Chemical Analysis Report

TLH-ROC-2018-07-18-02

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

Event Description: **kit C (WBID 3402) Econfina River Run_2 Blank & Dup**
Request ID: **RQ-2018-07-09-59**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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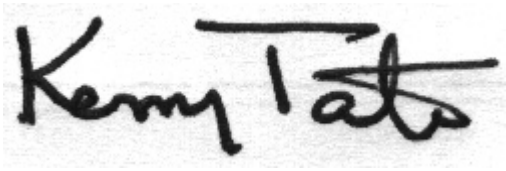
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 09-AUG-2018 08:31



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: ECOFINA RIVER @ CABBAGE GROVE SALT RD **Collection Date/Time: 07/18/2018 11:00**

Field ID: G1TLHR0092 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008655	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P348695	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P349064	
		Sulfate	0.51	I	mg SO4/L	P349067	
	SM 2120 B	Color (true)	690		PCU	P348716	
	SM 2320 B-97	Total Alkalinity	47		mg CaCO3/L	P348844	
	SM 2540 C-97	TDS	148		mg/L	P349272	
	SM 2540 D-97	TSS	3	I	mg/L	P349278	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P348850	
2008656	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P349072	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P348921	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P348764	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P348985	
	SM 5310 B-00	Organic Carbon	47		mg C/L	P349004	
2008657	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.068		mg P/L	P348688	
2008659	EPA 200.7 Rev. 4.4	Calcium	19.5		mg/L	P348964	
		Iron	1.49E+03		ug/L	P348964	
		Magnesium	4.43		mg/L	P348964	
		Potassium	0.30	U	mg/L	P348964	
		Sodium	2.2		mg/L	P348964	
		Zinc	5.0	U	ug/L	P348964	
	EPA 200.8 Rev. 5.4	Arsenic	0.60		ug/L	P348964	
		Cadmium	0.020	U	ug/L	P348964	
		Chromium	0.66	I	ug/L	P348964	
		Copper	1.18		ug/L	P348964	
		Lead	0.40		ug/L	P348964	
		Nickel	0.37	I	ug/L	P348964	
		Silver	0.010	U	ug/L	P348964	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348695

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P348964

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: P348964

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: P349064

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349067

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349072

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348921

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: P348764

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348985

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348688

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

Reference Method: SM 2120 B
Batch ID: P348716

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P348844

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

Reference Method: SM 2540 C-97
Batch ID: P349272

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349278

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P348850

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349004

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: P348964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	104		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	101		P	85 - 115
Sodium	99.0		P	85 - 115
Zinc	99.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P348964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	96.7		P	85 - 115
Copper	96.4		P	85 - 115
Lead	94.6		P	85 - 115
Nickel	98.2		P	85 - 115
Silver	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349064

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	108		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349072

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	106		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348764

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: P348985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348688

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

Reference Method: SM 2120 B
Batch ID: P348716

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	106		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P348844

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P348850

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349004

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P348964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009018	Calcium	102		P	80 - 120
2009018	Iron	102		P	80 - 120
2009018	Magnesium	103		P	80 - 120
2009018	Potassium	95.9		P	80 - 120
2009018	Sodium	96.3		P	80 - 120
2009018	Zinc	102		P	80 - 120
2009245	Calcium	103		P	80 - 120
2009245	Iron	101	101	P/P	80 - 120
2009245	Magnesium	104	105	P/P	80 - 120
2009245	Potassium	96.3	96.7	P/P	80 - 120
2009245	Sodium	98.0		P	80 - 120
2009245	Zinc	99.2	98.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P348964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009018	Arsenic	98.4		P	80 - 120
2009018	Cadmium	96.9		P	80 - 120
2009018	Chromium	96.7		P	80 - 120
2009018	Copper	93.2		P	80 - 120
2009018	Lead	94.6		P	80 - 120
2009018	Nickel	96.7		P	80 - 120
2009018	Silver	98.6		P	80 - 120
2009245	Arsenic	94.2	100	P/P	80 - 120
2009245	Cadmium	94.2	100	P/P	80 - 120
2009245	Chromium	92.7	98.9	P/P	80 - 120
2009245	Copper	88.5	94.6	P/P	80 - 120
2009245	Lead	90.9	96.4	P/P	80 - 120
2009245	Nickel	90.0	96.8	P/P	80 - 120
2009245	Silver	97.5	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349064

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007742	Chloride	107		P	90 - 110
2008648	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007742	Sulfate	106		P	90 - 110
2008648	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349072

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008617	Ammonia-N	105	104	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008618	Kjeldahl Nitrogen	98.9	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008618	NO2NO3-N	99.2	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008681	Total-P	93.9	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008619	O-Phosphate-P	93.1	94.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P348850

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008615	Fluoride	97.2	97.8	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008613	Turbidity	6.61	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P348964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009245	Calcium	0.144	Spike	P	0 - 20
2009245	Iron	0.208	Spike	P	0 - 20
2009245	Magnesium	0.256	Spike	P	0 - 20
2009245	Potassium	0.293	Spike	P	0 - 20
2009245	Sodium	0.441	Spike	P	0 - 20
2009245	Zinc	0.734	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P348964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009245	Arsenic	5.99	Spike	P	0 - 20
2009245	Cadmium	6.27	Spike	P	0 - 20
2009245	Chromium	6.55	Spike	P	0 - 20
2009245	Copper	6.35	Spike	P	0 - 20
2009245	Lead	5.91	Spike	P	0 - 20
2009245	Nickel	7.10	Spike	P	0 - 20
2009245	Silver	4.62	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007742	Chloride	5.53	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007742	Sulfate	6.36	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008617	Ammonia-N	0.238	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008618	Kjeldahl Nitrogen	0.678	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008618	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008681	Total-P	3.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008619	O-Phosphate-P	1.01	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P348716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008487	Color (true)	1.10	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P348844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008615	Total Alkalinity	1.28	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008586	TDS	2.68	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P348850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008615	Fluoride	0.474	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P349004

