

Chemical Analysis Report

SE-DIST-2019-09-25-01

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

Event Description: **SMP-Kevin Run**
Request ID: **RQ-2019-09-23-14**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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2199 South Rock Road
Fort Pierce, FL 34945
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 10-OCT-2019 11:40

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

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: Taylor Creek @ 441

Collection Date/Time: 09/24/2019 10:40

Field ID: G1SE0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2122140	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P371321	
	EPA 300.0 Rev. 2.1	Chloride	65		mg Cl/L	P371794	
		Sulfate	79		mg SO4/L	P371981	
	SM 2120 B	Color (true)	66		PCU	P371356	
	SM 2320 B-97	Total Alkalinity	51		mg CaCO3/L	P371878	
	SM 2540 C-97	TDS	315		mg/L	P371954	
	SM 2540 D-97	TSS	3	I	mg/L	P371815	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P371881	
2122146	EPA 350.1 Rev. 2.0	Ammonia-N	0.096		mg N/L	P371744	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P371446	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.29		mg N/L	P371471	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P371497	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P371504	
2122152	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P371331	

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: Taylor Creek @ 441

Collection Date/Time: 09/24/2019 10:50

Field ID: G1SE0001_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2122141	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P371321	
	EPA 300.0 Rev. 2.1	Chloride	66		mg Cl/L	P371795	
		Sulfate	80		mg SO4/L	P371981	
	SM 2120 B	Color (true)	66		PCU	P371356	
	SM 2320 B-97	Total Alkalinity	51		mg CaCO3/L	P371878	
	SM 2540 C-97	TDS	305		mg/L	P371954	
	SM 2540 D-97	TSS	4	I	mg/L	P371815	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P371881	
2122147	EPA 350.1 Rev. 2.0	Ammonia-N	0.096		mg N/L	P371744	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P371452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.29		mg N/L	P371471	
	EPA 365.1 Rev. 2.0	Total-P	0.081		mg P/L	P371497	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P371504	
2122153	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P371332	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Taylor Creek @ 39th St

Collection Date/Time: 09/24/2019 11:25

Field ID: G1SE0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2122142	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P371320	
	EPA 300.0 Rev. 2.1	Chloride	57		mg Cl/L	P371795	
		Sulfate	34		mg SO4/L	P371797	
	SM 2120 B	Color (true)	170		PCU	P371357	
	SM 2320 B-97	Total Alkalinity	74		mg CaCO3/L	P371878	
	SM 2540 C-97	TDS	263	A	mg/L	P371955	
	SM 2540 D-97	TSS	2	IA	mg/L	P371816	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P371881	
2122148	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P371744	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P371452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.060		mg N/L	P371471	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P371497	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P371504	
2122154	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P371332	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: L-63N canal @ SR 70

Collection Date/Time: 09/24/2019 12:45

Field ID: G1SE0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2122143	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P371320	
	EPA 300.0 Rev. 2.1	Chloride	61		mg Cl/L	P371795	
		Sulfate	37		mg SO4/L	P371797	
	SM 2120 B	Color (true)	250		PCU	P371357	
	SM 2320 B-97	Total Alkalinity	80		mg CaCO3/L	P371878	
	SM 2540 C-97	TDS	282		mg/L	P371955	
	SM 2540 D-97	TSS	2	I	mg/L	P371816	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P371881	
2122149	EPA 350.1 Rev. 2.0	Ammonia-N	0.17		mg N/L	P371744	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P371452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P371471	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P371497	
	SM 5310 B-00	Organic Carbon	27		mg C/L	P371504	
2122155	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.24		mg P/L	P371332	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: L-63 @ SE 59th Blvd

Collection Date/Time: 09/24/2019 13:05

Field ID: G1SE0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2122144	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P371320	
	EPA 300.0 Rev. 2.1	Chloride	73		mg Cl/L	P371795	
		Sulfate	34		mg SO4/L	P371797	
	SM 2120 B	Color (true)	350		PCU	P371357	
	SM 2320 B-97	Total Alkalinity	74		mg CaCO3/L	P371878	
	SM 2540 C-97	TDS	299		mg/L	P371955	
	SM 2540 D-97	TSS	2	I	mg/L	P371816	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P371881	
2122150	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P371745	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P371452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P371471	
	EPA 365.1 Rev. 2.0	Total-P	0.37		mg P/L	P371497	
	SM 5310 B-00	Organic Carbon	31		mg C/L	P371504	
2122156	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.31		mg P/L	P371332	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: L-65 upstream of S-153

