Chemical Analysis Report

SO-DIST-2019-08-27-02

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

Event Description: **Hawthorne**
Request ID: **RQ-2019-08-26-16**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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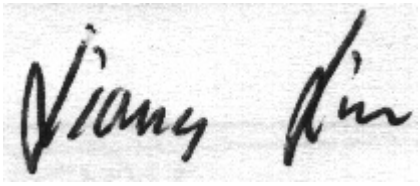
Date Certified: 17-SEP-2019 13:35



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 groups are included in this report: Metals and 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: HawthorneCreek@Reynolds **Collection Date/Time: 08/26/2019 11:00**

Field ID: G3SD0011 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114799	EPA 180.1 Rev. 2.0	Turbidity	10	A	NTU	P369773	
	EPA 300.0 Rev. 2.1	Chloride	59		mg Cl/L	P369925	
		Sulfate	51		mg SO4/L	P369928	
	SM 2120 B	Color (true)	240		PCU	P369768	
	SM 2320 B-97	Total Alkalinity	97		mg CaCO3/L	P370026	
	SM 2540 C-97	TDS	331		mg/L	P370069	
	SM 2540 D-97	TSS	21		mg/L	P370074	
	SM 4500 F-C-97	Fluoride	0.25		mg F/L	P370030	
2114800	EPA 350.1 Rev. 2.0	Ammonia-N	0.17		mg N/L	P370235	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P369831	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.56		mg N/L	P369940	
	EPA 365.1 Rev. 2.0	Total-P	0.68		mg P/L	P369874	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P370222	
2114801	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.45		mg P/L	P369798	
2114810	EPA 200.7 Rev. 4.4	Barium	24.8		ug/L	P369856	
		Calcium	52.9		mg/L	P369856	
		Iron	2.07E+03		ug/L	P369856	
		Magnesium	11.7		mg/L	P369856	
		Potassium	6.4		mg/L	P369856	
		Sodium	28.0		mg/L	P369856	
		Zinc	5.0	U	ug/L	P369856	
	EPA 200.8 Rev. 5.4	Aluminum	348		ug/L	P369856	
		Antimony	0.39		ug/L	P369856	
		Arsenic	3.18		ug/L	P369856	
		Boron**	47.6		ug/L	P369856	
		Cadmium	0.066	I	ug/L	P369856	
		Chromium	1.1	I	ug/L	P369856	
		Copper	2.09		ug/L	P369856	
		Lead	0.42		ug/L	P369856	
		Nickel	1.3	I	ug/L	P369856	
		Selenium	0.31	I	ug/L	P369856	
		Silver	0.010	U	ug/L	P369856	
		Thallium	0.10	U	ug/L	P369856	

Ref. Method and Comment:
SM 2540 D-97: Sample contains high density particulates with sandy appearance that settle out quickly.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369773

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369856

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369856

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369925

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369928

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370235

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369831

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369940

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369874

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369798

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

Reference Method: SM 2120 B
Batch ID: P369768

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P370026

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

Reference Method: SM 2540 C-97
Batch ID: P370069

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P370074

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P370030

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P370222

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369856

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	80 - 120
Calcium	104		P	80 - 120
Iron	104		P	80 - 120
Magnesium	105		P	80 - 120
Potassium	107		P	80 - 120
Sodium	108		P	80 - 120
Zinc	97.0		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369856

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	99.1		P	85 - 115
Arsenic	99.6		P	85 - 115
Boron	100		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	97.4		P	85 - 115
Copper	96.7		P	85 - 115
Lead	97.8		P	85 - 115
Nickel	97.6		P	85 - 115
Selenium	99.0		P	85 - 115
Silver	100		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369925

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369928

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370235

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.0		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369940

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: P369874

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369798

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.0		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P369768

