Chemical Analysis Report

SO-DIST-2018-12-13-01

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

Event Description: **LaBelle->Lake O.**
Request ID: **RQ-2018-12-10-53**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
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Certified by: Colin Wright, Program Administrator

Date Certified: 09-JAN-2019 15:50

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 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: OK Branch @ Eucalyptus **Collection Date/Time: 12/12/2018 15:10**

Field ID: G3SD0099 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2048595	EPA 180.1 Rev. 2.0	Turbidity	18	A	NTU	P356110	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P356356	
		Sulfate	20		mg SO4/L	P356358	
	SM 2120 B	Color (true)	35		PCU	P356102	
	SM 2320 B-97	Total Alkalinity	241		mg CaCO3/L	P356318	
	SM 2540 C-97	TDS	367		mg/L	P356489	
	SM 2540 D-97	TSS	22		mg/L	P356468	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P356321	
2048596	EPA 350.1 Rev. 2.0	Ammonia-N	0.19		mg N/L	P356262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P356247	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P356397	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P356570	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P356206	
2048597	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P356109	
2048601	EPA 200.7 Rev. 4.4	Calcium	106		mg/L	P356238	
		Iron	2.24E+03		ug/L	P356238	
		Magnesium	7.21		mg/L	P356238	
		Potassium	4.1		mg/L	P356238	
		Sodium	28.4		mg/L	P356238	
		Zinc	5.0	U	ug/L	P356238	
	EPA 200.8 Rev. 5.4	Arsenic	3.48		ug/L	P356238	
		Cadmium	0.020	U	ug/L	P356238	
		Chromium	0.80	I	ug/L	P356238	
		Copper	0.43	I	ug/L	P356238	
		Lead	0.16	I	ug/L	P356238	
		Nickel	1.46		ug/L	P356238	
		Silver	0.010	U	ug/L	P356238	

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: Lake Hicpochee in Canal **Collection Date/Time: 12/12/2018 13:45**

Field ID: G3SD0102 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2048592	EPA 180.1 Rev. 2.0	Turbidity	15		NTU	P356110	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P356356	
		Sulfate	22		mg SO4/L	P356358	
	SM 2120 B	Color (true)	35	A	PCU	P356102	
	SM 2320 B-97	Total Alkalinity	94		mg CaCO3/L	P356318	
	SM 2540 C-97	TDS	255		mg/L	P356489	
	SM 2540 D-97	TSS	18		mg/L	P356468	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P356321	
2048593	EPA 350.1 Rev. 2.0	Ammonia-N	0.0057		mg N/L	P356262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P356247	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P356397	
	EPA 365.1 Rev. 2.0	Total-P	0.096		mg P/L	P356570	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P356206	
2048594	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P356109	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P356110

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356238

Component	Result	Code	Units
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: P356238

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356356

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356358

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356262

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356247

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356397

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356570

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356109

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

Reference Method: SM 2120 B
Batch ID: P356102

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P356318

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

Reference Method: SM 2540 C-97
Batch ID: P356489

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356468

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P356321

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P356206

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: P356238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	108		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	101		P	85 - 115
Sodium	92.3		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	105		P	85 - 115
Cadmium	99.6		P	85 - 115
Chromium	98.8		P	85 - 115
Copper	101		P	85 - 115
Lead	95.7		P	85 - 115
Nickel	102		P	85 - 115
Silver	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356356

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: P356358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356262

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356247

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356397

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356570

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356109

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

Reference Method: SM 2120 B
Batch ID: P356102

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P356318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.8		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P356321

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P356206

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048865	Calcium	103		P	80 - 120
2048865	Iron	110		P	80 - 120
2048865	Magnesium	111		P	80 - 120
2048865	Potassium	109		P	80 - 120
2048865	Sodium	96.3		P	80 - 120
2048865	Zinc	105		P	80 - 120
2049065	Calcium	105	107	P/P	80 - 120
2049065	Iron	111	112	P/P	80 - 120
2049065	Magnesium	111	113	P/P	80 - 120
2049065	Potassium	105	106	P/P	80 - 120
2049065	Sodium	99.9	99.2	P/P	80 - 120
2049065	Zinc	107	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048865	Arsenic	104		P	80 - 120
2048865	Cadmium	102		P	80 - 120
2048865	Chromium	103		P	80 - 120
2048865	Copper	101		P	80 - 120
2048865	Lead	96.1		P	80 - 120
2048865	Nickel	102		P	80 - 120
2048865	Silver	101		P	80 - 120
2049065	Arsenic	106	106	P/P	80 - 120
2049065	Cadmium	104	104	P/P	80 - 120
2049065	Chromium	104	104	P/P	80 - 120
2049065	Copper	103	105	P/P	80 - 120
2049065	Lead	99.5	99.1	P/P	80 - 120
2049065	Nickel	104	104	P/P	80 - 120
2049065	Silver	104	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356356

