

Chemical Analysis Report

TLH-ROC-2019-05-29-01

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

Event Description: **Run 4**
Request ID: **RQ-2019-05-27-42**
Customer: **TLH-ROC**
Project ID: **SMP**

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Tallahassee, FL 32399
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Date Certified: 19-JUN-2019 18:01



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: UNNAMED BRANCH @ HARDAWAY RD 2

Collection Date/Time: 05/29/2019 09:45

Field ID: G2TLHR0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089729	EPA 180.1 Rev. 2.0	Turbidity	6.5		NTU	P364701	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P364936	
		Sulfate	0.65		mg SO4/L	P364938	
		Color (true)	42		PCU	P364697	
	SM 2120 B	Total Alkalinity	3.7		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	15	U	mg/L	P365260	
	SM 2540 D-97	TSS	8	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P365085	
2089734	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P364965	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P364790	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P364905	
2089739	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.061		mg P/L	P364680	
2089761	EPA 200.7 Rev. 4.4	Barium	12.8		ug/L	P364766	
		Calcium	1.48		mg/L	P364766	
		Iron	970		ug/L	P364766	
		Magnesium	0.85		mg/L	P364766	
		Potassium	0.38	I	mg/L	P364766	
		Sodium	2.3		mg/L	P364766	
		Zinc	16	I	ug/L	P365476	
	EPA 200.8 Rev. 5.4	Aluminum	210		ug/L	P364766	
		Antimony	0.050	U	ug/L	P364766	
		Arsenic	0.84		ug/L	P364766	
		Boron**	8.5		ug/L	P364766	
		Cadmium	0.028	I	ug/L	P364766	
		Chromium	0.40	U	ug/L	P364766	
		Copper	0.59	I	ug/L	P365219	
		Lead	0.23	I	ug/L	P365219	
		Nickel	0.50	U	ug/L	P364766	
		Selenium	0.20	U	ug/L	P364766	
		Silver	0.010	U	ug/L	P364766	
		Thallium	0.10	U	ug/L	P364766	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: UNNAMED BRANCH @ FLAT CREEK RD

Collection Date/Time: 05/29/2019 10:10

Field ID: G2TLHR0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089730	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P364702	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P364936	
		Sulfate	1.2		mg SO4/L	P364938	
	SM 2120 B	Color (true)	43	A	PCU	P364697	
	SM 2320 B-97	Total Alkalinity	66		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	81		mg/L	P365261	
	SM 2540 D-97	TSS	8	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P365085	
2089735	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P364965	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P364790	
	EPA 365.1 Rev. 2.0	Total-P	0.070		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P364905	
2089740	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P364680	
2089762	EPA 200.7 Rev. 4.4	Barium	19.7		ug/L	P364766	
		Calcium	16.3		mg/L	P364766	
		Iron	1.16E+03		ug/L	P364766	
		Magnesium	7.39		mg/L	P364766	
		Potassium	0.48	I	mg/L	P364766	
		Sodium	2.9		mg/L	P364766	
		Zinc	9.0	I	ug/L	P364766	
		Aluminum	957		ug/L	P364766	
		Antimony	0.050	U	ug/L	P364766	
		Arsenic	0.90		ug/L	P364766	
	EPA 200.8 Rev. 5.4	Boron**	10.3		ug/L	P364766	
		Cadmium	0.021	I	ug/L	P364766	
		Chromium	1.3	I	ug/L	P364766	
		Copper	0.41	I	ug/L	P364766	
		Lead	0.45		ug/L	P364766	
		Nickel	0.50	U	ug/L	P364766	
		Selenium	0.20	U	ug/L	P364766	
		Silver	0.010	U	ug/L	P364766	
		Thallium	0.10	U	ug/L	P364766	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: MOSQUITO CREEK @ SR269

