

Chemical Analysis Report

TLH-ROC-2018-01-08-02

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

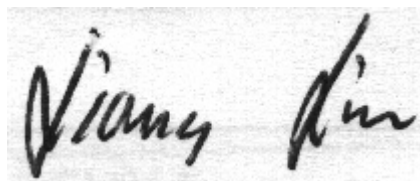
Event Description: **kit A w/ bacteria**
Request ID: **RQ-2018-01-01-24**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 25-JAN-2018 14:41

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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 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: Rocky Creek @ SR51

Collection Date/Time: 01/08/2018 10:55

Field ID: G1TLHR0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957759	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P337967	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P338148	
		Sulfate	0.31	I	mg SO4/L	P338151	
	SM 2120 B	Color (true)	56		PCU	P337955	
	SM 2320 B-97	Total Alkalinity	189		mg CaCO3/L	P338204	
	SM 2540 C-97	TDS	236		mg/L	P338240	
	SM 2540 D-97	TSS	2	I	mg/L	P338289	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P338207	
1957766	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P338300	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P338004	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P338012	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P338019	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P338257	
1957773	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P337990	

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: Sandhill Creek @ SW HWY 358

Collection Date/Time: 01/08/2018 11:35

Field ID: G1TLHR0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957760	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P337967	
	EPA 300.0 Rev. 2.1	Chloride	9.1		mg Cl/L	P338148	
		Sulfate	0.43	I	mg SO4/L	P338151	
	SM 2120 B	Color (true)	67		PCU	P337955	
	SM 2320 B-97	Total Alkalinity	279		mg CaCO3/L	P338204	
	SM 2540 C-97	TDS	297		mg/L	P338240	
	SM 2540 D-97	TSS	3	I	mg/L	P338289	
	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P338207	
1957767	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P338360	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P338004	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P338012	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P338019	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P338257	
1957774	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P337990	

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 @ NW 798 St

Collection Date/Time: 01/08/2018 12:05

Field ID: G1TLHR0078

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957761	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P337967	
	EPA 300.0 Rev. 2.1	Chloride	9.8		mg Cl/L	P338148	
		Sulfate	0.27	I	mg SO4/L	P338151	

Field ID: G1TLHR0078

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957761	SM 2120 B	Color (true)	140		PCU	P337955	
	SM 2320 B-97	Total Alkalinity	170		mg CaCO3/L	P338204	
	SM 2540 C-97	TDS	225		mg/L	P338240	
	SM 2540 D-97	TSS	2	I	mg/L	P338289	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P338207	
1957768	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P338360	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P338004	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P338012	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P338019	
	SM 5310 B-00	Organic Carbon	26		mg C/L	P338257	
1957775	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.010		mg P/L	P337990	

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: Steinhatchee River @ South Canal Rd

Collection Date/Time: 01/08/2018 12:20

Field ID: G1TLHR0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957762	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P337968	
	EPA 300.0 Rev. 2.1	Chloride	9.0		mg Cl/L	P338148	
		Sulfate	6.6		mg SO4/L	P338151	
	SM 2120 B	Color (true)	130		PCU	P337955	
	SM 2320 B-97	Total Alkalinity	152		mg CaCO3/L	P338204	
	SM 2540 C-97	TDS	219		mg/L	P338240	
	SM 2540 D-97	TSS	2	I	mg/L	P338289	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P338207	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P338360	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P338004	
1957769	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P338012	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P338021	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P338257	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P337990	

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: Steinhatchee River @ 40m N of SE Yearling Rd

Collection Date/Time: 01/08/2018 12:40

Field ID: G1TLHR0065

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957763	EPA 180.1 Rev. 2.0	Turbidity	2.8	A	NTU	P337968	
	EPA 300.0 Rev. 2.1	Chloride	9.2		mg Cl/L	P338148	
		Sulfate	10		mg SO4/L	P338151	
	SM 2120 B	Color (true)	140		PCU	P337955	
	SM 2320 B-97	Total Alkalinity	178		mg CaCO3/L	P338204	
	SM 2540 C-97	TDS	221		mg/L	P338240	
	SM 2540 D-97	TSS	6	I	mg/L	P338289	

Field ID: G1TLHR0065

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957763	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P338207	
1957770	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P338360	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P338005	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P338012	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P338021	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P338257	
1957777	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.050		mg P/L	P337990	

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: Steinhatchee Spring Vent @ SE Wolf Rd