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

Reference Method: SM 2320 B-97
Batch ID: P370026

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P370030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P370222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114588	Barium	97.5	97.1	P/P	80 - 120
2114588	Calcium	103		P	80 - 120
2114588	Iron	103	104	P/P	80 - 120
2114588	Magnesium	104		P	80 - 120
2114588	Potassium	108	99.1	P/P	80 - 120
2114588	Sodium	106		P	80 - 120
2114588	Zinc	96.0	95.7	P/P	80 - 120
2114889	Barium	98.2		P	80 - 120
2114889	Calcium	102		P	80 - 120
2114889	Iron	102		P	80 - 120
2114889	Magnesium	104		P	80 - 120
2114889	Potassium	106		P	80 - 120
2114889	Sodium	102		P	80 - 120
2114889	Zinc	95.3		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114588	Aluminum	98.7	99.6	P/P	80 - 120
2114588	Antimony	101	102	P/P	80 - 120
2114588	Arsenic	101	101	P/P	80 - 120
2114588	Boron	101	101	P/P	80 - 120
2114588	Cadmium	103	102	P/P	80 - 120
2114588	Chromium	98.4	98.6	P/P	80 - 120
2114588	Copper	93.0	93.7	P/P	80 - 120
2114588	Lead	98.1	98.8	P/P	80 - 120
2114588	Nickel	96.7	96.6	P/P	80 - 120
2114588	Selenium	99.3	99.5	P/P	80 - 120
2114588	Silver	99.3	100	P/P	80 - 120
2114588	Thallium	104	105	P/P	80 - 120
2114889	Aluminum	100		P	80 - 120
2114889	Antimony	101		P	80 - 120
2114889	Arsenic	102		P	80 - 120
2114889	Boron	104		P	80 - 120
2114889	Cadmium	101		P	80 - 120
2114889	Chromium	101		P	80 - 120
2114889	Copper	97.9		P	80 - 120
2114889	Lead	99.3		P	80 - 120
2114889	Nickel	102		P	80 - 120
2114889	Selenium	100		P	80 - 120
2114889	Silver	101		P	80 - 120
2114889	Thallium	105		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114406	Chloride	104		P	90 - 110
2114812	Chloride	107		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114406	Sulfate	104		P	90 - 110
2114812	Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114819	Ammonia-N	95.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114813	Kjeldahl Nitrogen	98.5	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115307	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114777	Total-P	92.6	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114814	O-Phosphate-P	94.8	95.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P370030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115036	Fluoride	99.3	98.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P370222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114394	Organic Carbon	100	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114799	Turbidity	5.03	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114588	Barium	0.449	Spike	P	0 - 20
2114588	Calcium	1.60	Spike	P	0 - 20
2114588	Iron	0.976	Spike	P	0 - 20
2114588	Magnesium	2.16	Spike	P	0 - 20
2114588	Potassium	4.67	Spike	P	0 - 20
2114588	Sodium	0.478	Spike	P	0 - 20
2114588	Zinc	0.302	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114588	Aluminum	0.839	Spike	P	0 - 20
2114588	Antimony	1.29	Spike	P	0 - 20
2114588	Arsenic	0.394	Spike	P	0 - 20
2114588	Boron	0.0156	Spike	P	0 - 20
2114588	Cadmium	0.853	Spike	P	0 - 20
2114588	Chromium	0.183	Spike	P	0 - 20
2114588	Copper	0.719	Spike	P	0 - 20
2114588	Lead	0.702	Spike	P	0 - 20
2114588	Nickel	0.0745	Spike	P	0 - 20
2114588	Selenium	0.233	Spike	P	0 - 20
2114588	Silver	0.677	Spike	P	0 - 20
2114588	Thallium	0.978	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114406	Chloride	0.288	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114406	Sulfate	0.0425	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114819	Ammonia-N	4.14	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114813	Kjeldahl Nitrogen	5.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115307	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114777	Total-P	4.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114814	O-Phosphate-P	1.05	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114815	Color (true)	1.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P370026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115036	Total Alkalinity	0.144	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P370069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114775	TDS	0.280	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 D-97
Batch ID: P370074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114775	TSS	6.78	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P370030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115036	Fluoride	0.477	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P370222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114394	Organic Carbon	0.415	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: EPA 300.0 Rev. 2.1
Run ID: A93819
Included Lab Sample IDs: 2114799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	104	P/P	90 - 110
Sulfate	104	106	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A93820
Included Lab Sample IDs: 2114799

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A93821
Included Lab Sample IDs: 2114799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A93828
Included Lab Sample IDs: 2114801

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A93888
Included Lab Sample IDs: 2114800

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: A93889
Included Lab Sample IDs: 2114800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.5	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A93921
Included Lab Sample IDs: 2114800

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

Reference Method: SM 2320 B-97
Run ID: A93928
Included Lab Sample IDs: 2114799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	106	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A93928
Included Lab Sample IDs: 2114799

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A93964
Included Lab Sample IDs: 2114810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	99.2	98.6	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	102	101	P/P	90 - 110
Sodium	104	103	P/P	90 - 110
Zinc	97.5	97.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A94014
Included Lab Sample IDs: 2114800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	104	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A94019
Included Lab Sample IDs: 2114800

