

Chemical Analysis Report

TLH-ROC-2020-09-29-01

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-2020-09-14-41**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 15-OCT-2020 14:54

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: 09/29/2020 11:05

Field ID: G1TLHR0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2198841	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P387977	
	EPA 300.0 Rev. 2.1	Bromide	0.78		mg Br/L	P388433	
	SM 2320 B-2011	Total Alkalinity	134		mg CaCO3/L	P388087	
	SM 2540 D-2011	TSS	3	I	mg/L	P388470	
	SM 4500 F-C-2011	Fluoride	0.13		mg F/L	P388090	
2198842	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P388172	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P388116	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P388006	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P388099	
	SM 5310 B-2011	Organic Carbon	18		mg C/L	P388190	
2198843	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P387985	
2198846	EPA 8321B	2,4-D	0.0020	U	ug/L	P388044	
		Acesulfame K**	0.10	U	ug/L	P388001	
		AMPA**	0.10	U	ug/L	P388001	
		Sucralose**	0.010	U	ug/L	P388001	
		Acetaminophen**	0.0080	U	ug/L	P388044	
		Acetamiprid**	0.0020	U	ug/L	P388044	
		Endothall**	0.25	U	ug/L	P388001	
		Glufosinate**	0.10	U	ug/L	P388001	
		Glyphosate**	0.10	U	ug/L	P388001	
		Afidopyropen**	0.0020	U	ug/L	P388044	
		Bentazon	8.0E-04	U	ug/L	P388044	
		Benzovindiflupyr**	0.0020	U	ug/L	P388044	
		Carbamazepine**	8.0E-04	U	ug/L	P388044	
		Clothianidin**	0.0020	U	ug/L	P388044	
		Dinotefuran**	0.0020	U	ug/L	P388044	
		Diuron	0.0020	U	ug/L	P388044	
		Fenuron	0.016	U	ug/L	P388044	
		Fluridone**	8.0E-04	U	ug/L	P388044	
		Imazapyr**	0.011	I	ug/L	P388044	
		Hydrocodone**	0.0020	U	ug/L	P388044	
		Ibuprofen**	0.020	U	ug/L	P388044	
		Imidacloprid	0.0020	U	ug/L	P388044	
		Linuron	0.0040	U	ug/L	P388044	
		Mandestrobin**	0.0020	U	ug/L	P388044	
		MCP	0.0020	U	ug/L	P388044	
		Naproxen**	0.0080	U	ug/L	P388044	
		Primidone**	0.0040	U	ug/L	P388044	
		Pyraclostrobin**	0.0020	U	ug/L	P388044	
		Thiamethoxam**	0.0020	U	ug/L	P388044	
		Tolfenpyrad**	0.0020	U	ug/L	P388044	
		Triclopyr**	0.0040	U	ug/L	P388044	
2198847	EPA 200.7 Rev. 4.4	Iron	650		ug/L	P388048	

Field ID: G1TLHR0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2198847	EPA 200.7 Rev. 4.4	Manganese	24.6		ug/L	P388048	
		Zinc	5.0	U	ug/L	P388048	
	EPA 200.8 Rev. 5.4	Aluminum	67		ug/L	P388048	
		Antimony	0.050	U	ug/L	P388048	
		Arsenic	0.89		ug/L	P388048	
		Beryllium	0.010	I	ug/L	P388048	
		Cadmium	0.020	U	ug/L	P388048	
		Chromium	0.61	I	ug/L	P388048	
		Copper	0.40	U	ug/L	P388048	
		Lead	0.20	U	ug/L	P388048	
		Nickel	0.50	U	ug/L	P388048	
		Selenium	0.20	I	ug/L	P388048	
		Silver	0.010	U	ug/L	P388048	
		Thallium	0.10	U	ug/L	P388048	

Ref. Method and Comment:

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

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

EPA 8321B: MS accuracy for imidacloprid could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387977

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388048

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: P388048

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	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: P388433

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388172

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388116

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388006

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: P388099

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P387985

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

Reference Method: EPA 8321B
 Batch ID: P388001

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: P388044

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: P388087

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

Reference Method: SM 2540 D-2011
Batch ID: P388470

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P388090

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P388190

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: P388048

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115
Manganese	99.1		P	85 - 115
Zinc	94.0		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388048

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	94.8		P	85 - 115
Cadmium	98.8		P	85 - 115
Chromium	101		P	85 - 115
Copper	102		P	85 - 115
Lead	97.1		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	96.7		P	85 - 115
Thallium	98.8		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388433

