Chemical Analysis Report

SO-DIST-2019-11-20-02

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

Event Description: **2019 Continuous Monitoring**
Request ID: **RQ-2019-11-11-09**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
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Certified by: Colin Wright, Program Administrator

Date Certified: 17-DEC-2019 10:17

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: ClevelandCemeteryDitch **Collection Date/Time: 11/19/2019 10:10**

Field ID: G3SD0076 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137687	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P374542	
	EPA 300.0	Bromide	18		mg Br/L	P374772	
	SM 2320 B-97	Total Alkalinity	116	A	mg CaCO3/L	P374789	
	SM 2540 D-97	TSS	3	U	mg/L	P375132	
	SM 4500 F-C-97	Fluoride	0.58		mg F/L	P374792	
2137689	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P375088	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P374848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P374866	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P375065	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P374889	
2137691	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.25		mg P/L	P374576	
2137699	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P374611	
		Manganese	13		ug/L	P374611	
		Zinc	15	U	ug/L	P374611	
	EPA 200.8 Rev. 5.4	Aluminum	26	I	ug/L	P374611	
		Antimony	0.20	U	ug/L	P374611	
		Arsenic	1.64		ug/L	P374611	
		Cadmium	0.080	U	ug/L	P374611	
		Chromium	4.0	U	ug/L	P374611	
		Copper	1.6	U	ug/L	P374611	
		Lead	0.80	U	ug/L	P374611	
		Nickel	2.0	U	ug/L	P374611	
		Selenium	0.80	U	ug/L	P374611	
		Silver	0.040	U	ug/L	P374611	
		Thallium	0.40	U	ug/L	P374611	

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: Coral Creek (East) **Collection Date/Time: 11/19/2019 11:50**

Field ID: G2SD0039 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137688	EPA 180.1 Rev. 2.0	Turbidity	2.8	A	NTU	P374542	
	EPA 300.0	Bromide	69		mg Br/L	P374772	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P374791	
	SM 2540 D-97	TSS	8	I A	mg/L	P375132	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P374794	
2137690	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P375088	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P374848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374866	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P375065	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P374889	
2137692	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P374576	
2137700	EPA 200.7 Rev. 4.4	Iron	150	U	ug/L	P374611	
		Manganese	6.0	U	ug/L	P374611	
		Zinc	30	U	ug/L	P374611	
	EPA 200.8 Rev. 5.4	Aluminum	55	I	ug/L	P374611	
		Antimony	0.20	U	ug/L	P374611	
		Arsenic	1.76		ug/L	P374611	
		Cadmium	0.080	U	ug/L	P374611	
		Chromium	4.0	U	ug/L	P374611	
		Copper	0.40	U	ug/L	P374611	
		Lead	2.0	U	ug/L	P374611	
		Nickel	2.0	U	ug/L	P374611	
		Selenium	0.80	U	ug/L	P374611	
		Silver	0.040	U	ug/L	P374611	
		Thallium	1.0	U	ug/L	P374611	

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: P374542

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374611

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374611

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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
Batch ID: P374772

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375088

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374848

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374866

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375065

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374576

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

Reference Method: SM 2320 B-97
Batch ID: P374789

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

Reference Method: SM 2320 B-97
Batch ID: P374791

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

Reference Method: SM 2540 D-97
Batch ID: P375132

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374792

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P374794

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P374889

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: P374611

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115
Manganese	101		P	85 - 115
Zinc	99.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374611

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	100		P	85 - 115
Cadmium	98.1		P	85 - 115
Chromium	91.9		P	85 - 115
Copper	99.2		P	85 - 115
Lead	103		P	85 - 115
Nickel	99.9		P	85 - 115
Selenium	89.4		P	85 - 115
Silver	104		P	85 - 115
Thallium	108		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P374772

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374866

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375065

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374576

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

Reference Method: SM 2320 B-97
Batch ID: P374789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P374791

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

Reference Method: SM 4500 F-C-97
Batch ID: P374792

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P374794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P374889

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374611

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137699	Iron	101	102	P/P	70 - 130
2137699	Manganese	97.0	97.1	P/P	70 - 130
2137699	Zinc	104	104	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374611

