

Chemical Analysis Report

NW-DIST-2018-03-27-02

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

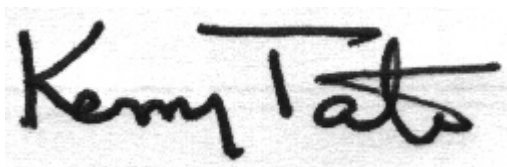
Event Description: **Laurel Hill West**
Request ID: **RQ-2018-03-26-15**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-APR-2018 15:33

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line extending from the end of the name.

NON-CONFORMANCE REPORT INCLUDED

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: POND CREEK IN MCCLOUD BAY UPSTREAM OF HWY 393 **Collection Date/Time: 03/26/2018 10:55**

Field ID: G4NW0349

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1977997	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P342270	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P342507	
		Sulfate	1.3		mg SO4/L	P342510	
	SM 2120 B	Color (true)	42		PCU	P342264	
	SM 2320 B-97	Total Alkalinity	4.9		mg CaCO3/L	P342981	
	SM 2540 C-97	TDS	28		mg/L	P342576	
	SM 2540 D-97	TSS	6	I	mg/L	P342631	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343645	
1978003	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P342682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P342309	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P342337	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P342482	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P342873	
1978009	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P342316	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LONG CREEK UPSTREAM OF LONG ROAD **Collection Date/Time: 03/26/2018 11:35**

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1977998	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P342270	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P342507	
		Sulfate	0.59		mg SO4/L	P342510	
	SM 2120 B	Color (true)	43		PCU	P342264	
	SM 2320 B-97	Total Alkalinity	2.6		mg CaCO3/L	P342981	
	SM 2540 C-97	TDS	23	I	mg/L	P342576	
	SM 2540 D-97	TSS	4	I	mg/L	P342631	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343645	
1978004	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P342682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P342309	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P342337	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P342482	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P342873	
1978010	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P342316	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BEECH TREE CREEK ABOVE UN-NAMED ROAD **Collection Date/Time: 03/26/2018 11:45**

Field ID: G4NW0330

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G4NW0330

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1977999	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P342270	
	EPA 300.0 Rev. 2.1	Chloride	2.4		mg Cl/L	P342507	
		Sulfate	0.84		mg SO4/L	P342510	
	SM 2120 B	Color (true)	25		PCU	P342264	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P342981	
	SM 2540 C-97	TDS	19	I	mg/L	P342576	
	SM 2540 D-97	TSS	4	I	mg/L	P342631	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343645	
1978005	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P342682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P342309	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P342337	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P342482	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P342876	
1978011	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342318	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: PINE LOG CREEK UPSTREAM OF LONG ROAD Collection Date/Time: 03/26/2018 12:05

Field ID: G4NW0315

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978000	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P342270	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P342507	
		Sulfate	1.0		mg SO4/L	P342510	
	SM 2120 B	Color (true)	60		PCU	P342264	
	SM 2320 B-97	Total Alkalinity	5.6		mg CaCO3/L	P342981	
	SM 2540 C-97	TDS	33		mg/L	P342576	
	SM 2540 D-97	TSS	4	I	mg/L	P342631	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343645	
1978006	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	UY	mg N/L	P342682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	Y	mg N/L	P342309	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15	Y	mg N/L	P342337	
	EPA 365.1 Rev. 2.0	Total-P	0.015	Y	mg P/L	P342498	
	SM 5310 B-00	Organic Carbon	4.1	Y	mg C/L	P342876	
1978012	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P342316	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

SM 5310 B-00: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

**Sample Location: EAST BRANCH PINE LOG CREEK ABOVE
BEAR BAY FLATS ROAD**

Collection Date/Time: 03/26/2018 12:30

Field ID: G4NW0208

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978001	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P342270	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P342507	
		Sulfate	0.62		mg SO4/L	P342510	
	SM 2120 B	Color (true)	100		PCU	P342264	
	SM 2320 B-97	Total Alkalinity	6.3		mg CaCO3/L	P342981	
	SM 2540 C-97	TDS	47		mg/L	P342577	
	SM 2540 D-97	TSS	4	I	mg/L	P342632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343645	
1978007	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P342682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P342310	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P342337	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P342498	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P342876	
1978013	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P342316	

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: TURKEY CREEK ABOVE WILLIAMS RD.

