

Chemical Analysis Report

NW-DIST-2019-05-24-01

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

Event Description: **Bay Walton County Run**

Request ID: **RQ-2019-05-20-13**

Customer: **NW-DIST**

Project ID: **SMP**

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160 Government Center
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Pensacola, FL 32502-5794
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Date Certified: 14-JUN-2019 14:58



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: Seven Runs upstream of Hwy 81

Collection Date/Time: 05/23/2019 10:08

Field ID: G3NW0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089036	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P364537	
	EPA 300.0 Rev. 2.1	Chloride	2.0		mg Cl/L	P364738	
		Sulfate	2.4		mg SO4/L	P364739	
		Color (true)	38		PCU	P364528	
	SM 2320 B-97	Total Alkalinity	1.7	I	mg CaCO3/L	P364859	
	SM 2540 C-97	TDS	20	I	mg/L	P364972	
	SM 2540 D-97	TSS	3	I	mg/L	P364967	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364863	
2089040	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P364913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P364909	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.086		mg N/L	P364650	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P364872	
	SM 5310 B-00	Organic Carbon	2.1		mg C/L	P364798	
2089044	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364533	
2089061	EPA 200.7 Rev. 4.4	Barium	6.3		ug/L	P364577	
		Calcium	1.30		mg/L	P364577	
		Iron	140		ug/L	P364577	
		Magnesium	0.44		mg/L	P364577	
		Potassium	0.48	I	mg/L	P364577	
		Sodium	1.1	I	mg/L	P364577	
		Zinc	5.0	U	ug/L	P364577	
		Aluminum	122		ug/L	P364577	
		Antimony	0.050	U	ug/L	P364577	
		Arsenic	0.098	I	ug/L	P364577	
	EPA 200.8 Rev. 5.4	Boron**	7.0	I	ug/L	P364577	
		Cadmium	0.020	U	ug/L	P364577	
		Chromium	0.40	U	ug/L	P364577	
		Copper	0.40	U	ug/L	P364577	
		Lead	0.20	U	ug/L	P364577	
		Nickel	0.50	U	ug/L	P364577	
		Selenium	0.20	U	ug/L	P364577	
		Silver	0.010	U	ug/L	P364577	
		Thallium	0.10	U	ug/L	P364577	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Otter Creek upstream of Otter Creek Bridge Rd Collection Date/Time: 05/23/2019 10:44

Field ID: G3NW0133

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089037	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P364537	
	EPA 300.0 Rev. 2.1	Chloride	49		mg Cl/L	P364738	
		Sulfate	14		mg SO4/L	P364739	
		Color (true)	60		PCU	P364528	
	SM 2120 B	Total Alkalinity	31	A	mg CaCO3/L	P364859	
	SM 2540 C-97	TDS	136	A	mg/L	P364973	
	SM 2540 D-97	TSS	3	IA	mg/L	P364968	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364863	
2089041	EPA 350.1 Rev. 2.0	Ammonia-N	2.2		mg N/L	P364913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.6		mg N/L	P364909	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P364650	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P364872	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P364798	
2089045	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364533	
2089062	EPA 200.7 Rev. 4.4	Barium	23.0		ug/L	P364577	
		Calcium	13.9		mg/L	P364577	
		Iron	640		ug/L	P364577	
		Magnesium	2.84		mg/L	P364577	
		Potassium	6.9		mg/L	P364577	
		Sodium	27.0		mg/L	P364577	
		Zinc	5.0	U	ug/L	P364577	
	EPA 200.8 Rev. 5.4	Aluminum	74		ug/L	P364577	
		Antimony	0.050	U	ug/L	P364577	
		Arsenic	0.40		ug/L	P364577	
		Boron**	146		ug/L	P364577	
		Cadmium	0.020	U	ug/L	P364577	
		Chromium	0.40	U	ug/L	P364577	
		Copper	0.40	U	ug/L	P364577	
		Lead	0.20	U	ug/L	P364577	
		Nickel	0.50	U	ug/L	P364577	
		Selenium	0.20	U	ug/L	P364577	
		Silver	0.010	U	ug/L	P364577	
		Thallium	0.10	U	ug/L	P364577	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Pine Log Creek upstream of Hwy 79