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137699	Aluminum	121	124	P/P	70 - 130
2137699	Antimony	102	102	P/P	70 - 130
2137699	Arsenic	109	110	P/P	70 - 130
2137699	Cadmium	90.6	91.8	P/P	70 - 130
2137699	Chromium	88.1	89.2	P/P	70 - 130
2137699	Copper	94.3	97.1	P/P	70 - 130
2137699	Lead	107	107	P/P	70 - 130
2137699	Nickel	92.5	94.6	P/P	70 - 130
2137699	Selenium	91.8	92.1	P/P	70 - 130
2137699	Silver	94.7	95.3	P/P	70 - 130
2137699	Thallium	111	112	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P374772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137703	Bromide	95.9	96.0	P/P	90 - 110
2137706	Bromide	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2138122	Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137555	Kjeldahl Nitrogen	97.9	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374866

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137555	NO2NO3-N	100	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137555	Total-P	96.9	97.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137480	O-Phosphate-P	96.8	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P374792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137687	Fluoride	96.4	98.1	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P374794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137447	Fluoride	94.6	94.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P374889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137468	Organic Carbon	102	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137688	Turbidity	3.16	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374611

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137699	Iron	0.849	Spike	P	0 - 20
2137699	Manganese	0.129	Spike	P	0 - 20
2137699	Zinc	0.285	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374611

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137699	Aluminum	2.75	Spike	P	0 - 20
2137699	Antimony	0.439	Spike	P	0 - 20
2137699	Arsenic	1.36	Spike	P	0 - 20
2137699	Cadmium	1.39	Spike	P	0 - 20
2137699	Chromium	1.28	Spike	P	0 - 20
2137699	Copper	3.02	Spike	P	0 - 20
2137699	Lead	0.771	Spike	P	0 - 20
2137699	Nickel	2.22	Spike	P	0 - 20
2137699	Selenium	0.301	Spike	P	0 - 20
2137699	Silver	0.670	Spike	P	0 - 20
2137699	Thallium	0.715	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P374772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137703	Bromide	0.0514	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2138122	Ammonia-N	1.30	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137555	Kjeldahl Nitrogen	2.36	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137555	NO2NO3-N	0.466	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137555	Total-P	0.153	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137480	O-Phosphate-P	1.64	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P374789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137687	Total Alkalinity	0.471	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P374791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137447	Total Alkalinity	0.496	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P374792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137687	Fluoride	1.01	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P374794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137447	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P374889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137468	Organic Carbon	0.478	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A95857
Included Lab Sample IDs: 2137687, 2137688

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A95869
Included Lab Sample IDs: 2137691, 2137692

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	98.5	P/P	90 - 110
O-Phosphate-P	99.9	99.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A95922
Included Lab Sample IDs: 2137699, 2137700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	104	101	P/P	95 - 105
Manganese	104	105	P/P	90 - 110
Manganese	105	104	P/P	95 - 105
Zinc	100	101	P/P	90 - 110
Zinc	101	100	P/P	95 - 105

Reference Method: EPA 300.0
Run ID: A95940
Included Lab Sample IDs: 2137687, 2137688

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	102	104	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A95947
Included Lab Sample IDs: 2137687, 2137688

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110
Total Alkalinity	98.3	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A95947
Included Lab Sample IDs: 2137687, 2137688

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A95948
Included Lab Sample IDs: 2137700

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A95966
Included Lab Sample IDs: 2137689, 2137690

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

Reference Method: SM 5310 B-00
Run ID: A95973
Included Lab Sample IDs: 2137689, 2137690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A96013
Included Lab Sample IDs: 2137689, 2137690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	95.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A96062
Included Lab Sample IDs: 2137689, 2137690

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96067
Included Lab Sample IDs: 2137699, 2137700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	95.5	93.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A96076
Included Lab Sample IDs: 2137689

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A96092
Included Lab Sample IDs: 2137690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96204
Included Lab Sample IDs: 2137699, 2137700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	107	110	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96204
Included Lab Sample IDs: 2137699, 2137700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	100	101	P/P	90 - 110
Arsenic	106	107	P/P	90 - 110
Cadmium	101	100	P/P	90 - 110
Lead	104	104	P/P	90 - 110
Lead	104	104	P/P	90 - 110
Nickel	106	105	P/P	90 - 110
Silver	109	108	P/P	90 - 110
Thallium	100	101	P/P	90 - 110
Thallium	101	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96240
Included Lab Sample IDs: 2137699, 2137700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	92.9	94.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96267
Included Lab Sample IDs: 2137699

