Chemical Analysis Report

SO-DIST-2018-09-27-02

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

Event Description: **Tellywog**
Request ID: **RQ-2018-09-10-16**
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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Certified by: Colin Wright, Program Administrator

Date Certified: 24-OCT-2018 11:37

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: Telegraph Swamp South **Collection Date/Time: 09/26/2018 12:40**

Field ID: G3SD0100 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2028976	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P352474	
	EPA 300.0 Rev. 2.1	Chloride	60		mg Cl/L	P352728	
		Sulfate	8.0		mg SO4/L	P352729	
	SM 2120 B	Color (true)	190	A	PCU	P352386	
	SM 2320 B-97	Total Alkalinity	75	A	mg CaCO3/L	P352908	
	SM 2540 C-97	TDS	260	A	mg/L	P353178	
	SM 2540 D-97	TSS	2	IA	mg/L	P353076	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P353028	
2028977	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P353013	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P352545	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P352700	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P352518	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P352976	
2028978	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P352434	
2028982	EPA 200.7 Rev. 4.4	Calcium	32.1		mg/L	P352534	
		Iron	710		ug/L	P352534	
		Magnesium	5.49		mg/L	P352534	
		Potassium	1.7		mg/L	P352534	
		Sodium	27.8		mg/L	P352534	
		Zinc	5.0	U	ug/L	P352534	
	EPA 200.8 Rev. 5.4	Arsenic	0.78		ug/L	P352534	
		Cadmium	0.020	U	ug/L	P352534	
		Chromium	0.52	I	ug/L	P352534	
		Copper	0.52	I	ug/L	P352534	
		Lead	0.11	I	ug/L	P352534	
		Nickel	0.31	I	ug/L	P352534	
		Silver	0.010	U	ug/L	P352534	

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: P352474

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352534

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: P352534

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: P352728

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352729

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353013

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352545

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: P352700

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352518

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352434

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

Reference Method: SM 2120 B
Batch ID: P352386

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P352908

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

Reference Method: SM 2540 C-97
Batch ID: P353178

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353076

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353028

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352976

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: P352534

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	95.4		P	85 - 115
Iron	92.9		P	85 - 115
Magnesium	99.1		P	85 - 115
Potassium	97.8		P	85 - 115
Sodium	97.9		P	85 - 115
Zinc	93.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352534

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	103		P	85 - 115
Cadmium	109		P	85 - 115
Chromium	106		P	85 - 115
Copper	106		P	80 - 120
Lead	107		P	85 - 115
Nickel	102		P	85 - 115
Silver	108		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352728

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352545

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: P352700

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352518

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: P352434

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.8		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P352386

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P352908

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P353028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352976

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352534

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028663	Calcium	95.8		P	80 - 120
2028663	Iron	93.2		P	80 - 120
2028663	Magnesium	101		P	80 - 120
2028663	Potassium	103		P	80 - 120
2028663	Sodium	96.6		P	80 - 120
2028663	Zinc	95.1		P	80 - 120
2028883	Calcium	91.5	90.0	P/P	80 - 120
2028883	Iron	90.0	87.0	P/P	80 - 120
2028883	Magnesium	95.8	93.4	P/P	80 - 120
2028883	Potassium	96.6	94.2	P/P	80 - 120
2028883	Sodium	91.8	87.3	P/P	80 - 120
2028883	Zinc	91.9	88.0	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352534

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028663	Arsenic	104		P	80 - 120
2028663	Cadmium	104		P	80 - 120
2028663	Chromium	104		P	80 - 120
2028663	Copper	104		P	80 - 120
2028663	Lead	104		P	80 - 120
2028663	Nickel	102		P	80 - 120
2028663	Silver	106		P	80 - 120
2028883	Arsenic	103	101	P/P	80 - 120
2028883	Cadmium	110	105	P/P	80 - 120
2028883	Chromium	108	104	P/P	80 - 120
2028883	Copper	103	100	P/P	80 - 120
2028883	Lead	107	104	P/P	80 - 120
2028883	Nickel	100	98.6	P/P	80 - 120
2028883	Silver	107	105	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028746	Chloride	98.7		P	90 - 110
2028861	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028746	Sulfate	95.8		P	90 - 110
2028861	Sulfate	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029229	Ammonia-N	97.4	98.2	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352545

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028894	Kjeldahl Nitrogen	98.4	112	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028977	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028894	Total-P	99.8	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028895	O-Phosphate-P	98.6	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028976	Fluoride	98.3	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028840	Organic Carbon	98.0	97.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029319	Turbidity	5.14	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028883	Calcium	1.18	Spike	P	0 - 20
2028883	Iron	3.18	Spike	P	0 - 20
2028883	Magnesium	2.26	Spike	P	0 - 20
2028883	Potassium	2.52	Spike	P	0 - 20
2028883	Sodium	2.83	Spike	P	0 - 20
2028883	Zinc	4.33	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028883	Arsenic	1.86	Spike	P	0 - 20
2028883	Cadmium	5.01	Spike	P	0 - 20
2028883	Chromium	3.63	Spike	P	0 - 20
2028883	Copper	2.49	Spike	P	0 - 20
2028883	Lead	2.46	Spike	P	0 - 20
2028883	Nickel	1.46	Spike	P	0 - 20
2028883	Silver	1.60	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028746	Chloride	0.204	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028746	Sulfate	1.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029229	Ammonia-N	0.546	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028894	Kjeldahl Nitrogen	8.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028977	NO2NO3-N	0.323	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028894	Total-P	1.87	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028895	O-Phosphate-P	0.719	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P352386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028976	Color (true)	1.70	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P352908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028976	Total Alkalinity	1.36	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028976	TDS	1.92	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P353028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028976	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P352976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028840	Organic Carbon	0.160	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: SM 2120 B
Run ID: A86754
Included Lab Sample IDs: 2028976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	99.7	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86767
Included Lab Sample IDs: 2028978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86787
Included Lab Sample IDs: 2028976