Collection Date/Time: 05/23/2019 11:10

Field ID: G3NW0153

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089038	EPA 180.1 Rev. 2.0	Turbidity	7.1		NTU	P364538	
	EPA 300.0 Rev. 2.1	Chloride	2.4		mg Cl/L	P364738	
		Sulfate	0.79		mg SO4/L	P364739	
		Color (true)	110		PCU	P364528	
	SM 2320 B-97	Total Alkalinity	4.0		mg CaCO3/L	P364859	
	SM 2540 C-97	TDS	15	U	mg/L	P364973	
	SM 2540 D-97	TSS	11		mg/L	P364968	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364863	
2089042	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P364913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P364909	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P364650	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P364872	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P364798	
2089046	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364533	
2089063	EPA 200.7 Rev. 4.4	Barium	5.2		ug/L	P364577	
		Calcium	2.39		mg/L	P364577	
		Iron	320		ug/L	P364577	
		Magnesium	0.43		mg/L	P364577	
		Potassium	0.30	U	mg/L	P364577	
		Sodium	1.5	I	mg/L	P364577	
		Zinc	5.0	U	ug/L	P364577	
	EPA 200.8 Rev. 5.4	Aluminum	247		ug/L	P364577	
		Antimony	0.050	U	ug/L	P364577	
		Arsenic	0.32		ug/L	P364577	
		Boron**	9.6		ug/L	P364577	
		Cadmium	0.020	U	ug/L	P364577	
		Chromium	0.43	I	ug/L	P364577	
		Copper	0.40	U	ug/L	P364577	
		Lead	0.29	I	ug/L	P364577	
		Nickel	0.50	U	ug/L	P364577	
		Selenium	0.20	U	ug/L	P364577	
		Silver	0.010	U	ug/L	P364577	
		Thallium	0.10	U	ug/L	P364577	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Little Black Creek upstream of Black Creek

Collection Date/Time: 05/23/2019 11:47

Field ID: G3NW0200

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089039	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P364538	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P364738	
		Sulfate	0.68		mg SO4/L	P364739	
	SM 2120 B	Color (true)	57	A	PCU	P364528	
	SM 2320 B-97	Total Alkalinity	1.0	I	mg CaCO3/L	P364859	
	SM 2540 C-97	TDS	15	U	mg/L	P364973	
	SM 2540 D-97	TSS	3	I	mg/L	P364968	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364863	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P364913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P364895	
2089043	EPA 353.2 Rev. 2.0	NO2NO3-N	0.066		mg N/L	P364650	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P364872	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P364798	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P364533	
	dissolved						
2089064	EPA 200.7 Rev. 4.4	Barium	5.1		ug/L	P364577	
		Calcium	0.85		mg/L	P364577	
		Iron	270		ug/L	P364577	
		Magnesium	0.39		mg/L	P364577	
		Potassium	0.30	U	mg/L	P364577	
		Sodium	1.5	I	mg/L	P364577	
		Zinc	5.0	U	ug/L	P364577	
	EPA 200.8 Rev. 5.4	Aluminum	96		ug/L	P364577	
		Antimony	0.050	U	ug/L	P364577	
		Arsenic	0.23		ug/L	P364577	
		Boron**	8.2		ug/L	P364577	
		Cadmium	0.020	U	ug/L	P364577	
		Chromium	0.40	U	ug/L	P364577	
		Copper	0.40	U	ug/L	P364577	
		Lead	0.20	U	ug/L	P364577	
		Nickel	0.50	U	ug/L	P364577	
		Selenium	0.20	U	ug/L	P364577	
		Silver	0.010	U	ug/L	P364577	
		Thallium	0.10	U	ug/L	P364577	

Ref. Method and Comment:

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

Sample Location: Black Creek Upstream of Hwy 20

Collection Date/Time: 05/23/2019 12:09

Field ID: G3NW0148

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089048	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P364538	
	EPA 300.0 Rev. 2.1	Chloride	2.8		mg Cl/L	P364738	
		Sulfate	1.3		mg SO4/L	P364739	
	SM 2120 B	Color (true)	70		PCU	P364529	
	SM 2320 B-97	Total Alkalinity	1.8	I	mg CaCO3/L	P364859	
	SM 2540 C-97	TDS	18	I	mg/L	P364973	
	SM 2540 D-97	TSS	3	I	mg/L	P364968	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364863	
2089049	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P364913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P364895	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P364651	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P364872	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P364798	
2089050	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364534	