Collection Date/Time: 03/26/2018 13:15

Field ID: G4NW0409

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978002	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P342270	
	EPA 300.0 Rev. 2.1	Chloride	4.6		mg Cl/L	P342508	
		Sulfate	1.4		mg SO4/L	P342512	MS
	SM 2120 B	Color (true)	47		PCU	P342264	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P342981	
	SM 2540 C-97	TDS	32		mg/L	P342577	
	SM 2540 D-97	TSS	6	I	mg/L	P342632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343645	
1978008	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P342682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P342310	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42		mg N/L	P342337	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P342498	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P342876	
1978014	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P342316	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 6946

Event(s)

NW-DIST-2018-03-27-02

Job(s)

TLH-2018-03-27-31

Sample(s)

1978006

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Sample not preserved to pH < 2.

Non-Conformance Report

NCR ID: 6946

Event(s) **Job(s)** **Sample(s)** **Test(s)**
 Resolution: Sample preserved in the laboratory on 3-27-18 with Sulfuric Acid at 10:28

Authorized by/Date: Joshua Ayres 3/28/2018

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
 Please address questions to:

Chemistry Colin Wright (850) 245-8085
 Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P342270

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P342507

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P342508

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P342510

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P342512

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P342682

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P342309

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342310

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342337

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342482

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342498

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342316

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342318

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

Reference Method: SM 2120 B
Batch ID: P342264

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P342981

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

Reference Method: SM 2540 C-97
Batch ID: P342576

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P342577

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342631

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342632

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P343645

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342873

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

Reference Method: SM 5310 B-00
Batch ID: P342876

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: P342507

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342508

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342510

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342510

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342512

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342309

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: P342310

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: P342337

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342482

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342498

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342316

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342318

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: P342981

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P343645

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342873

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P342876

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977857	Chloride	94.2		P	90 - 110
1977934	Chloride	96.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978002	Chloride	100	98.2	P/P	90 - 110
1978208	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977857	Sulfate	96.6		P	90 - 110
1977934	Sulfate	97.1		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978002	Sulfate	101	99.9	P/P	90 - 110
1978208	Sulfate	88.7		F	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977937	Ammonia-N	96.5	96.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342309

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977927	Kjeldahl Nitrogen	98.9	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978007	Kjeldahl Nitrogen	108	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977937	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978038	Total-P	103	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977942	O-Phosphate-P	98.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342318

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978011	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P343645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978282	Fluoride	97.0	97.0	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P342873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977219	Organic Carbon	100	99.4	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P342876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978005	Organic Carbon	97.2	95.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977934	Turbidity	1.45	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977857	Chloride	0.757	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978002	Chloride	1.79	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977857	Sulfate	0.948	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978002	Sulfate	1.24	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977937	Ammonia-N	0.228	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977927	Kjeldahl Nitrogen	1.62	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978007	Kjeldahl Nitrogen	1.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977937	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977932	Total-P	0.699	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978038	Total-P	5.15	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977942	O-Phosphate-P	0.509	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978011	O-Phosphate-P	0.0980	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P342264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977934	Color (true)	1.30	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P342981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978282	Total Alkalinity	0.435	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P342576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977924	TDS	6.02	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P342577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978035	TDS	4.75	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P343645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978282	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P342873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977219	Organic Carbon	0.592	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P342876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978005	Organic Carbon	1.41	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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A82875

Included Lab Sample IDs: 1977997, 1977998, 1977999, 1978000, 1978001, 1978002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.4	98.3	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A82876

Included Lab Sample IDs: 1977997, 1977998, 1977999, 1978000, 1978001, 1978002

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82892

Included Lab Sample IDs: 1977997, 1977998, 1977999, 1978000, 1978001, 1978002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.4	P/P	90 - 110
Chloride	98.6	101	P/P	90 - 110
Chloride	99.4	101	P/P	90 - 110
Sulfate	98.9	99.2	P/P	90 - 110
Sulfate	99.2	99.8	P/P	90 - 110
Sulfate	99.8	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82895

Included Lab Sample IDs: 1978009, 1978010, 1978011, 1978012, 1978013, 1978014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82906

