

Chemical Analysis Report

TLH-ROC-2020-08-18-01

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

Event Description: **Run 2**
Request ID: **RQ-2020-07-13-30**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 09-SEP-2020 09:20

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals, Nutrients and Pesticides.

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: Waccasassa River @ Otter Creek

Collection Date/Time: 08/18/2020 11:50

Field ID: G1TLHR0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2190992	EPA 180.1 Rev. 2.0	Turbidity	3.4	A	NTU	P386270	
	EPA 300.0 Rev. 2.1	Bromide	2.4		mg Br/L	P386404	MS
	SM 2320 B-2011	Total Alkalinity	146		mg CaCO3/L	P386325	
	SM 2540 D-2011	TSS	4	I	mg/L	P386796	
	SM 4500 F-C-2011	Fluoride	0.20		mg F/L	P386329	
2190993	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P386431	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P386400	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.35		mg N/L	P386306	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P386311	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P386333	
2190994	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P386289	
2190997	EPA 8321B	Acesulfame K**	1.0	U	ug/L	P386214	
		2,4-D	0.0020	U	ug/L	P386256	
		AMPA**	0.10	U	ug/L	P386214	
		Sucralose**	0.010	U	ug/L	P386214	
		Acetaminophen**	0.0080	U	ug/L	P386256	
		Endothall**	2.5	U	ug/L	P386214	
		Acetamiprid**	0.0020	U	ug/L	P386256	
		Glufosinate**	0.10	U	ug/L	P386214	
		Glyphosate**	0.10	U	ug/L	P386214	
		Afidopyropen**	0.0020	U	ug/L	P386256	
		Bentazon	8.0E-04	U	ug/L	P386256	
		Benzovindiflupyr**	0.0020	U	ug/L	P386256	
		Carbamazepine**	8.0E-04	U	ug/L	P386256	
		Clothianidin**	0.0020	U	ug/L	P386256	
		Dinotefuran**	0.0020	U	ug/L	P386256	
		Diuron	0.0020	U	ug/L	P386256	
		Fenuron	0.016	U	ug/L	P386256	
		Fluridone**	8.0E-04	U	ug/L	P386256	
		Imazapyr**	0.0097	I	ug/L	P386256	
		Hydrocodone**	0.0020	U	ug/L	P386256	
		Ibuprofen**	0.020	U	ug/L	P386256	
		Imidacloprid	0.0020	U	ug/L	P386256	
		Linuron	0.0040	U	ug/L	P386256	
		Mandestrobin**	0.0020	U	ug/L	P386256	
		MCP	0.0020	U	ug/L	P386256	
		Naproxen**	0.0080	U	ug/L	P386256	
		Primidone**	0.0040	U	ug/L	P386256	
		Pyraclostrobin**	0.0020	U	ug/L	P386256	
		Thiamethoxam**	0.0020	U	ug/L	P386256	
		Tolfenpyrad**	0.0020	U	ug/L	P386256	
		Triclopyr**	0.0040	U	ug/L	P386256	
2190998	EPA 200.7 Rev. 4.4	Iron	340		ug/L	P386268	

Field ID: G1TLHR0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2190998	EPA 200.7 Rev. 4.4	Manganese	28.4		ug/L	P386268	
		Zinc	5.0	U	ug/L	P386268	
	EPA 200.8 Rev. 5.4	Aluminum	88		ug/L	P386268	
		Antimony	0.062	I	ug/L	P386268	
		Arsenic	0.91		ug/L	P386268	
		Cadmium	0.020	U	ug/L	P386268	
		Chromium	0.63	I	ug/L	P386268	
		Copper	0.40	U	ug/L	P386268	
		Lead	0.20	U	ug/L	P386268	
		Nickel	0.50	U	ug/L	P386268	
		Selenium	0.20	U	ug/L	P386268	
		Silver	0.010	U	ug/L	P386268	
		Thallium	0.10	U	ug/L	P386268	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 8321B: MDL for some parameters elevated due to matrix interference.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P386270