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048610	Chloride	95.7		P	90 - 110
2048830	Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048610	Sulfate	94.1		P	90 - 110
2048830	Sulfate	93.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048523	Ammonia-N	101	97.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048596	Kjeldahl Nitrogen	101	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048596	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356570

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048526	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048594	O-Phosphate-P	92.2	93.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P356321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048518	Fluoride	97.3	94.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P356206

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2048352	Organic Carbon	103	99.7	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P356110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048595	Turbidity	1.09	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2049065	Calcium	1.49	Spike	P	0 - 20
2049065	Iron	1.31	Spike	P	0 - 20
2049065	Magnesium	1.23	Spike	P	0 - 20
2049065	Potassium	0.842	Spike	P	0 - 20
2049065	Sodium	0.397	Spike	P	0 - 20
2049065	Zinc	1.12	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2049065	Arsenic	0.474	Spike	P	0 - 20
2049065	Cadmium	0.190	Spike	P	0 - 20
2049065	Chromium	0.219	Spike	P	0 - 20
2049065	Copper	0.960	Spike	P	0 - 20
2049065	Lead	0.386	Spike	P	0 - 20
2049065	Nickel	0.443	Spike	P	0 - 20
2049065	Silver	1.46	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048610	Chloride	0.388	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048610	Sulfate	0.0683	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048523	Ammonia-N	3.68	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048596	Kjeldahl Nitrogen	3.12	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048596	NO2NO3-N	1.14	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048526	Total-P	1.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048594	O-Phosphate-P	1.09	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P356102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048592	Color (true)	3.26	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P356318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048518	Total Alkalinity	4.37	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P356489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048581	TDS	2.53	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P356321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048518	Fluoride	2.84	Spike	P	0 - 3.0

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P356206

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2048352	Organic Carbon	1.92	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: A88324
Included Lab Sample IDs: 2048592, 2048595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	100	P/P	90 - 110
Sulfate	98.0	98.7	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A88330
Included Lab Sample IDs: 2048592, 2048595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A88333
Included Lab Sample IDs: 2048594, 2048597

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	94.4	94.9	P/P	90 - 110
O-Phosphate-P	94.9	94.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A88334
Included Lab Sample IDs: 2048592, 2048595

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

Reference Method: SM 5310 B-00
Run ID: A88375
Included Lab Sample IDs: 2048593, 2048596

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.7	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A88391
Included Lab Sample IDs: 2048593, 2048596

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	103	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A88410
Included Lab Sample IDs: 2048592, 2048595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.3	95.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A88410
Included Lab Sample IDs: 2048592, 2048595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A88410
Included Lab Sample IDs: 2048592, 2048595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88412
Included Lab Sample IDs: 2048593, 2048596

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A88433
Included Lab Sample IDs: 2048593, 2048596

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A88445
Included Lab Sample IDs: 2048601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.4	97.1	P/P	90 - 110
Iron	101	103	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	98.4	97.5	P/P	90 - 110
Zinc	100	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A88477
Included Lab Sample IDs: 2048601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	96.1	92.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A88531
Included Lab Sample IDs: 2048593, 2048596