Collection Date/Time: 01/08/2018 12:55

Field ID: G1TLHR0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957764	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P337968	
	EPA 300.0 Rev. 2.1	Chloride	8.9		mg Cl/L	P338148	
		Sulfate	9.6		mg SO4/L	P338151	
	SM 2120 B	Color (true)	130		PCU	P337955	
	SM 2320 B-97	Total Alkalinity	170		mg CaCO3/L	P338204	
	SM 2540 C-97	TDS	235		mg/L	P338240	
	SM 2540 D-97	TSS	3	I	mg/L	P338289	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P338207	
1957771	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P338360	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P338005	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P338012	
	EPA 365.1 Rev. 2.0	Total-P	0.069		mg P/L	P338021	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P338257	
1957778	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.041		mg P/L	P337990	

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: Weaver (middle) Warrior Creek @ US 98

Collection Date/Time: 01/08/2018 13:55

Field ID: G1TLHR0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957765	EPA 180.1 Rev. 2.0	Turbidity	10		NTU	P337968	
	EPA 300.0 Rev. 2.1	Chloride	7.9		mg Cl/L	P338148	
		Sulfate	0.20	U	mg SO4/L	P338151	
	SM 2120 B	Color (true)	64		PCU	P337955	
	SM 2320 B-97	Total Alkalinity	143		mg CaCO3/L	P338204	
	SM 2540 C-97	TDS	190		mg/L	P338240	
	SM 2540 D-97	TSS	27		mg/L	P338289	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P338207	
1957772	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P338307	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P338005	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P338013	

Field ID: G1TLHR0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1957772	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P338021	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P338257	
1957779	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P337990	

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: P337967

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P337968

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338148

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338151

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338300

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338307

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338360

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338004

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338004

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338005

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338012

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338013

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338019

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338021

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P337990

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

Reference Method: SM 2120 B
Batch ID: P337955

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P338204

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P338240

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P338289

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P338207

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P338257

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: P338148

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338300

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338307

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338004

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338012

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338013

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338019

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338021

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P337990

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

Reference Method: SM 2320 B-97
Batch ID: P338204

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P338207

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P338257

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338148

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957809	Chloride	97.9		P	90 - 110
1957852	Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957809	Sulfate	97.7		P	90 - 110
1957852	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957752	Ammonia-N	97.6	99.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957772	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957767	Ammonia-N	93.4	94.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338004

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957767	Kjeldahl Nitrogen	93.6	96.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P338005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957771	Kjeldahl Nitrogen	102	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P338012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957740	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P338013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957772	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P338019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957752	Total-P	96.8	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P338021

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957804	Total-P	101	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P337990

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957753	O-Phosphate-P	99.7	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P338207

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957739	Fluoride	95.5	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P338257

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1957752	Organic Carbon	106		P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P337967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957751	Turbidity	1.56	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P337968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957763	Turbidity	0.725	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957852	Chloride	3.21	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957852	Sulfate	3.29	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957752	Ammonia-N	1.47	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957772	Ammonia-N	0.334	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957767	Ammonia-N	0.819	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338004

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957767	Kjeldahl Nitrogen	1.58	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957771	Kjeldahl Nitrogen	1.55	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957740	NO2NO3-N	0.398	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957772	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957752	Total-P	2.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338021

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957804	Total-P	2.67	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P337990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957753	O-Phosphate-P	1.20	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P337955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957739	Color (true)	9.57	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P338204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957739	Total Alkalinity	0.401	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P338240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957751	TDS	7.96	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P338207

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957739	Fluoride	0.513	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P338257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1957752	Organic Carbon	0.756	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: A81350
Included Lab Sample IDs: 1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A81353
Included Lab Sample IDs: 1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A81364
Included Lab Sample IDs: 1957773, 1957774, 1957775, 1957776, 1957777, 1957778, 1957779

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.8	P/P	90 - 110
O-Phosphate-P	99.5	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A81373
Included Lab Sample IDs: 1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A81373

Included Lab Sample IDs: 1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A81397

Included Lab Sample IDs: 1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	97.2	P/P	90 - 110
Chloride	97.2	99.6	P/P	90 - 110
Sulfate	100	96.3	P/P	90 - 110
Sulfate	96.3	99.5	P/P	90 - 110
Sulfate	99.1	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A81404

Included Lab Sample IDs: 1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	103	P/P	90 - 110
Kjeldahl Nitrogen	102	100	P/P	90 - 110
Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81413