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: P364537

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364538

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364577

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 200.8 Rev. 5.4
Batch ID: P364577

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 300.0 Rev. 2.1
Batch ID: P364738

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364895

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364909

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364651

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364872

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364534

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

Reference Method: SM 2120 B
Batch ID: P364528

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P364529

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P364859

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

Reference Method: SM 2540 C-97
Batch ID: P364972

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P364973

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364967

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364968

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P364863

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P364798

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: P364577

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	105		P	85 - 115
Iron	101		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	100		P	85 - 115
Sodium	103		P	85 - 115
Zinc	98.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364577

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	104		P	85 - 115
Boron	102		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	101		P	85 - 115
Copper	102		P	85 - 115
Lead	95.3		P	85 - 115
Nickel	102		P	85 - 115
Selenium	103		P	85 - 115
Silver	101		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364738

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

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: P364895

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364909

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364651

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364534

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

Reference Method: SM 2120 B
Batch ID: P364528

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

Reference Method: SM 2120 B
Batch ID: P364529

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

Reference Method: SM 2320 B-97
Batch ID: P364859

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P364863

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

Reference Method: SM 5310 B-00
Batch ID: P364798

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088440	Barium	103		P	80 - 120
2088440	Calcium	104		P	80 - 120
2088440	Iron	107		P	80 - 120
2088440	Magnesium	106		P	80 - 120
2088440	Potassium	103		P	80 - 120
2088440	Sodium	106		P	80 - 120
2088440	Zinc	101		P	80 - 120
2089219	Barium	102	99.7	P/P	80 - 120
2089219	Calcium	105	104	P/P	80 - 120
2089219	Iron	104	101	P/P	80 - 120
2089219	Magnesium	105	103	P/P	80 - 120
2089219	Potassium	108	105	P/P	80 - 120
2089219	Sodium	105	102	P/P	80 - 120
2089219	Zinc	98.8	97.1	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088440	Aluminum	101		P	80 - 120
2088440	Antimony	103		P	80 - 120
2088440	Arsenic	106		P	80 - 120
2088440	Boron	104		P	80 - 120
2088440	Cadmium	106		P	80 - 120
2088440	Chromium	101		P	80 - 120
2088440	Copper	102		P	80 - 120
2088440	Lead	97.7		P	80 - 120
2088440	Nickel	101		P	80 - 120
2088440	Selenium	105		P	80 - 120
2088440	Silver	103		P	80 - 120
2088440	Thallium	106		P	80 - 120
2089219	Aluminum	101	101	P/P	80 - 120
2089219	Antimony	102	101	P/P	80 - 120
2089219	Arsenic	102	101	P/P	80 - 120
2089219	Boron	104	105	P/P	80 - 120
2089219	Cadmium	104	102	P/P	80 - 120
2089219	Chromium	101	101	P/P	80 - 120
2089219	Copper	102	100	P/P	80 - 120
2089219	Lead	96.7	94.7	P/P	80 - 120
2089219	Nickel	101	100	P/P	80 - 120
2089219	Selenium	102	101	P/P	80 - 120
2089219	Silver	103	101	P/P	80 - 120
2089219	Thallium	106	105	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088941	Chloride	98.2		P	90 - 110
2089070	Chloride	95.6		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088941	Sulfate	99.0		P	90 - 110
2089070	Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089024	Ammonia-N	98.0	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089043	Kjeldahl Nitrogen	103	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088960	NO2NO3-N	96.7	96.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089049	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089041	Total-P	98.1	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089044	O-Phosphate-P	94.2	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364534

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089050	O-Phosphate-P	96.8	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P364863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089037	Fluoride	101	102	P/P	89 - 106