Collection Date/Time: 09/24/2019 13:30

Field ID: G1SE0022

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2122145	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P371320	
	EPA 300.0 Rev. 2.1	Chloride	110		mg Cl/L	P371795	
		Sulfate	28		mg SO4/L	P371797	
	SM 2120 B	Color (true)	340		PCU	P371357	
	SM 2320 B-97	Total Alkalinity	70		mg CaCO3/L	P371878	
	SM 2540 C-97	TDS	358		mg/L	P371955	
	SM 2540 D-97	TSS	2	I	mg/L	P371816	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P371881	
2122151	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P371745	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P371452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P371471	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P371497	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P371504	
2122157	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P371332	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371320

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371321

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371794

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371795

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371797

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371981

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371744

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371745

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371446

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: P371452

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371471

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371497

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371331

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371332

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

Reference Method: SM 2120 B
Batch ID: P371356

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P371357

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P371878

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

Reference Method: SM 2540 C-97
Batch ID: P371954

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P371955

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P371815

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P371816

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P371881

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P371504

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: P371794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371795

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371797

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371981

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371446

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: P371452

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: P371471

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371497

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371331

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371332

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

Reference Method: SM 2120 B
Batch ID: P371356

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

Reference Method: SM 2120 B
Batch ID: P371357

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

Reference Method: SM 2320 B-97
Batch ID: P371878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P371881

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P371504

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	108		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122047	Chloride	96.6		P	90 - 110
2122097	Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122386	Chloride	100		P	90 - 110
2122388	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122386	Sulfate	100		P	90 - 110
2122388	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122391	Sulfate	97.9		P	90 - 110
2122638	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122098	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122347	Ammonia-N	99.1	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122081	Kjeldahl Nitrogen	95.9	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122148	NO2NO3-N	98.8	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371497

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122121	Total-P	98.8	93.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371331

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122070	O-Phosphate-P	95.7	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122153	O-Phosphate-P	95.5	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P371881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122047	Fluoride	97.4	96.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P371504

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2122048	Organic Carbon	110	105	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122115	Turbidity	4.57	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122192	Turbidity	2.02	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122047	Chloride	0.926	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122386	Chloride	3.10	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122386	Sulfate	2.19	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122391	Sulfate	2.40	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122098	Ammonia-N	0.384	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122347	Ammonia-N	0.100	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122081	Kjeldahl Nitrogen	0.765	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122150	Kjeldahl Nitrogen	7.28	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122148	NO2NO3-N	1.56	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122121	Total-P	3.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122070	O-Phosphate-P	1.14	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122153	O-Phosphate-P	0.813	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P371356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122046	Color (true)	1.92	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P371357

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122047	Color (true)	2.28	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P371878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122047	Total Alkalinity	0.0644	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P371954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122115	TDS	9.07	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P371955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122142	TDS	3.80	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P371881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122047	Fluoride	0.963	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P371504

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2122048	Organic Carbon	3.30	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A94497

Included Lab Sample IDs: 2122140, 2122141, 2122142, 2122143, 2122144, 2122145

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A94499

Included Lab Sample IDs: 2122152, 2122153, 2122154, 2122155, 2122156, 2122157

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.9	98.1	P/P	90 - 110
O-Phosphate-P	98.6	98.1	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A94510

Included Lab Sample IDs: 2122140, 2122141, 2122142, 2122143, 2122144, 2122145

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	90 - 115
Color (true)	99.7	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A94525

Included Lab Sample IDs: 2122146, 2122147, 2122148, 2122149, 2122150, 2122151

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

Reference Method: SM 5310 B-00

Run ID: A94565

Included Lab Sample IDs: 2122146, 2122147, 2122148, 2122149, 2122150, 2122151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	100	P/P	90 - 110
Organic Carbon	104	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A94578

Included Lab Sample IDs: 2122146, 2122147, 2122148, 2122149, 2122150, 2122151

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A94597

Included Lab Sample IDs: 2122146, 2122147, 2122148, 2122149, 2122150, 2122151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	102	P/P	90 - 110
Kjeldahl Nitrogen	107	102	P/P	90 - 110
Kjeldahl Nitrogen	97.5	107	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A94667