Collection Date/Time: 05/29/2019 10:35

Field ID: G2TLHR0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089731	EPA 180.1 Rev. 2.0	Turbidity	8.9		NTU	P364702	
	EPA 300.0 Rev. 2.1	Chloride	5.3		mg Cl/L	P364936	
		Sulfate	0.86		mg SO4/L	P364938	
	SM 2120 B	Color (true)	40		PCU	P364697	
	SM 2320 B-97	Total Alkalinity	32		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	48		mg/L	P365260	
	SM 2540 D-97	TSS	8	I	mg/L	P365059	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P365085	
2089736	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P364965	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.82		mg N/L	P364790	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P364905	
2089741	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P364680	
2089763	EPA 200.7 Rev. 4.4	Barium	23.0		ug/L	P364766	
		Calcium	9.19		mg/L	P364766	
		Iron	810		ug/L	P364766	
		Magnesium	3.71		mg/L	P364766	
		Potassium	0.87	I	mg/L	P364766	
		Sodium	2.9		mg/L	P364766	
		Zinc	5.0	U	ug/L	P364766	
		Aluminum	508		ug/L	P364766	
		Antimony	0.050	U	ug/L	P364766	
		Arsenic	0.63		ug/L	P364766	
	EPA 200.8 Rev. 5.4	Boron**	11.3		ug/L	P364766	
		Cadmium	0.020	U	ug/L	P364766	
		Chromium	0.76	I	ug/L	P364766	
		Copper	0.52	I	ug/L	P364766	
		Lead	0.42		ug/L	P364766	
		Nickel	0.50	U	ug/L	P364766	
		Selenium	0.20	U	ug/L	P364766	
		Silver	0.010	U	ug/L	P364766	
		Thallium	0.10	U	ug/L	P364766	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: LAKE SEMINOLE 200M FROM BOAT RAMP @ RIVER RD **Collection Date/Time: 05/29/2019 11:00**

Field ID: G2TLHR0002

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089726	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P364701	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P364936	
		Sulfate	6.5		mg SO4/L	P364938	
	SM 2120 B	Color (true)	12		PCU	P364697	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	48		mg/L	P365260	
	SM 2540 D-97	TSS	6	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P365085	
2089727	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P364965	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P364790	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P364905	
2089728	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364680	
2089760	EPA 200.7 Rev. 4.4	Barium	17.2		ug/L	P364766	
		Calcium	10.9		mg/L	P364766	
		Iron	180		ug/L	P364766	
		Magnesium	2.20		mg/L	P364766	
		Potassium	1.9		mg/L	P364766	
		Sodium	6.1		mg/L	P364766	
		Zinc	5.0	U	ug/L	P364766	
	EPA 200.8 Rev. 5.4	Aluminum	148		ug/L	P364766	
		Antimony	0.067	I	ug/L	P364766	
		Arsenic	0.38		ug/L	P364766	
		Boron**	18.7		ug/L	P364766	
		Cadmium	0.020	U	ug/L	P364766	
		Chromium	0.40	U	ug/L	P364766	
		Copper	0.77	I	ug/L	P364766	
		Lead	0.20	U	ug/L	P364766	
		Nickel	0.50	U	ug/L	P364766	
		Selenium	0.20	U	ug/L	P364766	
		Silver	0.010	U	ug/L	P364766	
		Thallium	0.10	U	ug/L	P364766	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: SOUTH MOSQUITO CREEK @ POWER LINE

Collection Date/Time: 05/29/2019 11:50

Field ID: G2TLHR0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089732	EPA 180.1 Rev. 2.0	Turbidity	15		NTU	P364702	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P364936	
		Sulfate	0.48	I	mg SO4/L	P364938	
	SM 2120 B	Color (true)	24	A	PCU	P364698	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	31		mg/L	P365260	
	SM 2540 D-97	TSS	25		mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P365085	
2089737	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P365205	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P364969	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.52		mg N/L	P364790	
	EPA 365.1 Rev. 2.0	Total-P	0.070		mg P/L	P364975	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P364905	
2089742	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P364681	
2089764	EPA 200.7 Rev. 4.4	Barium	19.9		ug/L	P364766	
		Calcium	5.24		mg/L	P364766	
		Iron	1.33E+03		ug/L	P364766	
		Magnesium	2.63		mg/L	P364766	
		Potassium	0.60	I	mg/L	P364766	
		Sodium	2.5		mg/L	P364766	
		Zinc	5.0	U	ug/L	P364766	
	EPA 200.8 Rev. 5.4	Aluminum	1.10E+03		ug/L	P364766	
		Antimony	0.050	U	ug/L	P364766	
		Arsenic	0.76		ug/L	P364766	
		Boron**	9.6		ug/L	P364766	
		Cadmium	0.020	U	ug/L	P364766	
		Chromium	1.3	I	ug/L	P364766	
		Copper	0.46	I	ug/L	P364766	
		Lead	0.67		ug/L	P364766	
		Nickel	0.50	U	ug/L	P364766	
		Selenium	0.20	U	ug/L	P364766	
		Silver	0.010	U	ug/L	P364766	
		Thallium	0.10	U	ug/L	P364766	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 05/29/2019.