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86839
Included Lab Sample IDs: 2028976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.5	P/P	90 - 110
Sulfate	99.9	98.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A86849
Included Lab Sample IDs: 2028982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.1	96.1	P/P	90 - 110
Iron	95.9	95.6	P/P	90 - 110
Magnesium	97.0	97.7	P/P	90 - 110
Potassium	98.1	100	P/P	90 - 110
Sodium	97.9	96.1	P/P	90 - 110
Zinc	100	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86852
Included Lab Sample IDs: 2028977

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86890
Included Lab Sample IDs: 2028977

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86944
Included Lab Sample IDs: 2028977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	98.8	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A86962
Included Lab Sample IDs: 2028976

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

Reference Method: SM 5310 B-00
Run ID: A86991
Included Lab Sample IDs: 2028977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	95.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87005
Included Lab Sample IDs: 2028982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	100	99.4	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	102	103	P/P	90 - 110
Copper	100	99.6	P/P	90 - 110
Lead	104	104	P/P	90 - 110
Nickel	99.8	99.0	P/P	90 - 110
Silver	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87010
Included Lab Sample IDs: 2028977

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

Reference Method: SM 4500 F-C-97
Run ID: A87013
Included Lab Sample IDs: 2028976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	100	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						5.14	
EPA 200.7 Rev. 4.4	Calcium	95.4	95.8	91.5	90.0			1.18
	Iron	92.9	93.2	90.0	87.0			3.18
	Magnesium	99.1	101	95.8	93.4			2.26
	Potassium	97.8	103	96.6	94.2			2.52
	Sodium	97.9	96.6	91.8	87.3			2.83
	Zinc	93.4	95.1	91.9	88.0			4.33
EPA 200.8 Rev. 5.4	Arsenic	103	104	103	101			1.86
	Cadmium	109	104	110	105			5.01
	Chromium	106	104	108	104			3.63
	Copper	106	104	103	100			2.49
	Lead	107	104	107	104			2.46
	Nickel	102	102	100	98.6			1.46
	Silver	108	106	107	105			1.60
EPA 300.0 Rev. 2.1	Chloride	102	98.7	102			0.204	
	Sulfate	98.2	95.8	97.5			1.54	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	97.4	98.2				0.546
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.4	112				8.48
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	101				0.323
EPA 365.1 Rev. 2.0	Total-P	103	99.8	102				1.87
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	98.6	99.5				0.719
SM 2120 B	Color (true)	100					1.70	
SM 2320 B-97	Total Alkalinity	103					1.36	
SM 2540 C-97	TDS						1.92	
SM 4500 F-C-97	Fluoride	99.4	98.3	98.3				0.0
SM 5310 B-00	Organic Carbon	97.9	98.0	97.8				0.160

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2028976
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2028982
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2028982
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2028976
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2028976
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2028977
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2028977
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2028977
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2028977
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2028978
SM 2120 B / E31780	True Color measured at 450 nm	2028976
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2028976
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2028976
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2028976
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2028976

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2028977

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	09/27/2018			09/27/2018 15:54	Megan Treadwell	2028976
EPA 200.7 Rev. 4.4	09/27/2018	10/01/2018 14:40	Elliott D. Healy	10/02/2018 15:09	Betina Topolski	2028982
EPA 200.8 Rev. 5.4	09/27/2018	10/01/2018 14:40	Elliott D. Healy	10/09/2018 07:11	Allison Taylor	2028982
EPA 300.0 Rev. 2.1	09/27/2018			10/03/2018 21:04	Lipi Saha	2028976
EPA 350.1 Rev. 2.0	09/27/2018			10/03/2018 12:37	Ping Hua	2028977
EPA 351.2 Rev. 2.0	09/27/2018	10/01/2018 11:45	Adrian Shelby	10/05/2018 12:47	Joseph Suarez	2028977
EPA 353.2 Rev. 2.0	09/27/2018			10/03/2018 12:21	Lauren Bottorf	2028977
EPA 365.1 Rev. 2.0	09/27/2018	10/01/2018 12:40	Sima Feizi	10/02/2018 09:26	Beverly Y. Sanders	2028977
EPA 365.1 Rev. 2.0 dissolved	09/27/2018			09/27/2018 15:34	Julia Storbeck	2028978
SM 2120 B	09/27/2018			09/27/2018 14:56	DeAsia Armster	2028976
SM 2320 B-97	09/27/2018			10/08/2018 03:07	Dale L. Simmons	2028976
SM 2540 C-97	09/27/2018			10/01/2018 11:35	DeAsia Armster	2028976
SM 2540 D-97	09/27/2018			10/01/2018 11:35	DeAsia Armster	2028976
SM 4500 F-C-97	09/27/2018			10/09/2018 14:59	Dale L. Simmons	2028976
SM 5310 B-00	09/27/2018			10/04/2018 09:21	Megan Treadwell	2028977