Included Lab Sample IDs: 1978003, 1978004, 1978005, 1978006, 1978007, 1978008

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82956

Included Lab Sample IDs: 1978003, 1978004, 1978005, 1978006, 1978007, 1978008

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83000

Included Lab Sample IDs: 1978003, 1978004, 1978005, 1978006, 1978007, 1978008

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	98.8	P/P	90 - 110
Total-P	98.0	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83017

Included Lab Sample IDs: 1978003, 1978004, 1978005, 1978006, 1978007, 1978008

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

Reference Method: SM 5310 B-00

Run ID: A83069

Included Lab Sample IDs: 1978003, 1978004, 1978005, 1978006, 1978007, 1978008

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	95.4	P/P	90 - 110
Organic Carbon	96.0	95.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83098

Included Lab Sample IDs: 1977997, 1977998, 1977999, 1978000, 1978001, 1978002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.2	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83315

Included Lab Sample IDs: 1977997, 1977998, 1977999, 1978000, 1978001, 1978002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110
Fluoride	99.5	102	P/P	90 - 110

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.45	
EPA 300.0 Rev. 2.1	Chloride	97.4	94.2 96.5		0.757	
	Chloride	98.7	100 98.2 97.2			1.79
	Sulfate	97.7	96.6 97.1		0.948	
	Sulfate	98.9	101 99.9 88.7			1.24
EPA 350.1 Rev. 2.0	Ammonia-N	96.6	96.5 96.3			0.228
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	98.9 96.6			1.62
	Kjeldahl Nitrogen	97.8	108 110			1.02
EPA 353.2 Rev. 2.0	NO2NO3-N	104	106 106			0.471
EPA 365.1 Rev. 2.0	Total-P	102				0.699
	Total-P	101	103 97.7			5.15
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	98.0 98.5			0.509
	O-Phosphate-P	98.7	102 102			0.0980
SM 2120 B	Color (true)				1.30	
SM 2320 B-97	Total Alkalinity	99.8			0.435	
SM 2540 C-97	TDS				6.02	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 2540 C-97	TDS				4.75	
SM 4500 F-C-97	Fluoride	96.7	97.0	97.0		0.0
SM 5310 B-00	Organic Carbon	96.9	100	99.4		0.592
	Organic Carbon	97.5	97.2	95.8		1.41

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1978003, 1978004, 1978005, 1978006, 1978007, 1978008
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1978003, 1978004, 1978005, 1978006, 1978007, 1978008
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1978003, 1978004, 1978005, 1978006, 1978007, 1978008
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1978003, 1978004, 1978005, 1978006, 1978007, 1978008
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1978009, 1978010, 1978011, 1978012, 1978013, 1978014
SM 2120 B / E31780	True Color measured at 450 nm	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1978003, 1978004, 1978005, 1978006, 1978007, 1978008