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

EPA 200.8 Rev. 5.4: The lead result was confirmed on 06/17/2019.

Sample Location: SOUTH MOSQUITO CREEK @ POWER LINE

Collection Date/Time: 05/29/2019 11:55

Field ID: G2TLHR0039 DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089733	EPA 180.1 Rev. 2.0	Turbidity	21		NTU	P364702	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P364936	
		Sulfate	0.49	I	mg SO4/L	P364938	
	SM 2120 B	Color (true)	27		PCU	P364698	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	34		mg/L	P365261	
	SM 2540 D-97	TSS	23		mg/L	P365059	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P365085	
2089738	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P365205	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P364969	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.52		mg N/L	P364790	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P364975	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P364905	
2089743	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P364681	
2089765	EPA 200.7 Rev. 4.4	Barium	20.0		ug/L	P364766	
		Calcium	5.24		mg/L	P364766	
		Iron	1.37E+03		ug/L	P364766	
		Magnesium	2.62		mg/L	P364766	
		Potassium	0.58	I	mg/L	P364766	
		Sodium	2.4		mg/L	P364766	
		Zinc	5.0	U	ug/L	P364766	
	EPA 200.8 Rev. 5.4	Aluminum	1.18E+03		ug/L	P364766	
		Antimony	0.050	U	ug/L	P364766	
		Arsenic	0.79		ug/L	P364766	
		Boron**	9.6		ug/L	P364766	
		Cadmium	0.021	I	ug/L	P364766	
		Chromium	1.3	I	ug/L	P364766	
		Copper	0.47	I	ug/L	P364766	
		Lead	0.74		ug/L	P364766	
		Nickel	0.50	U	ug/L	P364766	
		Selenium	0.20	U	ug/L	P364766	
		Silver	0.010	U	ug/L	P364766	
		Thallium	0.10	U	ug/L	P364766	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 05/29/2019.

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

EPA 200.8 Rev. 5.4: The lead result was confirmed on 06/17/2019.

Sample Location: FB-05292019

Collection Date/Time: 05/29/2019 13:50

Field ID: FB-05292019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089744	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P364702	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P364936	
		Sulfate	0.20	U	mg SO4/L	P364938	
		Color (true)	2.5	U	PCU	P364697	
	SM 2120 B	Total Alkalinity	0.65	U	mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	15	U	mg/L	P365258	
	SM 2540 D-97	TSS	2	U	mg/L	P365056	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P365085	
2089745	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P365205	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P364969	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364790	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P364975	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P364905	
2089746	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364681	
2089766	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P364766	
		Calcium	0.075	U	mg/L	P364766	
		Iron	30	U	ug/L	P364766	
		Magnesium	0.040	U	mg/L	P364766	
		Potassium	0.30	U	mg/L	P364766	
		Sodium	0.50	U	mg/L	P364766	
		Zinc	5.0	U	ug/L	P364766	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P364766	
		Antimony	0.050	U	ug/L	P364766	
		Arsenic	0.050	U	ug/L	P364766	
		Boron**	2.0	U	ug/L	P364766	
		Cadmium	0.020	U	ug/L	P364766	
		Chromium	0.40	U	ug/L	P364766	
		Copper	0.40	U	ug/L	P364766	
		Lead	0.20	U	ug/L	P364766	
		Nickel	0.50	U	ug/L	P364766	
		Selenium	0.20	U	ug/L	P364766	
		Silver	0.010	U	ug/L	P364766	
		Thallium	0.10	U	ug/L	P364766	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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: P364701