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	97.8	96.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96330
Included Lab Sample IDs: 2137700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	94.7	95.3	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						3.16	
EPA 200.7 Rev. 4.4	Iron	105	101	102				0.849
	Manganese	101	97.0	97.1				0.129
	Zinc	99.2	104	104				0.285
EPA 200.8 Rev. 5.4	Aluminum	101	121	124				2.75
	Antimony	101	102	102				0.439
	Arsenic	100	109	110				1.36
	Cadmium	98.1	90.6	91.8				1.39
	Chromium	91.9	88.1	89.2				1.28
	Copper	99.2	94.3	97.1				3.02
	Lead	103	107	107				0.771
	Nickel	99.9	92.5	94.6				2.22
	Selenium	89.4	91.8	92.1				0.301
	Silver	104	94.7	95.3				0.670
	Thallium	108	111	112				0.715
EPA 300.0	Bromide	100	95.9	96.0	96.1			0.0514
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	103	105				1.30
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	97.9	101				2.36
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	100	99.8				0.466
EPA 365.1 Rev. 2.0	Total-P	102	96.9	97.0				0.153
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	96.8	98.4				1.64
SM 2320 B-97	Total Alkalinity	101					0.471	
	Total Alkalinity	102					0.496	
SM 4500 F-C-97	Fluoride	96.5	96.4	98.1				1.01
	Fluoride	99.4	94.6	94.6				0.0
SM 5310 B-00	Organic Carbon	102	102	102				0.478

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2137687, 2137688
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2137699, 2137700
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2137699, 2137700
EPA 300.0 / E31780	Bromide in aqueous matrices	2137687, 2137688
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2137689, 2137690
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2137689, 2137690
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2137689, 2137690
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2137689, 2137690
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2137691, 2137692
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2137687, 2137688
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2137687, 2137688
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2137687, 2137688
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2137689, 2137690

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	11/20/2019			11/20/2019 16:28	Samantha Davila	2137687, 2137688
EPA 200.7 Rev. 4.4	11/20/2019	11/21/2019 15:55	Elliott D. Healy	11/22/2019 14:15	Vijayalakshmi Reddy	2137699
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	11/22/2019 15:09	Vijayalakshmi Reddy	2137700
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	11/25/2019 16:50	Betina Topolski	2137700
EPA 200.8 Rev. 5.4	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/03/2019 00:23	Robert K Palmer	2137699
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/03/2019 00:52	Robert K Palmer	2137700
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/09/2019 22:36	Alexander Thompson	2137700
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/10/2019 00:14	Alexander Thompson	2137700
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/10/2019 00:43	Alexander Thompson	2137699
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/11/2019 03:13	Alexander Thompson	2137700
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/11/2019 03:42	Alexander Thompson	2137699
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/11/2019 18:00	Martin Acosta	2137699
	11/20/2019	11/21/2019 15:55	Elliott D. Healy	12/13/2019 19:30	Alexander Thompson	2137700
EPA 300.0	11/20/2019			11/23/2019 02:16	Lipi Saha	2137687
	11/20/2019			11/23/2019 02:33	Lipi Saha	2137688
EPA 350.1 Rev. 2.0	11/20/2019			11/27/2019 09:25	Ping Hua	2137689
	11/20/2019			11/27/2019 09:33	Ping Hua	2137690
EPA 351.2 Rev. 2.0	11/20/2019	11/26/2019 12:44	Sima Feizi	11/27/2019 14:13	Jhamieka S. Greenwood	2137689
	11/20/2019	11/26/2019 12:44	Sima Feizi	11/27/2019 14:14	Jhamieka S. Greenwood	2137690
EPA 353.2 Rev. 2.0	11/20/2019			11/26/2019 10:25	Beverly Y. Sanders	2137689
	11/20/2019			11/26/2019 10:27	Beverly Y. Sanders	2137690
EPA 365.1 Rev. 2.0	11/20/2019	12/02/2019 14:16	Yen Ta	12/03/2019 13:09	Benjamin T. Nordmann	2137689
	11/20/2019	12/02/2019 14:16	Yen Ta	12/03/2019 16:12	Benjamin T. Nordmann	2137690
EPA 365.1 Rev. 2.0 dissolved	11/20/2019			11/20/2019 15:28	Ping Hua	2137691
	11/20/2019			11/20/2019 15:33	Ping Hua	2137692
SM 2320 B-97	11/20/2019			11/24/2019 23:59	Dale L. Simmons	2137687
	11/20/2019			11/25/2019 14:33	Dale L. Simmons	2137688
SM 2540 D-97	11/20/2019			11/25/2019 15:56	Yijie Li	2137687, 2137688
SM 4500 F-C-97	11/20/2019			11/24/2019 21:58	Dale L. Simmons	2137687
	11/20/2019			11/25/2019 10:38	Dale L. Simmons	2137688
SM 5310 B-00	11/20/2019			11/26/2019 12:12	Lauren Lees	2137689
	11/20/2019			11/26/2019 12:40	Lauren Lees	2137690