Included Lab Sample IDs: 1957769, 1957770, 1957771, 1957772

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81414

Included Lab Sample IDs: 1957766, 1957767, 1957768

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

Reference Method: SM 2320 B-97

Run ID: A81446

Included Lab Sample IDs: 1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765

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

Reference Method: SM 4500 F-C-97

Run ID: A81446

Included Lab Sample IDs: 1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A81463

Included Lab Sample IDs: 1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.5	97.6	P/P	90 - 110
Organic Carbon	97.6	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81472

Included Lab Sample IDs: 1957766

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81474

Included Lab Sample IDs: 1957772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81494

Included Lab Sample IDs: 1957767, 1957768, 1957769, 1957770, 1957771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.4	96.3	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.56	
	Turbidity				0.725	
EPA 300.0 Rev. 2.1	Chloride	97.9	98.6 97.9		3.21	
	Sulfate	97.9	98.0 97.7		3.29	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	97.6 99.3			1.47
	Ammonia-N	103	103 103			0.334
	Ammonia-N	94.8	93.4 94.5			0.819
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	93.6 96.2			1.58
	Kjeldahl Nitrogen	97.8	102 99.6			1.55
EPA 353.2 Rev. 2.0	NO2NO3-N	104	103 102			0.398
	NO2NO3-N	102	102 102			0.0
EPA 365.1 Rev. 2.0	Total-P	99.3	96.8 99.0			2.17
	Total-P	102	101 98.3			2.67
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	99.7 101			1.20
SM 2120 B	Color (true)				9.57	
SM 2320 B-97	Total Alkalinity	103			0.401	
SM 2540 C-97	TDS				7.96	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 4500 F-C-97	Fluoride	96.6	95.5	96.1		0.513
SM 5310 B-00	Organic Carbon	101	106			0.756

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1957773, 1957774, 1957775, 1957776, 1957777, 1957778, 1957779
SM 2120 B / E31780	True Color measured at 450 nm	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772

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	01/08/2018			01/09/2018 15:49	DeAsia Armster	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
EPA 300.0 Rev. 2.1	01/08/2018			01/11/2018	Julia Storbeck	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
	01/08/2018			01/12/2018	Julia Storbeck	1957760
EPA 350.1 Rev. 2.0	01/08/2018			01/16/2018	Sofia Elnemr	1957766, 1957772
	01/08/2018			01/17/2018	Sofia Elnemr	1957767, 1957768, 1957769, 1957770, 1957771
EPA 351.2 Rev. 2.0	01/08/2018	01/10/2018	Adrian Shelby	01/11/2018	Joseph Suarez	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772
EPA 353.2 Rev. 2.0	01/08/2018			01/10/2018	Beverly Y. Sanders	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772
EPA 365.1 Rev. 2.0	01/08/2018	01/10/2018	Sima Feizi	01/11/2018	Beverly Y. Sanders	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772
EPA 365.1 Rev. 2.0 dissolved	01/08/2018			01/09/2018 14:54	Megan Treadwell	1957773
	01/08/2018			01/09/2018 14:55	Megan Treadwell	1957774
	01/08/2018			01/09/2018 14:56	Megan Treadwell	1957775
	01/08/2018			01/09/2018 15:01	Megan Treadwell	1957776
	01/08/2018			01/09/2018 15:02	Megan Treadwell	1957777
	01/08/2018			01/09/2018 15:03	Megan Treadwell	1957778
	01/08/2018			01/09/2018 15:04	Megan Treadwell	1957779
SM 2120 B	01/08/2018			01/09/2018 14:25	Tanya Welborn	1957759, 1957760
	01/08/2018			01/09/2018 14:26	Tanya Welborn	1957761
	01/08/2018			01/09/2018 14:27	Tanya Welborn	1957762
	01/08/2018			01/09/2018 14:28	Tanya Welborn	1957763
	01/08/2018			01/09/2018 14:29	Tanya Welborn	1957764, 1957765
SM 2320 B-97	01/08/2018			01/12/2018	Dale L. Simmons	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 2540 C-97	01/08/2018			01/10/2018	Yijie Li	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 2540 D-97	01/08/2018			01/10/2018	Yijie Li	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 4500 F-C-97	01/08/2018			01/12/2018	Dale L. Simmons	1957759, 1957760, 1957761, 1957762, 1957763, 1957764, 1957765
SM 5310 B-00	01/08/2018			01/10/2018	Megan Treadwell	1957766, 1957767, 1957768, 1957769, 1957770, 1957771, 1957772