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364702

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364766

Component	Result	Code	Units
Barium	1.0	U	ug/L
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 200.7 Rev. 4.4
Batch ID: P365476

Component	Result	Code	Units
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364766

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	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 200.8 Rev. 5.4
Batch ID: P365219

Component	Result	Code	Units
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364936

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365205

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364969

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364790

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364952

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364975

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364680

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364681

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

Reference Method: SM 2120 B
Batch ID: P364697

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P364698

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P365081

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P365258

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P365260

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P365261

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365056

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P365058

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365059

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P365085

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P364905

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: P364766

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	103		P	85 - 115
Iron	102		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	98.6		P	85 - 115
Sodium	102		P	85 - 115
Zinc	98.2		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P365476

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Zinc	98.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364766

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	102		P	85 - 115
Boron	101		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	101		P	85 - 115
Copper	101		P	85 - 115
Lead	95.3		P	85 - 115
Nickel	101		P	85 - 115
Selenium	101		P	85 - 115
Silver	102		P	85 - 115
Thallium	99.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P365219

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	101		P	85 - 115
Lead	90.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364936

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365205

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	91.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364969

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364790

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: P364952

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364975

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P364697

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P364698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P365081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P365085

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P364905

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089560	Barium	98.1		P	80 - 120
2089560	Calcium	103		P	80 - 120
2089560	Iron	101		P	80 - 120
2089560	Magnesium	102		P	80 - 120
2089560	Potassium	101		P	80 - 120
2089560	Sodium	104		P	80 - 120
2089560	Zinc	96.1		P	80 - 120
2089760	Barium	102	100	P/P	80 - 120
2089760	Calcium	99.2		P	80 - 120
2089760	Iron	104	103	P/P	80 - 120
2089760	Magnesium	104	103	P/P	80 - 120
2089760	Potassium	102	101	P/P	80 - 120
2089760	Sodium	102		P	80 - 120
2089760	Zinc	99.0	97.0	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P365476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2093212	Zinc	96.5	96.9	P/P	80 - 120
2094119	Zinc	97.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089560	Aluminum	103		P	80 - 120
2089560	Antimony	101		P	80 - 120
2089560	Arsenic	106		P	80 - 120
2089560	Boron	99.0		P	80 - 120
2089560	Cadmium	103		P	80 - 120
2089560	Chromium	97.5		P	80 - 120
2089560	Copper	99.8		P	80 - 120
2089560	Lead	97.6		P	80 - 120
2089560	Nickel	100		P	80 - 120
2089560	Selenium	107		P	80 - 120
2089560	Silver	101		P	80 - 120
2089560	Thallium	104		P	80 - 120
2089760	Aluminum	101	99.9	P/P	80 - 120
2089760	Antimony	102	100	P/P	80 - 120
2089760	Arsenic	103	103	P/P	80 - 120
2089760	Boron	104	105	P/P	80 - 120
2089760	Cadmium	105	104	P/P	80 - 120
2089760	Chromium	102	101	P/P	80 - 120
2089760	Copper	101	101	P/P	80 - 120
2089760	Lead	98.4	97.3	P/P	80 - 120
2089760	Nickel	102	102	P/P	80 - 120
2089760	Selenium	104	103	P/P	80 - 120
2089760	Silver	105	103	P/P	80 - 120
2089760	Thallium	103	104	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P365219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089611	Copper	99.7	98.6	P/P	80 - 120
2089611	Lead	90.9	91.2	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364936

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089638	Chloride	105		P	90 - 110
2089698	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089698	Sulfate	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089701	Ammonia-N	99.6	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089892	Ammonia-N	99.2	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089701	Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089892	Kjeldahl Nitrogen	105	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089727	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089701	Total-P	96.3	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364975