Included Lab Sample IDs: 2122146, 2122147, 2122148, 2122149, 2122150, 2122151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.7	P/P	90 - 110
Ammonia-N	98.9	96.2	P/P	90 - 110
Ammonia-N	99.7	98.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A94686

Included Lab Sample IDs: 2122140, 2122141, 2122142, 2122143, 2122144, 2122145

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A94719

Included Lab Sample IDs: 2122140, 2122141, 2122142, 2122143, 2122144, 2122145

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

Reference Method: SM 4500 F-C-97

Run ID: A94719

Included Lab Sample IDs: 2122140, 2122141, 2122142, 2122143, 2122144, 2122145

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	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
EPA 180.1 Rev. 2.0	Turbidity				4.57	
	Turbidity				2.02	
EPA 300.0 Rev. 2.1	Chloride	99.1	96.6	99.9	0.926	
	Chloride	100	100	101	3.10	
	Sulfate	101	100	101	2.19	
	Sulfate	99.7	97.9	103	2.40	
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	102	102		0.384
	Ammonia-N	97.3	99.1	99.2		0.100
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	95.9	96.9		0.765
	Kjeldahl Nitrogen	100				7.28
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.8	96.8		1.56
EPA 365.1 Rev. 2.0	Total-P	99.6	98.8	93.7		3.57
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	95.7	96.8		1.14
	O-Phosphate-P	102	95.5	96.5		0.813
SM 2120 B	Color (true)	101			1.92	
	Color (true)	101			2.28	
SM 2320 B-97	Total Alkalinity	102			0.0644	
SM 2540 C-97	TDS				9.07	
	TDS				3.80	
SM 4500 F-C-97	Fluoride	96.4	97.4	96.3		0.963
SM 5310 B-00	Organic Carbon	108	110	105		3.30

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2122146, 2122147, 2122148, 2122149, 2122150, 2122151
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2122146, 2122147, 2122148, 2122149, 2122150, 2122151
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2122146, 2122147, 2122148, 2122149, 2122150, 2122151
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2122146, 2122147, 2122148, 2122149, 2122150, 2122151
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2122152, 2122153, 2122154, 2122155, 2122156, 2122157
SM 2120 B / E31780	True Color measured at 450 nm	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2122146, 2122147, 2122148, 2122149, 2122150, 2122151