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008649	Organic Carbon	1.54	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: A85316
Included Lab Sample IDs: 2008657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85317
Included Lab Sample IDs: 2008655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	100	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A85321
Included Lab Sample IDs: 2008655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	106	107	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85343
Included Lab Sample IDs: 2008656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85366
Included Lab Sample IDs: 2008655

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

Reference Method: SM 4500 F-C-97
Run ID: A85366
Included Lab Sample IDs: 2008655

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85417
Included Lab Sample IDs: 2008655

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

Reference Method: SM 5310 B-00
Run ID: A85418
Included Lab Sample IDs: 2008656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85419
Included Lab Sample IDs: 2008656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85426
Included Lab Sample IDs: 2008656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85427
Included Lab Sample IDs: 2008656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	106	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A85442
Included Lab Sample IDs: 2008659

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	99.7	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	97.8	97.3	P/P	90 - 110
Sodium	98.3	97.1	P/P	90 - 110
Zinc	101	97.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A85598
Included Lab Sample IDs: 2008659

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.7	98.0	P/P	90 - 110
Cadmium	95.0	97.3	P/P	90 - 110
Chromium	97.2	97.5	P/P	90 - 110
Copper	97.1	95.5	P/P	90 - 110
Lead	94.5	95.7	P/P	90 - 110
Nickel	97.5	96.5	P/P	90 - 110
Silver	97.5	99.3	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						6.61	
EPA 200.7 Rev. 4.4	Calcium	101	102	103				0.144
	Iron	104	102	101	101			0.208
	Magnesium	108	103	104	105			0.256
	Potassium	101	95.9	96.3	96.7			0.293
	Sodium	99.0	96.3	98.0				0.441
	Zinc	99.7	102	99.2	98.5			0.734
EPA 200.8 Rev. 5.4	Arsenic	100	98.4	94.2	100			5.99
	Cadmium	98.4	96.9	94.2	100			6.27
	Chromium	96.7	96.7	92.7	98.9			6.55
	Copper	96.4	93.2	88.5	94.6			6.35
	Lead	94.6	94.6	90.9	96.4			5.91
	Nickel	98.2	96.7	90.0	96.8			7.10
	Silver	100	98.6	97.5	102			4.62
EPA 300.0 Rev. 2.1	Chloride	101	107	103			5.53	
	Sulfate	108	106	99.5			6.36	
EPA 350.1 Rev. 2.0	Ammonia-N	106	105	104				0.238
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	98.9	100				0.678
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.2	99.2				0.0
EPA 365.1 Rev. 2.0	Total-P	95.4	93.9	97.1				3.20
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	93.1	94.1				1.01
SM 2120 B	Color (true)	106					1.10	
SM 2320 B-97	Total Alkalinity	105					1.28	
SM 2540 C-97	TDS						2.68	
SM 4500 F-C-97	Fluoride	98.7	97.2	97.8				0.474
SM 5310 B-00	Organic Carbon	94.0						1.54

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2008655
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2008659
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2008659
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2008655
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2008655
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2008656
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2008656
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2008656
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2008656
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2008657
SM 2120 B / E31780	True Color measured at 450 nm	2008655
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2008655
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2008655
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2008655
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2008655

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2008656

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	07/18/2018			07/18/2018 16:18	William L. Brown IV	2008655
EPA 200.7 Rev. 4.4	07/18/2018	07/23/2018 14:40	Elliott D. Healy	07/24/2018 14:11	Betina Topolski	2008659
EPA 200.8 Rev. 5.4	07/18/2018	07/23/2018 14:40	Elliott D. Healy	07/31/2018 15:51	Robert K Palmer	2008659
EPA 300.0 Rev. 2.1	07/18/2018			07/24/2018 05:08	Lipi Saha	2008655
EPA 350.1 Rev. 2.0	07/18/2018			07/24/2018 11:49	Ping Hua	2008656
EPA 351.2 Rev. 2.0	07/18/2018	07/23/2018 11:30	Adrian Shelby	07/24/2018 12:36	Joseph Suarez	2008656
EPA 353.2 Rev. 2.0	07/18/2018			07/19/2018 13:07	Lauren Bottorf	2008656
EPA 365.1 Rev. 2.0	07/18/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 09:01	Beverly Y. Sanders	2008656
EPA 365.1 Rev. 2.0 dissolved	07/18/2018			07/18/2018 15:53	Julia Storbeck	2008657
SM 2120 B	07/18/2018			07/18/2018 18:28	Tanya Welborn	2008655
SM 2320 B-97	07/18/2018			07/20/2018 08:51	Dale L. Simmons	2008655
SM 2540 C-97	07/18/2018			07/20/2018 14:31	Yijie Li	2008655
SM 2540 D-97	07/18/2018			07/20/2018 14:31	Yijie Li	2008655
SM 4500 F-C-97	07/18/2018			07/20/2018 08:51	Dale L. Simmons	2008655
SM 5310 B-00	07/18/2018			07/23/2018 14:41	Megan Treadwell	2008656