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P386268

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P386268

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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: P386404

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386431

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386400

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386306

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386311

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386289

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

Reference Method: EPA 8321B
Batch ID: P386214

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P386256

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCPP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P386325

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

Reference Method: SM 2540 D-2011
Batch ID: P386796

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P386329

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P386333

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: P386268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	104		P	85 - 115
Manganese	102		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P386268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	97.9		P	85 - 115
Arsenic	98.0		P	85 - 115
Cadmium	97.3		P	85 - 115
Chromium	99.6		P	85 - 115
Copper	98.7		P	85 - 115
Lead	103		P	85 - 115
Nickel	99.2		P	85 - 115
Selenium	98.1		P	85 - 115
Silver	101		P	85 - 115
Thallium	110		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P386404

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386431

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386400

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386311

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P386289

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

Reference Method: EPA 8321B
 Batch ID: P386214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	63.0		P	40 - 150
AMPA	94.4		P	40 - 150
Endothall	99.5		P	40 - 150
Glufosinate	95.9		P	40 - 150
Glyphosate	79.2		P	40 - 140
Sucralose	93.9		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P386256

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	115		P	30 - 160
Acetaminophen	82.2		P	30 - 160
Acetamiprid	71.7		P	30 - 160
Afidopyropen	58.2		P	30 - 160
Bentazon	61.8		P	30 - 160
Benzovindiflupyr	67.6		P	30 - 160
Carbamazepine	64.2		P	30 - 160
Clothianidin	88.3		P	30 - 160
Dinotefuran	94.8		P	30 - 160
Diuron	54.8		P	30 - 160
Fenuron	89.4		P	30 - 160
Fluridone	73.6		P	30 - 160
Hydrocodone	83.2		P	30 - 160
Ibuprofen	75.1		P	30 - 160
Imazapyr	70.3		P	30 - 160
Imidacloprid	101		P	30 - 160
Linuron	62.7		P	30 - 160
Mandestrobin	78.2		P	30 - 160
MCPP	123		P	30 - 160
Naproxen	62.8		P	30 - 160
Primidone	83.1		P	30 - 160
Pyraclostrobin	66.4		P	30 - 160
Thiamethoxam	86.9		P	30 - 160
Tolfenpyrad	43.2		P	30 - 160
Triclopyr	107		P	30 - 160

Reference Method: SM 2320 B-2011
 Batch ID: P386325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.3		P	93 - 104

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P386329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P386333

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P386268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190926	Iron	105	105	P/P	80 - 120
2190926	Manganese	103	104	P/P	80 - 120
2190926	Zinc	106	107	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P386268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190926	Aluminum	100	102	P/P	80 - 120
2190926	Antimony	99.8	99.9	P/P	80 - 120
2190926	Arsenic	98.7	100	P/P	80 - 120
2190926	Cadmium	98.6	101	P/P	80 - 120
2190926	Chromium	101	101	P/P	80 - 120
2190926	Copper	99.5	98.8	P/P	80 - 120
2190926	Lead	104	105	P/P	80 - 120
2190926	Nickel	96.8	97.7	P/P	80 - 120
2190926	Selenium	96.6	97.8	P/P	80 - 120
2190926	Silver	100	100	P/P	80 - 120
2190926	Thallium	115	115	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P386404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190112	Bromide	101	92.2	P/P	90 - 110
2190134	Bromide	88.8		F	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2191344	Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386400