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	09/25/2019			09/25/2019 16:25	Samantha Davila	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
EPA 300.0 Rev. 2.1	09/25/2019			10/02/2019 21:34	Julia Storbeck	2122140
	09/25/2019			10/02/2019 23:47	Julia Storbeck	2122141
	09/25/2019			10/03/2019 00:00	Julia Storbeck	2122142
	09/25/2019			10/03/2019 00:12	Julia Storbeck	2122143
	09/25/2019			10/03/2019 00:24	Julia Storbeck	2122144
	09/25/2019			10/03/2019 00:36	Julia Storbeck	2122145
	09/25/2019			10/04/2019 13:40	Julia Storbeck	2122140
	09/25/2019			10/04/2019 13:52	Julia Storbeck	2122141
EPA 350.1 Rev. 2.0	09/25/2019			10/02/2019 12:49	Ping Hua	2122146
	09/25/2019			10/02/2019 12:50	Ping Hua	2122147
	09/25/2019			10/02/2019 13:01	Ping Hua	2122148
	09/25/2019			10/02/2019 13:02	Ping Hua	2122149
	09/25/2019			10/02/2019 13:19	Ping Hua	2122150
	09/25/2019			10/02/2019 13:20	Ping Hua	2122151
EPA 351.2 Rev. 2.0	09/25/2019	09/27/2019 12:10	Jhamieka S. Greenwood	09/30/2019 15:08	Virginia P. Brown	2122146
	09/25/2019	09/27/2019 12:10	Jhamieka S. Greenwood	09/30/2019 15:16	Virginia P. Brown	2122147
	09/25/2019	09/27/2019 12:10	Jhamieka S. Greenwood	09/30/2019 15:18	Virginia P. Brown	2122148
	09/25/2019	09/27/2019 12:10	Jhamieka S. Greenwood	09/30/2019 15:19	Virginia P. Brown	2122149
	09/25/2019	09/27/2019 12:10	Jhamieka S. Greenwood	09/30/2019 15:25	Virginia P. Brown	2122151
	09/25/2019	09/27/2019 12:10	Jhamieka S. Greenwood	09/30/2019 16:03	Virginia P. Brown	2122150
EPA 353.2 Rev. 2.0	09/25/2019			09/26/2019 12:42	Beverly Y. Sanders	2122148
	09/25/2019			09/26/2019 12:49	Beverly Y. Sanders	2122146
	09/25/2019			09/26/2019 12:51	Beverly Y. Sanders	2122147
	09/25/2019			09/26/2019 12:52	Beverly Y. Sanders	2122149
	09/25/2019			09/26/2019 12:53	Beverly Y. Sanders	2122150
	09/25/2019			09/26/2019 12:54	Beverly Y. Sanders	2122151
EPA 365.1 Rev. 2.0	09/25/2019	09/27/2019 15:05	Lipi Saha	09/30/2019 09:52	Lipi Saha	2122146
	09/25/2019	09/27/2019 15:05	Lipi Saha	09/30/2019 09:53	Lipi Saha	2122147
	09/25/2019	09/27/2019 15:05	Lipi Saha	09/30/2019 09:54	Lipi Saha	2122148
	09/25/2019	09/27/2019 15:05	Lipi Saha	09/30/2019 09:58	Lipi Saha	2122149
	09/25/2019	09/27/2019 15:05	Lipi Saha	09/30/2019 09:59	Lipi Saha	2122150
	09/25/2019	09/27/2019 15:05	Lipi Saha	09/30/2019 10:00	Lipi Saha	2122151
EPA 365.1 Rev. 2.0 dissolved	09/25/2019			09/25/2019 17:34	Ping Hua	2122153
	09/25/2019			09/25/2019 18:09	Ping Hua	2122152
	09/25/2019			09/25/2019 18:10	Ping Hua	2122154
	09/25/2019			09/25/2019 18:11	Ping Hua	2122155, 2122156
	09/25/2019			09/25/2019 18:12	Ping Hua	2122157
SM 2120 B	09/25/2019			09/25/2019 17:16	Madeline Funaro	2122140, 2122141

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	09/25/2019			09/25/2019 18:09	Madeline Funaro	2122143
	09/25/2019			09/25/2019 18:10	Madeline Funaro	2122144
	09/25/2019			09/25/2019 18:11	Madeline Funaro	2122145
	09/25/2019			09/25/2019 18:12	Madeline Funaro	2122142
SM 2320 B-97	09/25/2019			10/02/2019 01:56	Dale L. Simmons	2122140
	09/25/2019			10/02/2019 02:08	Dale L. Simmons	2122141
	09/25/2019			10/02/2019 02:22	Dale L. Simmons	2122142
	09/25/2019			10/02/2019 02:35	Dale L. Simmons	2122143
	09/25/2019			10/02/2019 02:47	Dale L. Simmons	2122144
	09/25/2019			10/02/2019 03:00	Dale L. Simmons	2122145
SM 2540 C-97	09/25/2019			09/27/2019 14:08	Yijie Li	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
SM 2540 D-97	09/25/2019			09/27/2019 14:08	Yijie Li	2122140, 2122141, 2122142, 2122143, 2122144, 2122145
SM 4500 F-C-97	09/25/2019			10/02/2019 01:56	Dale L. Simmons	2122140
	09/25/2019			10/02/2019 02:08	Dale L. Simmons	2122141
	09/25/2019			10/02/2019 02:22	Dale L. Simmons	2122142
	09/25/2019			10/02/2019 02:35	Dale L. Simmons	2122143
	09/25/2019			10/02/2019 02:47	Dale L. Simmons	2122144
	09/25/2019			10/02/2019 03:00	Dale L. Simmons	2122145
SM 5310 B-00	09/25/2019			09/27/2019 16:14	Madeline Funaro	2122148
	09/25/2019			09/27/2019 20:25	Madeline Funaro	2122146
	09/25/2019			09/27/2019 20:37	Madeline Funaro	2122147
	09/25/2019			09/27/2019 20:49	Madeline Funaro	2122149
	09/25/2019			09/27/2019 21:02	Madeline Funaro	2122150
	09/25/2019			09/27/2019 21:14	Madeline Funaro	2122151