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P364798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089040	Organic Carbon	106	106	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088962	Turbidity	0.204	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089071	Turbidity	1.35	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089219	Barium	1.85	Spike	P	0 - 20
2089219	Calcium	0.619	Spike	P	0 - 20
2089219	Iron	2.64	Spike	P	0 - 20
2089219	Magnesium	1.15	Spike	P	0 - 20
2089219	Potassium	2.62	Spike	P	0 - 20
2089219	Sodium	2.16	Spike	P	0 - 20
2089219	Zinc	1.71	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089219	Aluminum	0.791	Spike	P	0 - 20
2089219	Antimony	0.837	Spike	P	0 - 20
2089219	Arsenic	1.30	Spike	P	0 - 20
2089219	Boron	0.679	Spike	P	0 - 20
2089219	Cadmium	2.14	Spike	P	0 - 20
2089219	Chromium	0.288	Spike	P	0 - 20
2089219	Copper	1.31	Spike	P	0 - 20
2089219	Lead	2.13	Spike	P	0 - 20
2089219	Nickel	0.730	Spike	P	0 - 20
2089219	Selenium	0.667	Spike	P	0 - 20
2089219	Silver	1.71	Spike	P	0 - 20
2089219	Thallium	1.81	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089070	Chloride	0.244	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089070	Sulfate	0.172	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089024	Ammonia-N	3.50	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089043	Kjeldahl Nitrogen	4.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088964	Kjeldahl Nitrogen	2.18	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088960	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089049	NO2NO3-N	0.407	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089041	Total-P	3.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089044	O-Phosphate-P	1.89	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089050	O-Phosphate-P	0.207	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P364528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089039	Color (true)	0.823	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P364529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089211	Color (true)	0.369	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P364859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089037	Total Alkalinity	0.628	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P364972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088942	TDS	0.213	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P364973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089037	TDS	5.17	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P364967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088942	TSS	5.88	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P364863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089037	Fluoride	0.958	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P364798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089040	Organic Carbon	0.259	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: A91669

Included Lab Sample IDs: 2089036, 2089037, 2089038, 2089039, 2089048

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91670

Included Lab Sample IDs: 2089044, 2089045, 2089046, 2089047, 2089050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.2	95.3	P/P	90 - 110
O-Phosphate-P	98.5	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91673

Included Lab Sample IDs: 2089036, 2089037, 2089038, 2089039, 2089048

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	98.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91712

Included Lab Sample IDs: 2089040, 2089041, 2089042, 2089043, 2089049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	98.0	P/P	90 - 110
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91730

Included Lab Sample IDs: 2089061, 2089062, 2089063, 2089064

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	105	103	P/P	90 - 110
Calcium	103	103	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Zinc	104	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91748

Included Lab Sample IDs: 2089036, 2089037, 2089038, 2089039, 2089048

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91768

Included Lab Sample IDs: 2089061, 2089062, 2089063, 2089064

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	101	P/P	90 - 110
Aluminum	102	101	P/P	90 - 110
Antimony	99.2	98.9	P/P	90 - 110
Antimony	99.5	99.2	P/P	90 - 110
Arsenic	101	100	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Boron	104	103	P/P	90 - 110
Boron	106	104	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Cadmium	103	102	P/P	90 - 110
Chromium	102	103	P/P	90 - 110
Chromium	103	102	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Copper	102	101	P/P	90 - 110
Lead	96.0	97.4	P/P	90 - 110
Lead	97.4	96.6	P/P	90 - 110
Nickel	101	102	P/P	90 - 110
Nickel	102	102	P/P	90 - 110
Selenium	101	102	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Thallium	100	100	P/P	90 - 110
Thallium	100	99.4	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91779

Included Lab Sample IDs: 2089040, 2089041, 2089042, 2089043, 2089049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	107	P/P	90 - 110
Organic Carbon	107	106	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A91798

Included Lab Sample IDs: 2089036, 2089037, 2089038, 2089039, 2089048

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

Reference Method: SM 4500 F-C-97

Run ID: A91798

Included Lab Sample IDs: 2089036, 2089037, 2089038, 2089039, 2089048

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91814

Included Lab Sample IDs: 2089040, 2089041, 2089042, 2089043, 2089049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	104	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91830

Included Lab Sample IDs: 2089040, 2089041, 2089042, 2089043, 2089049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	108	P/P	90 - 110
Kjeldahl Nitrogen	103	103	P/P	90 - 110
Kjeldahl Nitrogen	108	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91839