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2191298	Kjeldahl Nitrogen	99.5	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190993	NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190993	Total-P	103	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P386289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190994	O-Phosphate-P	99.4	99.9	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P386214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190698	Acesulfame K	70.0	70.2	P/P	40 - 150
2190698	AMPA	93.4	99.2	P/P	40 - 150
2190698	Endothall	94.0	96.0	P/P	40 - 150
2190698	Glufosinate	88.4	103	P/P	40 - 150
2190698	Glyphosate	69.3	72.4	P/P	40 - 140
2190698	Sucralose	92.6	91.6	P/P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P386256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190698	2,4-D	112	108	P/P	30 - 160
2190698	Acetaminophen	96.7	88.8	P/P	30 - 160
2190698	Acetamiprid	80.6	74.1	P/P	30 - 160
2190698	Afidopyropen	51.6	51.3	P/P	30 - 160
2190698	Bentazon	54.6	48.0	P/P	30 - 160
2190698	Benzovindiflupyr	70.2	72.0	P/P	30 - 160
2190698	Carbamazepine	67.4	64.7	P/P	30 - 160
2190698	Clothianidin	96.7	87.6	P/P	30 - 160
2190698	Dinotefuran	106	98.9	P/P	30 - 160
2190698	Diuron	59.5	53.9	P/P	30 - 160
2190698	Fenuron	88.6	83.2	P/P	30 - 160
2190698	Fluridone	85.5	83.5	P/P	30 - 160
2190698	Hydrocodone	87.0	85.0	P/P	30 - 160
2190698	Ibuprofen	79.6	72.4	P/P	30 - 160
2190698	Imazapyr	102	71.9	P/P	30 - 160
2190698	Imidacloprid	131	98.3	P/P	30 - 160
2190698	Linuron	67.6	57.5	P/P	30 - 160
2190698	Mandestrobin	82.4	75.9	P/P	30 - 160
2190698	MCP	121	112	P/P	30 - 160
2190698	Naproxen	74.2	88.0	P/P	30 - 160
2190698	Primidone	93.1	83.3	P/P	30 - 160
2190698	Pyraclostrobin	75.3	68.5	P/P	30 - 160
2190698	Thiamethoxam	105	96.9	P/P	30 - 160
2190698	Tolfenpyrad	47.0	42.0	P/P	30 - 160
2190698	Triclopyr	110	96.8	P/P	30 - 160

Reference Method: SM 4500 F-C-2011
 Batch ID: P386329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190933	Fluoride	102	104	P/P	94 - 107

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P386333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190822	Organic Carbon	95.9	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P386270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190992	Turbidity	1.74	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P386268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190926	Iron	0.299	Spike	P	0 - 20
2190926	Manganese	0.952	Spike	P	0 - 20
2190926	Zinc	0.862	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P386268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190926	Aluminum	0.973	Spike	P	0 - 20
2190926	Antimony	0.0694	Spike	P	0 - 20
2190926	Arsenic	1.25	Spike	P	0 - 20
2190926	Cadmium	1.94	Spike	P	0 - 20
2190926	Chromium	0.354	Spike	P	0 - 20
2190926	Copper	0.665	Spike	P	0 - 20
2190926	Lead	0.453	Spike	P	0 - 20
2190926	Nickel	0.879	Spike	P	0 - 20
2190926	Selenium	1.19	Spike	P	0 - 20
2190926	Silver	0.373	Spike	P	0 - 20
2190926	Thallium	0.113	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P386404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190112	Bromide	8.55	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2191344	Ammonia-N	1.58	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2191298	Kjeldahl Nitrogen	2.06	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190993	NO2NO3-N	0.181	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190993	Total-P	1.34	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190994	O-Phosphate-P	0.366	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P386214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190698	Acesulfame K	0.199	Spike	P	0 - 30
2190698	AMPA	6.10	Spike	P	0 - 30
2190698	Endothall	2.17	Spike	P	0 - 30
2190698	Glufosinate	15.6	Spike	P	0 - 30
2190698	Glyphosate	4.35	Spike	P	0 - 30
2190698	Sucralose	1.04	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P386256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190698	2,4-D	3.11	Spike	P	0 - 30
2190698	Acetaminophen	8.48	Spike	P	0 - 30
2190698	Acetamiprid	8.42	Spike	P	0 - 30
2190698	Afidopyropen	0.549	Spike	P	0 - 30
2190698	Bentazon	13.0	Spike	P	0 - 30
2190698	Benzovindiflupyr	2.64	Spike	P	0 - 30
2190698	Carbamazepine	4.07	Spike	P	0 - 30
2190698	Clothianidin	9.84	Spike	P	0 - 30
2190698	Dinotefuran	6.54	Spike	P	0 - 30
2190698	Diuron	9.84	Spike	P	0 - 30
2190698	Fenuron	6.22	Spike	P	0 - 30
2190698	Fluridone	2.43	Spike	P	0 - 30
2190698	Hydrocodone	2.43	Spike	P	0 - 30
2190698	Ibuprofen	9.60	Spike	P	0 - 30
2190698	Imazapyr	29.1	Spike	P	0 - 30
2190698	Imidacloprid	28.4	Spike	P	0 - 30
2190698	Linuron	16.1	Spike	P	0 - 30
2190698	Mandestrobin	8.22	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P386256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190698	MCP	7.98	Spike	P	0 - 30
2190698	Naproxen	16.9	Spike	P	0 - 30
2190698	Primidone	11.2	Spike	P	0 - 30
2190698	Pyraclostrobin	9.47	Spike	P	0 - 30
2190698	Thiamethoxam	7.73	Spike	P	0 - 30
2190698	Tolfenpyrad	11.3	Spike	P	0 - 30
2190698	Triclopyr	12.7	Spike	P	0 - 30

