	2434261
	09/06/2023			09/06/2023 14:43	Khloe J Berg	2434262
	09/06/2023			09/06/2023 14:44	Khloe J Berg	2434265
	09/06/2023			09/06/2023 14:45	Khloe J Berg	2434267
EPA 300.0 Rev. 2.1	09/06/2023			09/06/2023 14:47	Khloe J Berg	2434268
	09/06/2023			09/11/2023 22:34	James L Waggeberby	2434261
	09/06/2023			09/11/2023 22:49	James L Waggeberby	2434262
	09/06/2023			09/11/2023 23:04	James L Waggeberby	2434265
EPA 350.1 Rev. 2.0	09/06/2023			09/11/2023 23:19	James L Waggeberby	2434267
	09/06/2023			09/11/2023 23:34	James L Waggeberby	2434268
	09/06/2023			09/07/2023 12:29	Khloe J Berg	2434263
	09/06/2023			09/07/2023 12:30	Khloe J Berg	2434264
EPA 351.2 Rev. 2.0	09/06/2023			09/15/2023 11:35	Ping Hua	2434266
	09/06/2023			09/15/2023 11:37	Ping Hua	2434269
	09/06/2023			09/15/2023 11:38	Ping Hua	2434270
	09/06/2023	09/12/2023 11:47	Simonne.V. Calhoun	09/13/2023 16:10	Samantha L Bates	2434263
EPA 353.2 Rev. 2.0	09/06/2023	09/12/2023 11:47	Simonne.V. Calhoun	09/13/2023 16:15	Samantha L Bates	2434264
	09/06/2023	09/12/2023 11:47	Simonne.V. Calhoun	09/13/2023 16:17	Samantha L Bates	2434266
	09/06/2023	09/12/2023 11:47	Simonne.V. Calhoun	09/13/2023 16:18	Samantha L Bates	2434269
	09/06/2023	09/12/2023 11:47	Simonne.V. Calhoun	09/13/2023 16:20	Samantha L Bates	2434270
EPA 365.1 Rev. 2.0	09/06/2023			09/15/2023 13:37	Anna M. Plaviak	2434263
	09/06/2023			09/15/2023 13:38	Anna M. Plaviak	2434264
	09/06/2023			09/15/2023 13:40	Anna M. Plaviak	2434266
	09/06/2023			09/15/2023 13:41	Anna M. Plaviak	2434269
SM 2320 B-2011	09/06/2023			09/15/2023 13:42	Anna M. Plaviak	2434270
	09/06/2023	09/11/2023 16:54	Adam P Silver	09/12/2023 15:17	James L Waggeberby	2434270
	09/06/2023	09/12/2023 17:58	Adam P Silver	09/13/2023 14:21	Simonne.V. Calhoun	2434263
	09/06/2023	09/12/2023 17:58	Adam P Silver	09/13/2023 14:22	Simonne.V. Calhoun	2434264
	09/06/2023	09/12/2023 17:58	Adam P Silver	09/13/2023 14:23	Simonne.V. Calhoun	2434266
	09/06/2023	09/12/2023 17:58	Adam P Silver	09/13/2023 14:24	Simonne.V. Calhoun	2434269
	09/06/2023			09/08/2023 03:37	Dale L. Simmons	2434261
	09/06/2023			09/08/2023 03:51	Dale L. Simmons	2434262
	09/06/2023			09/08/2023 04:50	Dale L. Simmons	2434265
	09/06/2023			09/08/2023 05:04	Dale L. Simmons	2434267
	09/06/2023			09/08/2023 05:17	Dale L. Simmons	2434268

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-2015	09/06/2023			09/11/2023 15:46	Yijie Li	2434261, 2434262, 2434265, 2434267, 2434268
SM 2540 D-2015	09/06/2023			09/11/2023 15:46	Yijie Li	2434261, 2434262, 2434265, 2434267, 2434268
SM 4500-F- C-2011	09/06/2023			09/08/2023 01:48	Dale L. Simmons	2434261
	09/06/2023			09/08/2023 01:53	Dale L. Simmons	2434262
	09/06/2023			09/08/2023 01:58	Dale L. Simmons	2434265
	09/06/2023			09/08/2023 02:04	Dale L. Simmons	2434267
	09/06/2023			09/08/2023 02:09	Dale L. Simmons	2434268
SM 5310 B-2011	09/06/2023			09/14/2023 04:38	Elise M. Gillis	2434263
	09/06/2023			09/14/2023 04:51	Elise M. Gillis	2434264
	09/06/2023			09/15/2023 21:05	Elise M. Gillis	2434266
	09/06/2023			09/15/2023 21:52	Elise M. Gillis	2434269
	09/06/2023			09/15/2023 22:05	Elise M. Gillis	2434270