Included Lab Sample IDs: 2089040, 2089041, 2089042, 2089043, 2089049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.204	
	Turbidity					1.35	
EPA 200.7 Rev. 4.4	Barium	101	103	102	99.7		1.85
	Calcium	105	104	105	104		0.619
	Iron	101	107	104	101		2.64
	Magnesium	104	106	105	103		1.15
	Potassium	100	103	108	105		2.62
	Sodium	103	102	106	105		2.16
	Zinc	98.2	101	98.8	97.1		1.71
EPA 200.8 Rev. 5.4	Aluminum	100	101	101	101		0.791
	Antimony	101	103	102	101		0.837
	Arsenic	104	106	102	101		1.30
	Boron	102	104	104	105		0.679
	Cadmium	103	106	104	102		2.14
	Chromium	101	101	101	101		0.288
	Copper	102	102	102	100		1.31
	Lead	95.3	97.7	96.7	94.7		2.13
	Nickel	102	101	101	100		0.730
	Selenium	103	105	102	101		0.667
	Silver	101	103	103	101		1.71
	Thallium	104	106	106	105		1.81
EPA 300.0 Rev. 2.1	Chloride	99.2	95.6	98.2		0.244	
	Sulfate	98.9	94.3	99.0		0.172	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.0	102			3.50
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	103	108			4.15
	Kjeldahl Nitrogen	105					2.18
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	96.7	96.7			0.0
	NO2NO3-N	100	100	100			0.407
EPA 365.1 Rev. 2.0	Total-P	99.7	98.1	101			3.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	94.2	96.0			1.89
	O-Phosphate-P	100	96.8	96.6			0.207
SM 2120 B	Color (true)	101				0.823	
	Color (true)	102				0.369	
SM 2320 B-97	Total Alkalinity	104				0.628	
SM 2540 C-97	TDS					0.213	
	TDS					5.17	
SM 2540 D-97	TSS					5.88	
SM 4500 F-C-97	Fluoride	99.4	101	102			0.958
SM 5310 B-00	Organic Carbon	105	106	106			0.259

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2089036, 2089037, 2089038, 2089039, 2089048
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2089061, 2089062, 2089063, 2089064
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2089061, 2089062, 2089063, 2089064
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2089036, 2089037, 2089038, 2089039, 2089048
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2089036, 2089037, 2089038, 2089039, 2089048

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2089040, 2089041, 2089042, 2089043, 2089049
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2089040, 2089041, 2089042, 2089043, 2089049
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2089040, 2089041, 2089042, 2089043, 2089049
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2089040, 2089041, 2089042, 2089043, 2089049
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2089044, 2089045, 2089046, 2089047, 2089050
SM 2120 B / E31780	True Color measured at 450 nm	2089036, 2089037, 2089038, 2089039, 2089048
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2089036, 2089037, 2089038, 2089039, 2089048
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2089036, 2089037, 2089038, 2089039, 2089048
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2089036, 2089037, 2089038, 2089039, 2089048
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2089036, 2089037, 2089038, 2089039, 2089048
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2089040, 2089041, 2089042, 2089043, 2089049