Reference Method: SM 2320 B-2011
 Batch ID: P386325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190933	Total Alkalinity	3.11	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011
 Batch ID: P386329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190933	Fluoride	0.909	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
 Batch ID: P386333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190822	Organic Carbon	1.71	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2190997

Field Sample ID: G1TLHR0101

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	99.5	P	30 - 160
EPA 8321B	Acetaminophen-d4	91.1	P	30 - 160
EPA 8321B	Carbamazepine-d10	60.2	P	30 - 160
EPA 8321B	Diuron-d6	53.0	P	30 - 160
EPA 8321B	Endothall-d6	120	P	30 - 160
EPA 8321B	Endothall-d6	120	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	63.7	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	63.7	P	30 - 160
EPA 8321B	Ibuprofen-d3	65.4	P	30 - 160
EPA 8321B	Primidone-d5	87.1	P	30 - 160
EPA 8321B	Sucralose-d6	30.8	P	30 - 160
EPA 8321B	Sucralose-d6	30.8	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100542

Included Lab Sample IDs: 2190992

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A100549

Included Lab Sample IDs: 2190994

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.2	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A100557

Included Lab Sample IDs: 2190997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	78.9	80.1	P/P	60 - 160
Glufosinate	91.9	92.4	P/P	60 - 160
Glyphosate	82.5	81.4	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100558

Included Lab Sample IDs: 2190993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A100560

Included Lab Sample IDs: 2190992

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	96.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A100560

Included Lab Sample IDs: 2190992

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

Reference Method: SM 5310 B-2011

Run ID: A100563

Included Lab Sample IDs: 2190993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.1	95.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A100573

Included Lab Sample IDs: 2190998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A100573

Included Lab Sample IDs: 2190998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	102	P/P	90 - 110
Manganese	103	104	P/P	90 - 110
Zinc	101	103	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A100586

Included Lab Sample IDs: 2190997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	60.3	63.6	P/P	60 - 160
Endothall	96.6	108	P/P	60 - 160

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100589

Included Lab Sample IDs: 2190992

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	98.3	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100592

Included Lab Sample IDs: 2190993

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100597

Included Lab Sample IDs: 2190993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.2	97.7	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A100611