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089892	Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089739	O-Phosphate-P	97.2	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089742	O-Phosphate-P	95.7	95.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P365085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089700	Fluoride	99.0	97.4	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P364905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089635	Organic Carbon	100	99.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089638	Turbidity	1.14	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089730	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089760	Barium	1.72	Spike	P	0 - 20
2089760	Calcium	0.661	Spike	P	0 - 20
2089760	Iron	1.24	Spike	P	0 - 20
2089760	Magnesium	0.945	Spike	P	0 - 20
2089760	Potassium	0.282	Spike	P	0 - 20
2089760	Sodium	0.156	Spike	P	0 - 20
2089760	Zinc	2.03	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P365476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2093212	Zinc	0.381	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089760	Aluminum	0.547	Spike	P	0 - 20
2089760	Antimony	1.37	Spike	P	0 - 20
2089760	Arsenic	0.321	Spike	P	0 - 20
2089760	Boron	0.517	Spike	P	0 - 20
2089760	Cadmium	1.14	Spike	P	0 - 20
2089760	Chromium	0.458	Spike	P	0 - 20
2089760	Copper	0.338	Spike	P	0 - 20
2089760	Lead	1.10	Spike	P	0 - 20
2089760	Nickel	0.247	Spike	P	0 - 20
2089760	Selenium	0.582	Spike	P	0 - 20
2089760	Silver	1.08	Spike	P	0 - 20
2089760	Thallium	0.387	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P365219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089611	Copper	1.05	Spike	P	0 - 20
2089611	Lead	0.347	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089638	Chloride	12.5	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089638	Sulfate	12.6	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089701	Ammonia-N	1.42	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089892	Ammonia-N	3.03	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089701	Kjeldahl Nitrogen	1.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089892	Kjeldahl Nitrogen	4.76	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089727	NO2NO3-N	1.07	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089701	Total-P	3.80	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364975

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089892	Total-P	0.661	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089739	O-Phosphate-P	0.127	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089742	O-Phosphate-P	0.0858	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P364697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089730	Color (true)	2.30	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P364698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089732	Color (true)	0.370	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P365081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089700	Total Alkalinity	0.253	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P365258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089431	TDS	4.05	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P365260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089644	TDS	5.71	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P365261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089638	TDS	2.62	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P365085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089700	Fluoride	1.48	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P364905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089635	Organic Carbon	0.290	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: A91728

Included Lab Sample IDs: 2089728, 2089739, 2089740, 2089741, 2089742, 2089743, 2089746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	94.6	93.5	P/P	90 - 110
O-Phosphate-P	94.6	94.6	P/P	90 - 110
O-Phosphate-P	96.2	95.8	P/P	90 - 110
O-Phosphate-P	97.7	96.2	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A91732

Included Lab Sample IDs: 2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	90 - 115
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91733

Included Lab Sample IDs: 2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.5	P/P	95 - 105
Turbidity	99.0	99.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91776

Included Lab Sample IDs: 2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91812

Included Lab Sample IDs: 2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	99.8	P/P	90 - 110
Organic Carbon	99.8	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91823

Included Lab Sample IDs: 2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Chloride	103	103	P/P	90 - 110
Sulfate	104	105	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91825

Included Lab Sample IDs: 2089760, 2089761, 2089762, 2089763, 2089764, 2089765, 2089766

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	103	P/P	95 - 105
Barium	102	98.8	P/P	90 - 110
Barium	102	102	P/P	90 - 110
Calcium	102	97.0	P/P	90 - 110
Calcium	102	102	P/P	95 - 105
Calcium	97.0	101	P/P	90 - 110
Iron	102	97.2	P/P	90 - 110
Iron	102	101	P/P	95 - 105
Iron	97.2	99.7	P/P	90 - 110
Magnesium	101	101	P/P	95 - 105
Magnesium	102	97.0	P/P	90 - 110
Magnesium	97.0	98.9	P/P	90 - 110
Potassium	100	101	P/P	95 - 105
Potassium	101	97.6	P/P	90 - 110
Potassium	97.6	100	P/P	90 - 110
Sodium	102	98.2	P/P	90 - 110
Sodium	98.2	101	P/P	90 - 110
Sodium	98.9	102	P/P	95 - 105
Zinc	101	98.0	P/P	90 - 110
Zinc	101	101	P/P	90 - 110
Zinc	102	103	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91828

Included Lab Sample IDs: 2089760, 2089761, 2089762, 2089763, 2089764, 2089765, 2089766