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	03/27/2018			03/27/2018 15:15	DeAsia Armster	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
EPA 300.0 Rev. 2.1	03/27/2018			03/29/2018 21:49	Lipi Saha	1977997
	03/27/2018			03/29/2018 22:01	Lipi Saha	1977998
	03/27/2018			03/29/2018 22:37	Lipi Saha	1977999
	03/27/2018			03/29/2018 22:49	Lipi Saha	1978000
	03/27/2018			03/29/2018 23:01	Lipi Saha	1978001
	03/27/2018			03/30/2018 00:13	Lipi Saha	1978002
EPA 350.1 Rev. 2.0	03/27/2018			04/03/2018 14:31	Ping Hua	1978003
	03/27/2018			04/03/2018 14:33	Ping Hua	1978004
	03/27/2018			04/03/2018 14:34	Ping Hua	1978005
	03/27/2018			04/03/2018 14:36	Ping Hua	1978006
	03/27/2018			04/03/2018 14:37	Ping Hua	1978007
	03/27/2018			04/03/2018 14:39	Ping Hua	1978008
EPA 351.2 Rev. 2.0	03/27/2018	03/28/2018 10:40	Adrian Shelby	03/30/2018 10:08	Joseph Suarez	1978003
	03/27/2018	03/28/2018 10:40	Adrian Shelby	03/30/2018 10:09	Joseph Suarez	1978004
	03/27/2018	03/28/2018 10:40	Adrian Shelby	03/30/2018 10:14	Joseph Suarez	1978005
	03/27/2018	03/28/2018 10:40	Adrian Shelby	03/30/2018 10:16	Joseph Suarez	1978006
	03/27/2018	03/28/2018 10:40	Adrian Shelby	03/30/2018 10:20	Joseph Suarez	1978007
	03/27/2018	03/28/2018 10:40	Adrian Shelby	03/30/2018 10:25	Joseph Suarez	1978008
EPA 353.2 Rev. 2.0	03/27/2018			03/28/2018 12:11	Lauren Bottorf	1978003
	03/27/2018			03/28/2018 12:12	Lauren Bottorf	1978004
	03/27/2018			03/28/2018 12:13	Lauren Bottorf	1978005
	03/27/2018			03/28/2018 12:14	Lauren Bottorf	1978006
	03/27/2018			03/28/2018 12:15	Lauren Bottorf	1978007
	03/27/2018			03/28/2018 12:17	Lauren Bottorf	1978008
EPA 365.1 Rev. 2.0	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 12:59	Beverly Y. Sanders	1978003, 1978004
	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:00	Beverly Y. Sanders	1978005
	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:09	Beverly Y. Sanders	1978006
	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:10	Beverly Y. Sanders	1978007
	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:11	Beverly Y. Sanders	1978008
EPA 365.1 Rev. 2.0 dissolved	03/27/2018			03/27/2018 15:13	Megan Treadwell	1978011
	03/27/2018			03/27/2018 15:39	Megan Treadwell	1978009
	03/27/2018			03/27/2018 15:40	Megan Treadwell	1978010
	03/27/2018			03/27/2018 15:41	Megan Treadwell	1978012
	03/27/2018			03/27/2018 15:42	Megan Treadwell	1978013
	03/27/2018			03/27/2018 15:43	Megan Treadwell	1978014
SM 2120 B	03/27/2018			03/27/2018 15:35	Tanya Welborn	1977997
	03/27/2018			03/27/2018 15:36	Tanya Welborn	1977998
	03/27/2018			03/27/2018 15:37	Tanya Welborn	1977999

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	03/27/2018			03/27/2018 15:38	Tanya Welborn	1978000, 1978001
	03/27/2018			03/27/2018 15:39	Tanya Welborn	1978002
SM 2320 B-97	03/27/2018			04/05/2018 16:38	Dale L. Simmons	1977997
	03/27/2018			04/05/2018 16:49	Dale L. Simmons	1977998
	03/27/2018			04/05/2018 16:59	Dale L. Simmons	1977999
	03/27/2018			04/05/2018 17:10	Dale L. Simmons	1978000
	03/27/2018			04/05/2018 17:23	Dale L. Simmons	1978001
	03/27/2018			04/05/2018 17:33	Dale L. Simmons	1978002
SM 2540 C-97	03/27/2018			03/28/2018 15:49	Yijie Li	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
SM 2540 D-97	03/27/2018			03/28/2018 15:49	Yijie Li	1977997, 1977998, 1977999, 1978000, 1978001, 1978002
SM 4500 F-C-97	03/27/2018			04/17/2018 15:13	Dale L. Simmons	1977997
	03/27/2018			04/17/2018 15:16	Dale L. Simmons	1977998
	03/27/2018			04/17/2018 15:22	Dale L. Simmons	1977999
	03/27/2018			04/17/2018 15:34	Dale L. Simmons	1978000
	03/27/2018			04/17/2018 15:38	Dale L. Simmons	1978001
	03/27/2018			04/17/2018 15:41	Dale L. Simmons	1978002
SM 5310 B-00	03/27/2018			04/05/2018 00:33	Julia Storbeck	1978003
	03/27/2018			04/05/2018 00:47	Julia Storbeck	1978004
	03/27/2018			04/05/2018 01:44	Julia Storbeck	1978005
	03/27/2018			04/05/2018 03:13	Julia Storbeck	1978006
	03/27/2018			04/05/2018 03:30	Julia Storbeck	1978007
	03/27/2018			04/05/2018 03:44	Julia Storbeck	1978008