Included Lab Sample IDs: 2190997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	98.2	106	P/P	50 - 150
Acetaminophen	108	110	P/P	60 - 160
Acetamiprid	118	114	P/P	50 - 150
Afidopyropen	97.2	103	P/P	50 - 150
Bentazon	106	115	P/P	50 - 160
Benzovindiflupyr	101	109	P/P	50 - 150
Carbamazepine	108	106	P/P	60 - 150
Clothianidin	103	115	P/P	60 - 150
Dinotefuran	98.5	108	P/P	50 - 150
Diuron	108	117	P/P	60 - 160
Fenuron	110	117	P/P	60 - 150
Fluridone	111	109	P/P	60 - 160
Hydrocodone	103	108	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A100611
Included Lab Sample IDs: 2190997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ibuprofen	104	110	P/P	50 - 160
Imazapyr	97.3	79.1	P/P	50 - 150
Imidacloprid	91.5	106	P/P	60 - 150
Linuron	104	108	P/P	60 - 150
Mandestrobin	123	123	P/P	50 - 150
MCPP	96.7	101	P/P	50 - 150
Naproxen	105	112	P/P	50 - 160
Primidone	101	109	P/P	60 - 150
Pyraclostrobin	106	97.8	P/P	60 - 150
Thiamethoxam	91.9	109	P/P	50 - 150
Tolfenpyrad	99.2	93.6	P/P	60 - 150
Triclopyr	88.8	104	P/P	50 - 150

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100612
Included Lab Sample IDs: 2190993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.7	94.6	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A100617
Included Lab Sample IDs: 2190997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	92.7	93.3	P/P	60 - 160

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100647
Included Lab Sample IDs: 2190998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	101	101	P/P	90 - 110
Arsenic	98.8	98.5	P/P	90 - 110
Cadmium	99.3	98.5	P/P	90 - 110
Chromium	97.8	98.8	P/P	90 - 110
Copper	96.6	97.2	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Nickel	96.9	98.6	P/P	90 - 110
Selenium	99.9	101	P/P	90 - 110
Silver	101	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100692
Included Lab Sample IDs: 2190998

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100693

Included Lab Sample IDs: 2190998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	106	105	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						1.74	
EPA 200.7 Rev. 4.4	Iron	104		105	105			0.299
	Manganese	102		103	104			0.952
	Zinc	103		106	107			0.862
EPA 200.8 Rev. 5.4	Aluminum	102		100	102			0.973
	Antimony	97.9		99.8	99.9			0.0694
	Arsenic	98.0		98.7	100			1.25
	Cadmium	97.3		98.6	101			1.94
	Chromium	99.6		101	101			0.354
	Copper	98.7		99.5	98.8			0.665
	Lead	103		104	105			0.453
	Nickel	99.2		96.8	97.7			0.879
	Selenium	98.1		96.6	97.8			1.19
	Silver	101		100	100			0.373
	Thallium	110		115	115			0.113
EPA 300.0 Rev. 2.1	Bromide	99.8		101	92.2	88.8		8.55
EPA 350.1 Rev. 2.0	Ammonia-N	99.4		102	100			1.58
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.4		99.5	97.2			2.06
EPA 353.2 Rev. 2.0	NO2NO3-N	102		99.5				0.181
EPA 365.1 Rev. 2.0	Total-P	105		103	105			1.34
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7		99.4	99.9			0.366
EPA 8321B	2,4-D	115		112	108			3.11
	Acesulfame K	63.0		70.0	70.2			0.199
	Acetaminophen	82.2		96.7	88.8			8.48
	Acetamiprid	71.7		80.6	74.1			8.42
	Afidopyropen	58.2		51.6	51.3			0.549
	AMPA	94.4		93.4	99.2			6.10
	Bentazon	61.8		54.6	48.0			13.0
	Benzovindiflupyr	67.6		70.2	72.0			2.64
	Carbamazepine	64.2		67.4	64.7			4.07
	Clothianidin	88.3		96.7	87.6			9.84
	Dinotefuran	94.8		106	98.9			6.54
	Diuron	54.8		59.5	53.9			9.84
	Endothall	99.5		94.0	96.0			2.17
	Fenuron	89.4		88.6	83.2			6.22
	Fluridone	73.6		85.5	83.5			2.43
	Glufosinate	95.9		88.4	103			15.6
	Glyphosate	79.2		69.3	72.4			4.35
	Hydrocodone	83.2		87.0	85.0			2.43
	Ibuprofen	75.1		79.6	72.4			9.60
	Imazapyr	70.3		102	71.9			29.1
	Imidacloprid	101		131	98.3			28.4
	Linuron	62.7		67.6	57.5			16.1
	Mandestrobin	78.2		82.4	75.9			8.22
	MCPP	123		121	112			7.98
	Naproxen	62.8		74.2	88.0			16.9
	Primidone	83.1		93.1	83.3			11.2
	Pyraclostrobin	66.4		75.3	68.5			9.47
	Sucralose	93.9		92.6	91.6			1.04
	Thiamethoxam	86.9		105	96.9			7.73
	Tolfenpyrad	43.2		47.0	42.0			11.3
	Triclopyr	107		110	96.8			12.7
SM 2320 B-2011	Total Alkalinity	98.3					3.11	
SM 4500 F-C-2011	Fluoride	102		102	104			0.909