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A88601
Included Lab Sample IDs: 2048601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	102	100	P/P	90 - 110
Cadmium	99.4	97.7	P/P	90 - 110
Chromium	98.8	98.3	P/P	90 - 110
Copper	101	99.7	P/P	90 - 110
Lead	96.8	95.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A88601
Included Lab Sample IDs: 2048601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	100	99.8	P/P	90 - 110
Silver	97.8	96.6	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						1.09	
EPA 200.7 Rev. 4.4	Calcium	103	103	105	107			1.49
	Iron	108	110	111	112			1.31
	Magnesium	108	111	111	113			1.23
	Potassium	101	109	105	106			0.842
	Sodium	92.3	96.3	99.9	99.2			0.397
	Zinc	103	105	107	106			1.12
EPA 200.8 Rev. 5.4	Arsenic	105	104	106	106			0.474
	Cadmium	99.6	102	104	104			0.190
	Chromium	98.8	103	104	104			0.219
	Copper	101	101	103	105			0.960
	Lead	95.7	96.1	99.5	99.1			0.386
	Nickel	102	102	104	104			0.443
	Silver	100	101	104	102			1.46
EPA 300.0 Rev. 2.1	Chloride	98.7	95.7	97.5			0.388	
	Sulfate	96.7	94.1	93.2			0.0683	
EPA 350.1 Rev. 2.0	Ammonia-N	100	101	97.0				3.68
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	101	95.5				3.12
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	102				1.14
EPA 365.1 Rev. 2.0	Total-P	103	103	101				1.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	92.2	93.3				1.09
SM 2120 B	Color (true)	99.7					3.26	
SM 2320 B-97	Total Alkalinity	97.8					4.37	
SM 2540 C-97	TDS						2.53	
SM 4500 F-C-97	Fluoride	97.2	97.3	94.1				2.84
SM 5310 B-00	Organic Carbon	99.8	103	99.7				1.92

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2048592, 2048595
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2048601
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2048601
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2048592, 2048595
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2048592, 2048595
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2048593, 2048596
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2048593, 2048596
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2048593, 2048596
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2048593, 2048596
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2048594, 2048597
SM 2120 B / E31780	True Color measured at 450 nm	2048592, 2048595
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2048592, 2048595
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2048592, 2048595
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2048592, 2048595
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2048592, 2048595

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2048593, 2048596

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	12/13/2018			12/13/2018 17:01	Megan Treadwell	2048592, 2048595
EPA 200.7 Rev. 4.4	12/13/2018	12/18/2018 13:05	Elliott D. Healy	12/19/2018 17:47	Martin Acosta	2048601
	12/13/2018	12/18/2018 13:05	Elliott D. Healy	12/20/2018 15:23	Martin Acosta	2048601
EPA 200.8 Rev. 5.4	12/13/2018	12/18/2018 13:05	Elliott D. Healy	01/03/2019 00:56	Robert K Palmer	2048601
EPA 300.0 Rev. 2.1	12/13/2018			12/18/2018 21:59	Lipi Saha	2048592
	12/13/2018			12/18/2018 22:11	Lipi Saha	2048595
EPA 350.1 Rev. 2.0	12/13/2018			12/14/2018 12:01	Ping Hua	2048593
	12/13/2018			12/14/2018 12:02	Ping Hua	2048596
EPA 351.2 Rev. 2.0	12/13/2018	12/17/2018 14:00	Adrian Shelby	12/18/2018 11:12	Chelsea Hernandez	2048593
	12/13/2018	12/17/2018 14:00	Adrian Shelby	12/18/2018 11:13	Chelsea Hernandez	2048596
EPA 353.2 Rev. 2.0	12/13/2018			12/19/2018 11:35	Lauren Bottorf	2048596
	12/13/2018			12/19/2018 11:45	Lauren Bottorf	2048593
EPA 365.1 Rev. 2.0	12/13/2018	12/26/2018 12:35	Joseph Suarez	12/27/2018 11:13	Beverly Y. Sanders	2048593
	12/13/2018	12/26/2018 12:35	Joseph Suarez	12/27/2018 11:14	Beverly Y. Sanders	2048596
EPA 365.1 Rev. 2.0 dissolved	12/13/2018			12/13/2018 15:04	Jhamieka S. Greenwood	2048594
	12/13/2018			12/13/2018 15:17	Jhamieka S. Greenwood	2048597
SM 2120 B	12/13/2018			12/13/2018 15:27	Chelsea Hernandez	2048592
	12/13/2018			12/13/2018 15:28	Chelsea Hernandez	2048595
SM 2320 B-97	12/13/2018			12/18/2018 04:13	Lauren Bottorf	2048592
	12/13/2018			12/18/2018 04:35	Lauren Bottorf	2048595
SM 2540 C-97	12/13/2018			12/18/2018 14:18	Yijie Li	2048592, 2048595
SM 2540 D-97	12/13/2018			12/18/2018 14:18	Yijie Li	2048592, 2048595
SM 4500 F-C-97	12/13/2018			12/18/2018 04:13	Lauren Bottorf	2048592
	12/13/2018			12/18/2018 04:35	Lauren Bottorf	2048595
SM 5310 B-00	12/13/2018			12/14/2018 18:59	Megan Treadwell	2048593
	12/13/2018			12/14/2018 19:15	Megan Treadwell	2048596