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	107	P/P	90 - 110
Aluminum	103	102	P/P	90 - 110
Aluminum	107	103	P/P	90 - 110
Antimony	95.9	96.2	P/P	90 - 110
Antimony	96.5	97.6	P/P	90 - 110
Antimony	97.6	95.9	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Arsenic	99.8	102	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Cadmium	101	100	P/P	90 - 110
Chromium	94.9	98.6	P/P	90 - 110
Chromium	97.8	94.9	P/P	90 - 110
Chromium	98.6	100	P/P	90 - 110
Copper	100	101	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Copper	99.2	100	P/P	90 - 110
Lead	94.6	95.2	P/P	90 - 110
Lead	94.8	94.6	P/P	90 - 110
Lead	95.2	96.2	P/P	90 - 110
Nickel	100	100	P/P	90 - 110
Nickel	98.5	100	P/P	90 - 110
Nickel	98.8	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91828

Included Lab Sample IDs: 2089760, 2089761, 2089762, 2089763, 2089764, 2089765, 2089766

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	102	102	P/P	90 - 110
Selenium	102	102	P/P	90 - 110
Selenium	99.0	102	P/P	90 - 110
Silver	101	99.9	P/P	90 - 110
Silver	99.5	101	P/P	90 - 110
Silver	99.9	100	P/P	90 - 110
Thallium	93.2	93.5	P/P	90 - 110
Thallium	93.5	94.5	P/P	90 - 110
Thallium	94.4	93.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91852

Included Lab Sample IDs: 2089760, 2089761, 2089762, 2089763, 2089764, 2089765, 2089766

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	101	104	P/P	90 - 110
Boron	96.9	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A91867

Included Lab Sample IDs: 2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744

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

Reference Method: SM 4500 F-C-97

Run ID: A91867

Included Lab Sample IDs: 2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91885

Included Lab Sample IDs: 2089734, 2089735, 2089736, 2089737, 2089738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110
Total-P	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91886

Included Lab Sample IDs: 2089727, 2089745

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91914

Included Lab Sample IDs: 2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110
Ammonia-N	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91922

Included Lab Sample IDs: 2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	101	P/P	90 - 110
Kjeldahl Nitrogen	98.2	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92033

Included Lab Sample IDs: 2089761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	102	102	P/P	90 - 110
Lead	92.5	92.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92126

Included Lab Sample IDs: 2089761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	100	104	P/P	95 - 105

* 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								1.14	
	Turbidity								0.0	
EPA 200.7 Rev. 4.4	Barium	100			98.1	102	100			1.72
	Calcium	103			103	99.2				0.661
	Iron	102			101	104	103			1.24
	Magnesium	104			102	104	103			0.945
	Potassium	98.6			101	102	101			0.282
	Sodium	102			104	102				0.156
	Zinc	98.2			96.1	99.0	97.0			2.03
	Zinc	98.1			96.5	96.9	97.9			0.381
EPA 200.8 Rev. 5.4	Aluminum	101			103	101	99.9			0.547
	Antimony	100			101	102	100			1.37
	Arsenic	102			106	103	103			0.321
	Boron	101			99.0	104	105			0.517
	Cadmium	103			103	105	104			1.14
	Chromium	101			97.5	102	101			0.458
	Copper	101			99.8	101	101			0.338
	Copper	101			99.7	98.6				1.05
	Lead	95.3			97.6	98.4	97.3			1.10
	Lead	90.1			90.9	91.2				0.347
	Nickel	101			100	102	102			0.247
	Selenium	101			107	104	103			0.582
	Silver	102			101	105	103			1.08
	Thallium	99.8			104	103	104			0.387
EPA 300.0 Rev. 2.1	Chloride	100			105	104			12.5	
	Sulfate	103			105				12.6	
EPA 350.1 Rev. 2.0	Ammonia-N	100			99.6	101				1.42
	Ammonia-N	101			99.2	102				3.03
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	91.7			104	101				1.77
	Kjeldahl Nitrogen	101			105	97.9				4.76
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5			102	100				1.07
EPA 365.1 Rev. 2.0	Total-P	94.8			96.3	100				3.80
	Total-P	97.8			101	100				0.661
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.9			97.2	97.4				0.127
	O-Phosphate-P	97.9			95.7	95.6				0.0858
SM 2120 B	Color (true)	102							2.30	
	Color (true)	101							0.370	
SM 2320 B-97	Total Alkalinity	104							0.253	
SM 2540 C-97	TDS								4.05	
	TDS								5.71	
	TDS								2.62	
SM 4500 F-C-97	Fluoride	96.9			99.0	97.4				1.48
SM 5310 B-00	Organic Carbon	99.8			100	99.9				0.290

