

Chemical Analysis Report

SO-DIST-2018-08-17-01

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

Event Description: **Biology: SMP Somewhere**
Request ID: **RQ-2018-07-02-39**
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
Attn: Maryann Dugan

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Certified by: Colin Wright, Program Administrator

Date Certified: 05-SEP-2018 11:41

A handwritten signature in black ink, appearing to read "Colin Wright", is written over a light blue rectangular background.

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: MyrtleSlough@Pinelands

Collection Date/Time: 08/16/2018 12:05

Field ID: G3SD0095

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018025	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P350382	
	EPA 300.0 Rev. 2.1	Chloride	21	A	mg Cl/L	P350843	
		Sulfate	4.2	A	mg SO4/L	P350846	
	SM 2120 B	Color (true)	280		PCU	P350379	
	SM 2320 B-97	Total Alkalinity	61		mg CaCO3/L	P350557	
	SM 2540 C-97	TDS	173		mg/L	P350816	
	SM 2540 D-97	TSS	12		mg/L	P350807	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P350562	
2018026	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P350687	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P350461	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P350664	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P350610	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P350549	
2018027	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P350370	
2018052	EPA 200.7 Rev. 4.4	Calcium	24.9		mg/L	P350432	
		Iron	1.01E+03		ug/L	P350432	
		Magnesium	5.43		mg/L	P350432	
		Potassium	2.1		mg/L	P350432	
		Sodium	10.7		mg/L	P350432	
		Zinc	5.0	U	ug/L	P350432	
	EPA 200.8 Rev. 5.4	Arsenic	1.07		ug/L	P350432	
		Cadmium	0.020	U	ug/L	P350432	
		Chromium	0.52	I	ug/L	P350432	
		Copper	0.39	I	ug/L	P350432	
		Lead	0.38		ug/L	P350432	
		Nickel	0.31	I	ug/L	P350432	
		Silver	0.010	U	ug/L	P350432	

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: P350382

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350432

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: P350432

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: P350843

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350846

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350687

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350461

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: P350664

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350610

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350370

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

Reference Method: SM 2120 B
Batch ID: P350379

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P350557

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

Reference Method: SM 2540 C-97
Batch ID: P350816

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350807

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350562

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350549

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: P350432

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	103		P	85 - 115
Magnesium	106		P	85 - 115
Potassium	100		P	85 - 115
Sodium	98.0		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350432

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	102		P	85 - 115
Copper	99.0		P	85 - 115
Lead	102		P	85 - 115
Nickel	101		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350843

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350846

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350461

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350664

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: P350610

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350370

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

Reference Method: SM 2120 B
Batch ID: P350379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.8		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P350562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350549

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350432

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017739	Calcium	105		P	80 - 120
2017739	Iron	104		P	80 - 120
2017739	Magnesium	101		P	80 - 120
2017739	Potassium	99.4		P	80 - 120
2017739	Sodium	99.1		P	80 - 120
2017739	Zinc	105		P	80 - 120
2017915	Calcium	104		P	80 - 120
2017915	Iron	103	104	P/P	80 - 120
2017915	Magnesium	104	107	P/P	80 - 120
2017915	Potassium	101	103	P/P	80 - 120
2017915	Sodium	97.3		P	80 - 120
2017915	Zinc	111	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350432

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017739	Arsenic	106		P	80 - 120
2017739	Cadmium	109		P	80 - 120
2017739	Chromium	103		P	80 - 120
2017739	Copper	101		P	80 - 120
2017739	Lead	105		P	80 - 120
2017739	Nickel	102		P	80 - 120
2017739	Silver	102		P	80 - 120
2017915	Arsenic	98.5	107	P/P	80 - 120
2017915	Cadmium	101	108	P/P	80 - 120
2017915	Chromium	96.5	103	P/P	80 - 120
2017915	Copper	93.2	101	P/P	80 - 120
2017915	Lead	98.1	106	P/P	80 - 120
2017915	Nickel	94.2	103	P/P	80 - 120
2017915	Silver	97.6	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018025	Chloride	94.4		P	90 - 110
2018329	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018025	Sulfate	98.4		P	90 - 110
2018329	Sulfate	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017903	Ammonia-N	95.9	94.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017980	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017595	NO2NO3-N	97.4	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350610

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017973	Total-P	99.1	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017982	O-Phosphate-P	96.6	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017977	Fluoride	95.6	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2017903	Organic Carbon	97.6	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P350382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017972	Turbidity	1.39	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P350432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017915	Calcium	0.0335	Spike	P	0 - 20
2017915	Iron	1.09	Spike	P	0 - 20
2017915	Magnesium	1.44	Spike	P	0 - 20
2017915	Potassium	1.26	Spike	P	0 - 20
2017915	Sodium	0.994	Spike	P	0 - 20
2017915	Zinc	2.21	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P350432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017915	Arsenic	7.68	Spike	P	0 - 20
2017915	Cadmium	6.38	Spike	P	0 - 20
2017915	Chromium	6.87	Spike	P	0 - 20
2017915	Copper	7.64	Spike	P	0 - 20
2017915	Lead	7.46	Spike	P	0 - 20
2017915	Nickel	8.72	Spike	P	0 - 20
2017915	Silver	4.46	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P350843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018025	Chloride	2.49	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P350846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018025	Sulfate	2.75	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P350687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017903	Ammonia-N	1.60	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017980	Kjeldahl Nitrogen	0.403	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017595	NO2NO3-N	0.784	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017973	Total-P	0.0644	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017982	O-Phosphate-P	1.82	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P350379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017977	Color (true)	0.344	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017977	Total Alkalinity	0.688	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P350816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017901	TDS	1.79	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P350562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017977	Fluoride	0.484	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P350549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2017903	Organic Carbon	0.203	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 365.1 Rev. 2.0 dissolved