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	05/24/2019			05/24/2019 14:43	Adrian Shelby	2089036, 2089037, 2089038, 2089039, 2089048
EPA 200.7 Rev. 4.4	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/29/2019 18:35	Betina Topolski	2089061
	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/29/2019 18:41	Betina Topolski	2089062
	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/29/2019 18:48	Betina Topolski	2089063
	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/29/2019 18:53	Betina Topolski	2089064
EPA 200.8 Rev. 5.4	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/31/2019 00:05	Robert K Palmer	2089061
	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/31/2019 00:45	Robert K Palmer	2089062
	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/31/2019 00:54	Robert K Palmer	2089063
	05/24/2019	05/28/2019 13:50	Elliott D. Healy	05/31/2019 01:04	Robert K Palmer	2089064
EPA 300.0 Rev. 2.1	05/24/2019			05/29/2019 18:30	Lipi Saha	2089036
	05/24/2019			05/29/2019 19:07	Lipi Saha	2089037
	05/24/2019			05/29/2019 19:19	Lipi Saha	2089038
	05/24/2019			05/29/2019 19:31	Lipi Saha	2089039
	05/24/2019			05/29/2019 19:43	Lipi Saha	2089048
EPA 350.1 Rev. 2.0	05/24/2019			05/31/2019 13:12	Ping Hua	2089040
	05/24/2019			05/31/2019 13:13	Ping Hua	2089042
	05/24/2019			05/31/2019 13:15	Ping Hua	2089043
	05/24/2019			05/31/2019 13:16	Ping Hua	2089049
	05/24/2019			05/31/2019 15:14	Ping Hua	2089041
EPA 351.2 Rev. 2.0	05/24/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/03/2019 21:48	Virginia P. Brown	2089040
	05/24/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/03/2019 21:49	Virginia P. Brown	2089041
	05/24/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/03/2019 21:51	Virginia P. Brown	2089042
	05/24/2019	06/03/2019 13:00	Adrian Shelby	06/03/2019 22:27	Virginia P. Brown	2089043
	05/24/2019	06/03/2019 13:00	Adrian Shelby	06/03/2019 22:35	Virginia P. Brown	2089049
EPA 353.2 Rev. 2.0	05/24/2019			05/29/2019 11:28	Beverly Y. Sanders	2089040
	05/24/2019			05/29/2019 11:29	Beverly Y. Sanders	2089041
	05/24/2019			05/29/2019 11:30	Beverly Y. Sanders	2089042
	05/24/2019			05/29/2019 11:31	Beverly Y. Sanders	2089043
	05/24/2019			05/29/2019 12:47	Beverly Y. Sanders	2089049
EPA 365.1 Rev. 2.0	05/24/2019	06/03/2019 11:05	Sima Feizi	06/04/2019 12:20	Rosalyn Ballman	2089040
	05/24/2019	06/03/2019 11:05	Sima Feizi	06/04/2019 12:21	Rosalyn Ballman	2089041
	05/24/2019	06/03/2019 11:05	Sima Feizi	06/04/2019 12:22	Rosalyn Ballman	2089042
	05/24/2019	06/03/2019 11:05	Sima Feizi	06/04/2019 12:23	Rosalyn Ballman	2089043
	05/24/2019	06/03/2019 11:05	Sima Feizi	06/04/2019 12:24	Rosalyn Ballman	2089049
EPA 365.1 Rev. 2.0 dissolved	05/24/2019			05/24/2019 15:59	Jhamieka S. Greenwood	2089044
	05/24/2019			05/24/2019 16:04	Jhamieka S. Greenwood	2089050
	05/24/2019			05/24/2019 16:39	Jhamieka S. Greenwood	2089047
	05/24/2019			05/24/2019 16:40	Jhamieka S. Greenwood	2089046
	05/24/2019			05/24/2019 16:41	Jhamieka S. Greenwood	2089045

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	05/24/2019			05/24/2019 16:15	Julia Storbeck	2089039
	05/24/2019			05/24/2019 16:20	Julia Storbeck	2089036
	05/24/2019			05/24/2019 16:21	Julia Storbeck	2089037
	05/24/2019			05/24/2019 16:22	Julia Storbeck	2089038
	05/24/2019			05/24/2019 16:27	Julia Storbeck	2089048
SM 2320 B-97	05/24/2019			06/01/2019 20:41	Dale L. Simmons	2089037
	05/24/2019			06/01/2019 22:49	Dale L. Simmons	2089036
	05/24/2019			06/01/2019 23:02	Dale L. Simmons	2089038
	05/24/2019			06/01/2019 23:15	Dale L. Simmons	2089039
	05/24/2019			06/01/2019 23:28	Dale L. Simmons	2089048
SM 2540 C-97	05/24/2019			05/29/2019 12:16	Yijie Li	2089036, 2089037, 2089038, 2089039, 2089048
SM 2540 D-97	05/24/2019			05/29/2019 12:16	Yijie Li	2089036, 2089037, 2089038, 2089039, 2089048
SM 4500 F-C-97	05/24/2019			06/01/2019 20:32	Dale L. Simmons	2089037
	05/24/2019			06/01/2019 22:49	Dale L. Simmons	2089036
	05/24/2019			06/01/2019 23:02	Dale L. Simmons	2089038
	05/24/2019			06/01/2019 23:15	Dale L. Simmons	2089039
	05/24/2019			06/01/2019 23:28	Dale L. Simmons	2089048
SM 5310 B-00	05/24/2019			05/30/2019 22:38	Julia Storbeck	2089040
	05/24/2019			05/31/2019 00:25	Julia Storbeck	2089041
	05/24/2019			05/31/2019 00:39	Julia Storbeck	2089042
	05/24/2019			05/31/2019 00:51	Julia Storbeck	2089043
	05/24/2019			05/31/2019 01:03	Julia Storbeck	2089049