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2089760, 2089761, 2089762, 2089763, 2089764, 2089765, 2089766
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2089760, 2089761, 2089762, 2089763, 2089764, 2089765, 2089766

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2089728, 2089739, 2089740, 2089741, 2089742, 2089743, 2089746
SM 2120 B / E31780	True Color measured at 450 nm	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2089727, 2089734, 2089735, 2089736, 2089737, 2089738, 2089745

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	05/29/2019			05/29/2019 16:48	Adrian Shelby	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
EPA 200.7 Rev. 4.4	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 13:53	Betina Topolski	2089766
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 17:44	Betina Topolski	2089760
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 18:49	Betina Topolski	2089761
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 18:54	Betina Topolski	2089762
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 19:02	Betina Topolski	2089763
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 19:09	Betina Topolski	2089764
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 19:16	Betina Topolski	2089765
	05/29/2019	06/12/2019 15:00	Alexander Thompson	06/14/2019 13:15	Betina Topolski	2089761
EPA 200.8 Rev. 5.4	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 16:20	Robert K Palmer	2089766
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 19:35	Robert K Palmer	2089760
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 20:44	Robert K Palmer	2089761
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 20:54	Robert K Palmer	2089762
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 21:03	Robert K Palmer	2089763
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 21:13	Robert K Palmer	2089764
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/03/2019 21:23	Robert K Palmer	2089765
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/04/2019 13:05	Robert K Palmer	2089766
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/04/2019 14:20	Robert K Palmer	2089760
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/04/2019 14:39	Robert K Palmer	2089761
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/04/2019 14:45	Robert K Palmer	2089762
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/04/2019 14:51	Robert K Palmer	2089763
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/04/2019 14:57	Robert K Palmer	2089764
	05/29/2019	05/30/2019 17:10	Elliott D. Healy	06/04/2019 15:03	Robert K Palmer	2089765
	05/29/2019	06/06/2019 17:10	Elliott D. Healy	06/12/2019 00:39	Robert K Palmer	2089761
EPA 300.0 Rev. 2.1	05/29/2019			06/04/2019 03:05	Lipi Saha	2089726
	05/29/2019			06/04/2019 03:17	Lipi Saha	2089729
	05/29/2019			06/04/2019 03:29	Lipi Saha	2089730
	05/29/2019			06/04/2019 03:41	Lipi Saha	2089731
	05/29/2019			06/04/2019 04:18	Lipi Saha	2089732
	05/29/2019			06/04/2019 04:30	Lipi Saha	2089733
	05/29/2019			06/04/2019 04:42	Lipi Saha	2089744
EPA 350.1 Rev. 2.0	05/29/2019			06/05/2019 10:35	Ping Hua	2089727
	05/29/2019			06/05/2019 10:37	Ping Hua	2089734
	05/29/2019			06/05/2019 10:38	Ping Hua	2089735
	05/29/2019			06/05/2019 10:40	Ping Hua	2089736
	05/29/2019			06/05/2019 10:55	Ping Hua	2089745
	05/29/2019			06/05/2019 10:56	Ping Hua	2089737
	05/29/2019			06/05/2019 10:58	Ping Hua	2089738
EPA 351.2 Rev. 2.0	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:25	Joseph Suarez	2089727