Run ID: A85971

Included Lab Sample IDs: 2018027

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.7	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A85974

Included Lab Sample IDs: 2018025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	99.8	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A85975

Included Lab Sample IDs: 2018025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	104	103	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86029

Included Lab Sample IDs: 2018026

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	94.1	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86036

Included Lab Sample IDs: 2018026

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86040

Included Lab Sample IDs: 2018025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86040

Included Lab Sample IDs: 2018025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	98.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86042

Included Lab Sample IDs: 2018052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	104	105	P/P	90 - 110
Iron	101	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86042

Included Lab Sample IDs: 2018052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	101	102	P/P	90 - 110
Potassium	99.2	99.9	P/P	90 - 110
Sodium	98.8	98.9	P/P	90 - 110
Zinc	106	107	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86049

Included Lab Sample IDs: 2018025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	97.1	P/P	90 - 110
Sulfate	103	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86078

Included Lab Sample IDs: 2018026

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86085

Included Lab Sample IDs: 2018026

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86096

Included Lab Sample IDs: 2018026

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86106

Included Lab Sample IDs: 2018052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.1	99.8	P/P	90 - 110
Cadmium	99.8	99.0	P/P	90 - 110
Chromium	99.0	100	P/P	90 - 110
Copper	97.4	98.3	P/P	90 - 110
Lead	104	104	P/P	90 - 110
Nickel	97.5	98.5	P/P	90 - 110
Silver	98.3	97.7	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						1.39	
EPA 200.7 Rev. 4.4	Calcium	102	105	104				0.0335
	Iron	103	104	103	104			1.09
	Magnesium	106	101	104	107			1.44
	Potassium	100	99.4	101	103			1.26
	Sodium	98.0	99.1	97.3				0.994
	Zinc	102	105	111	108			2.21
EPA 200.8 Rev. 5.4	Arsenic	102	106	98.5	107			7.68
	Cadmium	105	109	101	108			6.38
	Chromium	102	103	96.5	103			6.87
	Copper	99.0	101	93.2	101			7.64
	Lead	102	105	98.1	106			7.46
	Nickel	101	102	94.2	103			8.72
	Silver	101	102	97.6	102			4.46
EPA 300.0 Rev. 2.1	Chloride	101	94.4	99.2			2.49	
	Sulfate	99.4	98.4	99.3			2.75	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	95.9	94.3				1.60
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	101	101				0.403
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	97.4	96.4				0.784
EPA 365.1 Rev. 2.0	Total-P	101	99.1	99.0				0.0644
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.6	98.6				1.82
SM 2120 B	Color (true)	97.8					0.344	
SM 2320 B-97	Total Alkalinity	104					0.688	
SM 2540 C-97	TDS						1.79	
SM 4500 F-C-97	Fluoride	95.3	95.6	96.1				0.484
SM 5310 B-00	Organic Carbon	97.0	97.6	97.9				0.203

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2018025
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2018052
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2018052
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2018025
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2018025
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2018026
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2018026
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2018026
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2018026
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2018027
SM 2120 B / E31780	True Color measured at 450 nm	2018025
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2018025
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2018025
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2018025
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2018025

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2018026

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	08/17/2018			08/17/2018 15:47	Julia Storbeck	2018025
EPA 200.7 Rev. 4.4	08/17/2018	08/20/2018 13:00	Elliott D. Healy	08/21/2018 17:06	Betina Topolski	2018052
EPA 200.8 Rev. 5.4	08/17/2018	08/20/2018 13:00	Elliott D. Healy	08/23/2018 23:39	Allison Taylor	2018052
EPA 300.0 Rev. 2.1	08/17/2018			08/23/2018 14:59	Lipi Saha	2018025
EPA 350.1 Rev. 2.0	08/17/2018			08/23/2018 11:50	Ping Hua	2018026
EPA 351.2 Rev. 2.0	08/17/2018	08/20/2018 11:00	Adrian Shelby	08/21/2018 13:16	Joseph Suarez	2018026
EPA 353.2 Rev. 2.0	08/17/2018			08/23/2018 12:00	Lauren Bottorf	2018026
EPA 365.1 Rev. 2.0	08/17/2018	08/22/2018 13:40	Sima Feizi	08/23/2018 11:54	Beverly Y. Sanders	2018026
EPA 365.1 Rev. 2.0 dissolved	08/17/2018			08/17/2018 13:49	Lipi Saha	2018027
SM 2120 B	08/17/2018			08/17/2018 16:25	Julia Storbeck	2018025
SM 2320 B-97	08/17/2018			08/22/2018 00:03	Dale L. Simmons	2018025
SM 2540 C-97	08/17/2018			08/22/2018 15:33	Yijie Li	2018025
SM 2540 D-97	08/17/2018			08/22/2018 15:33	Yijie Li	2018025
SM 4500 F-C-97	08/17/2018			08/22/2018 00:03	Dale L. Simmons	2018025
SM 5310 B-00	08/17/2018			08/21/2018 06:00	Megan Treadwell	2018026