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A94220
Included Lab Sample IDs: 2114810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	100	P/P	90 - 110
Antimony	97.9	98.5	P/P	90 - 110
Arsenic	102	102	P/P	90 - 110
Boron	102	101	P/P	90 - 110
Cadmium	102	103	P/P	90 - 110
Chromium	96.1	102	P/P	90 - 110
Copper	99.8	98.6	P/P	90 - 110
Lead	98.4	98.8	P/P	90 - 110
Nickel	101	99.5	P/P	90 - 110
Selenium	102	103	P/P	90 - 110
Silver	98.7	97.5	P/P	90 - 110
Thallium	96.3	97.1	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						5.03	
EPA 200.7 Rev. 4.4	Barium	100	97.5	97.1	98.2			0.449
	Calcium	104	103	102				1.60
	Iron	104	103	104	102			0.976
	Magnesium	105	104	104				2.16
	Potassium	107	108	99.1	106			4.67
	Sodium	108	106	102				0.478
	Zinc	97.0	96.0	95.7	95.3			0.302
EPA 200.8 Rev. 5.4	Aluminum	101	98.7	99.6	100			0.839
	Antimony	99.1	101	102	101			1.29
	Arsenic	99.6	101	101	102			0.394
	Boron	100	101	101	104			0.0156
	Cadmium	100	103	102	101			0.853
	Chromium	97.4	98.4	98.6	101			0.183
	Copper	96.7	93.0	93.7	97.9			0.719
	Lead	97.8	98.1	98.8	99.3			0.702
	Nickel	97.6	96.7	96.6	102			0.0745
	Selenium	99.0	99.3	99.5	100			0.233
	Silver	100	99.3	100	101			0.677
	Thallium	102	104	105	105			0.978
EPA 300.0 Rev. 2.1	Chloride	103	104	107			0.288	
	Sulfate	103	104	106			0.0425	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	95.0	101				4.14
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.0	98.5	107				5.27
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	101				0.0
EPA 365.1 Rev. 2.0	Total-P	96.6	92.6	98.4				4.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.0	94.8	95.8				1.05
SM 2120 B	Color (true)	101					1.05	
SM 2320 B-97	Total Alkalinity	104					0.144	
SM 2540 C-97	TDS						0.280	
SM 2540 D-97	TSS						6.78	
SM 4500 F-C-97	Fluoride	97.6	99.3	98.6				0.477
SM 5310 B-00	Organic Carbon	99.7	100	101				0.415

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2114799
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2114810
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2114810
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2114799
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2114799
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2114800
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2114800
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2114800
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2114800

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2114801
SM 2120 B / E31780	True Color measured at 450 nm	2114799
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2114799
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2114799
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2114799
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2114799
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2114800

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	08/27/2019			08/27/2019 16:17	Rosalyn Ballman	2114799
EPA 200.7 Rev. 4.4	08/27/2019	08/28/2019 17:20	Elliott D. Healy	09/03/2019 17:44	Alexander Thompson	2114810
EPA 200.8 Rev. 5.4	08/27/2019	08/28/2019 17:20	Elliott D. Healy	09/13/2019 17:10	Justin Cutchin	2114810
EPA 300.0 Rev. 2.1	08/27/2019			08/29/2019 04:31	Jhamieka S. Greenwood	2114799
EPA 350.1 Rev. 2.0	08/27/2019			09/05/2019 12:10	Ping Hua	2114800
EPA 351.2 Rev. 2.0	08/27/2019	08/28/2019 12:55	Sima Feizi	08/29/2019 13:24	Julia Storbeck	2114800
EPA 353.2 Rev. 2.0	08/27/2019			08/29/2019 13:57	Beverly Y. Sanders	2114800
EPA 365.1 Rev. 2.0	08/27/2019	08/29/2019 07:30	Joseph Suarez	08/30/2019 11:04	Lipi Saha	2114800
EPA 365.1 Rev. 2.0 dissolved	08/27/2019			08/27/2019 16:04	Jhamieka S. Greenwood	2114801
SM 2120 B	08/27/2019			08/27/2019 16:29	Madeline Funaro	2114799
SM 2320 B-97	08/27/2019			08/30/2019 13:14	Dale L. Simmons	2114799
SM 2540 C-97	08/27/2019			08/28/2019 14:52	Yijie Li	2114799
SM 2540 D-97	08/27/2019			08/28/2019 14:52	Yijie Li	2114799
SM 4500 F-C-97	08/27/2019			08/30/2019 13:14	Dale L. Simmons	2114799
SM 5310 B-00	08/27/2019			09/04/2019 18:22	Madeline Funaro	2114800