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 351.2 Rev. 2.0	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:27	Joseph Suarez	2089734
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:28	Joseph Suarez	2089735
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:30	Joseph Suarez	2089736
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:35	Joseph Suarez	2089737
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:36	Joseph Suarez	2089738
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:41	Joseph Suarez	2089745
EPA 353.2 Rev. 2.0	05/29/2019			05/31/2019 08:59	Beverly Y. Sanders	2089727
	05/29/2019			05/31/2019 09:05	Beverly Y. Sanders	2089734
	05/29/2019			05/31/2019 09:06	Beverly Y. Sanders	2089735
	05/29/2019			05/31/2019 09:09	Beverly Y. Sanders	2089738
	05/29/2019			05/31/2019 09:10	Beverly Y. Sanders	2089745
	05/29/2019			05/31/2019 09:34	Beverly Y. Sanders	2089736
EPA 365.1 Rev. 2.0	05/29/2019			05/31/2019 09:35	Beverly Y. Sanders	2089737
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 10:05	Rosalyn Ballman	2089734
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 10:06	Rosalyn Ballman	2089735
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 10:07	Rosalyn Ballman	2089736
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 10:16	Rosalyn Ballman	2089737
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 10:17	Rosalyn Ballman	2089738
EPA 365.1 Rev. 2.0 dissolved	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 14:03	Rosalyn Ballman	2089727
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 14:05	Rosalyn Ballman	2089745
	05/29/2019			05/29/2019 16:24	Jhamieka S. Greenwood	2089739
	05/29/2019			05/29/2019 16:32	Jhamieka S. Greenwood	2089742
	05/29/2019			05/29/2019 17:15	Jhamieka S. Greenwood	2089728, 2089740
	05/29/2019			05/29/2019 17:16	Jhamieka S. Greenwood	2089741
SM 2120 B	05/29/2019			05/29/2019 17:21	Jhamieka S. Greenwood	2089746
	05/29/2019			05/29/2019 17:22	Jhamieka S. Greenwood	2089743
	05/29/2019			05/29/2019 17:37	Madeline Funaro	2089726
	05/29/2019			05/29/2019 17:38	Madeline Funaro	2089729
	05/29/2019			05/29/2019 17:39	Madeline Funaro	2089730
	05/29/2019			05/29/2019 17:40	Madeline Funaro	2089731
SM 2320 B-97	05/29/2019			05/29/2019 17:42	Madeline Funaro	2089744
	05/29/2019			05/29/2019 17:49	Madeline Funaro	2089732
	05/29/2019			05/29/2019 17:50	Madeline Funaro	2089733
	05/29/2019			06/05/2019 01:35	Samantha Davila	2089726
	05/29/2019			06/05/2019 01:47	Samantha Davila	2089729
	05/29/2019			06/05/2019 01:59	Samantha Davila	2089730
	05/29/2019			06/05/2019 02:11	Samantha Davila	2089731
	05/29/2019			06/05/2019 02:23	Samantha Davila	2089732
	05/29/2019			06/05/2019 02:34	Samantha Davila	2089733
	05/29/2019			06/05/2019 02:49	Samantha Davila	2089744

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-97	05/29/2019			05/31/2019 15:11	Yijie Li	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
SM 2540 D-97	05/29/2019			05/31/2019 15:11	Yijie Li	2089726, 2089729, 2089730, 2089731, 2089732, 2089733, 2089744
SM 4500 F-C-97	05/29/2019			06/05/2019 01:35	Samantha Davila	2089726
	05/29/2019			06/05/2019 01:47	Samantha Davila	2089729
	05/29/2019			06/05/2019 01:59	Samantha Davila	2089730
	05/29/2019			06/05/2019 02:11	Samantha Davila	2089731
	05/29/2019			06/05/2019 02:23	Samantha Davila	2089732
	05/29/2019			06/05/2019 02:34	Samantha Davila	2089733
	05/29/2019			06/05/2019 02:49	Samantha Davila	2089744
SM 5310 B-00	05/29/2019			05/31/2019 19:09	Julia Storbeck	2089727
	05/29/2019			05/31/2019 19:24	Julia Storbeck	2089734
	05/29/2019			05/31/2019 19:38	Julia Storbeck	2089735
	05/29/2019			05/31/2019 19:50	Julia Storbeck	2089736
	05/29/2019			05/31/2019 20:04	Julia Storbeck	2089737
	05/29/2019			05/31/2019 20:16	Julia Storbeck	2089738
	05/29/2019			05/31/2019 20:53	Julia Storbeck	2089745