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 5310 B-2011	Organic Carbon	96.6	95.9 97.9			1.71

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2190992
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2190998
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2190998
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2190992
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2190993
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2190993
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2190993
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2190993
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2190994
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2190997
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2190997
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2190992
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2190992
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2190992
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2190993

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	08/18/2020			08/19/2020 15:10	Yen Ta	2190992
EPA 200.7 Rev. 4.4	08/18/2020	08/19/2020 15:40	Elliott D. Healy	08/20/2020 16:30	Betina Topolski	2190998
EPA 200.8 Rev. 5.4	08/18/2020	08/19/2020 15:40	Elliott D. Healy	08/25/2020 16:33	Alexander Thompson	2190998
	08/18/2020	08/19/2020 15:40	Elliott D. Healy	08/27/2020 14:20	Alexander Thompson	2190998
	08/18/2020	08/19/2020 15:40	Elliott D. Healy	08/27/2020 20:00	Alexander Thompson	2190998
EPA 300.0 Rev. 2.1	08/18/2020			08/20/2020 07:29	Julia Storbeck	2190992
EPA 350.1 Rev. 2.0	08/18/2020			08/22/2020 16:44	Ping Hua	2190993
EPA 351.2 Rev. 2.0	08/18/2020	08/21/2020 09:05	David Boose	08/24/2020 10:18	Virginia P. Brown	2190993
EPA 353.2 Rev. 2.0	08/18/2020			08/20/2020 10:22	Beverly Y. Sanders	2190993
EPA 365.1 Rev. 2.0	08/18/2020	08/20/2020 12:33	Yen Ta	08/21/2020 14:02	Benjamin T. Nordmann	2190993
EPA 365.1 Rev. 2.0 dissolved	08/18/2020			08/19/2020 14:23	Virginia P. Brown	2190994
EPA 8321B	08/18/2020	08/19/2020 11:30	Rebecca Ware	08/19/2020 15:38	Rebecca Ware	2190997
	08/18/2020	08/19/2020 11:30	Rebecca Ware	08/21/2020 09:47	Rebecca Ware	2190997
	08/18/2020	08/19/2020 11:30	Rebecca Ware	08/21/2020 22:56	Rebecca Ware	2190997
	08/18/2020	08/20/2020 09:00	Hoor Shaik	08/21/2020 12:25	Juyoung Kim	2190997
SM 2320 B-2011	08/18/2020			08/20/2020 03:31	Dale L. Simmons	2190992
SM 2540 D-2011	08/18/2020			08/24/2020 13:35	Yijie Li	2190992
SM 4500 F-C-2011	08/18/2020			08/20/2020 03:31	Dale L. Simmons	2190992
SM 5310 B-2011	08/18/2020			08/20/2020 05:59	David Boose	2190993