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388172

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: P388116

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388006

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388099

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P387985

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

Reference Method: EPA 8321B
 Batch ID: P388001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	133		P	40 - 150
AMPA	47.8		P	40 - 150
Endothall	95.3		P	40 - 150
Glufosinate	85.4		P	40 - 150
Glyphosate	96.9		P	40 - 140
Sucralose	103		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P388044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	87.0		P	30 - 160
Acetaminophen	66.2		P	30 - 160
Acetamiprid	82.1		P	30 - 160
Afidopyropen	40.5		P	30 - 160
Bentazon	46.0		P	30 - 160
Benzovindiflupyr	71.4		P	30 - 160
Carbamazepine	59.0		P	30 - 160
Clothianidin	80.4		P	30 - 160
Dinotefuran	88.0		P	30 - 160
Diuron	56.8		P	30 - 160
Fenuron	84.3		P	30 - 160
Fluridone	71.9		P	30 - 160
Hydrocodone	87.7		P	30 - 160
Ibuprofen	44.7		P	30 - 160
Imazapyr	84.4		P	30 - 160
Imidacloprid	116		P	30 - 160
Linuron	61.8		P	30 - 160
Mandestrobin	72.7		P	30 - 160
MCPP	74.3		P	30 - 160
Naproxen	63.3		P	30 - 160
Primidone	60.0		P	30 - 160
Pyraclostrobin	60.5		P	30 - 160
Thiamethoxam	79.2		P	30 - 160
Tolfenpyrad	51.8		P	30 - 160
Triclopyr	61.3		P	30 - 160

Reference Method: SM 2320 B-2011
 Batch ID: P388087

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P388090

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P388190

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198834	Iron	108	110	P/P	80 - 120
2198834	Manganese	106	107	P/P	80 - 120
2198834	Zinc	100	102	P/P	80 - 120
2198880	Iron	110		P	80 - 120
2198880	Manganese	108		P	80 - 120
2198880	Zinc	103		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198834	Aluminum	101	99.2	P/P	80 - 120
2198834	Antimony	103	101	P/P	80 - 120
2198834	Arsenic	103	101	P/P	80 - 120
2198834	Beryllium	92.5	94.7	P/P	80 - 120
2198834	Cadmium	102	100	P/P	80 - 120
2198834	Chromium	103	101	P/P	80 - 120
2198834	Copper	105	103	P/P	80 - 120
2198834	Lead	99.7	98.3	P/P	80 - 120
2198834	Nickel	106	103	P/P	80 - 120
2198834	Selenium	103	101	P/P	80 - 120
2198834	Silver	99.1	96.2	P/P	80 - 120
2198834	Thallium	102	102	P/P	80 - 120
2198880	Aluminum	100		P	80 - 120
2198880	Antimony	102		P	80 - 120
2198880	Arsenic	100		P	80 - 120
2198880	Beryllium	93.7		P	80 - 120
2198880	Cadmium	100		P	80 - 120
2198880	Chromium	101		P	80 - 120
2198880	Copper	100		P	80 - 120
2198880	Lead	97.8		P	80 - 120
2198880	Nickel	99.8		P	80 - 120
2198880	Selenium	98.0		P	80 - 120
2198880	Silver	97.1		P	80 - 120
2198880	Thallium	101		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198159	Bromide	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198828	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198883	Kjeldahl Nitrogen	107	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198804	NO2NO3-N	100	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198828	Total-P	103	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198805	O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P388001

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198705	Acesulfame K	137	133	P/P	40 - 150
2198705	AMPA	112	119	P/P	40 - 150
2198705	Endothall	88.3	85.8	P/P	40 - 150
2198705	Glufosinate	93.9	95.7	P/P	40 - 150
2198705	Glyphosate	79.7	79.7	P/P	40 - 140
2198705	Sucralose	103	103	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P388044

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198240	2,4-D	87.4	76.4	P/P	30 - 160
2198240	Acetaminophen	57.0	61.7	P/P	30 - 160
2198240	Acetamiprid	80.2	84.3	P/P	30 - 160
2198240	Afidopyropen	43.7	45.4	P/P	30 - 160
2198240	Bentazon	39.3	38.0	P/P	30 - 160
2198240	Benzovindiflupyr	73.2	71.7	P/P	30 - 160
2198240	Carbamazepine	56.4	56.0	P/P	30 - 160
2198240	Clothianidin	75.3	72.7	P/P	30 - 160
2198240	Dinotefuran	96.1	96.7	P/P	30 - 160
2198240	Diuron	52.5	53.3	P/P	30 - 160
2198240	Fenuron	77.6	80.0	P/P	30 - 160
2198240	Fluridone	74.2	74.3	P/P	30 - 160
2198240	Hydrocodone	75.5	84.6	P/P	30 - 160
2198240	Ibuprofen	45.3	47.0	P/P	30 - 160
2198240	Imazapyr	87.8	74.9	P/P	30 - 160
2198240	Linuron	69.9	67.1	P/P	30 - 160
2198240	Mandestrobin	79.1	80.5	P/P	30 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P388044

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198240	MCP	66.0	68.9	P/P	30 - 160
2198240	Naproxen	72.5	55.2	P/P	30 - 160
2198240	Primidone	84.5	73.8	P/P	30 - 160
2198240	Pyraclostrobin	63.8	64.8	P/P	30 - 160
2198240	Thiamethoxam	75.6	74.2	P/P	30 - 160
2198240	Tolfenpyrad	57.9	58.3	P/P	30 - 160
2198240	Triclopyr	52.4	53.7	P/P	30 - 160

Reference Method: SM 4500 F-C-2011
Batch ID: P388090

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198231	Fluoride	97.6	98.2	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P388190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198842	Organic Carbon	104	107	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198849	Turbidity	10.1	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198834	Iron	2.09	Spike	P	0 - 20
2198834	Manganese	0.999	Spike	P	0 - 20
2198834	Zinc	1.23	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198834	Aluminum	1.09	Spike	P	0 - 20
2198834	Antimony	2.42	Spike	P	0 - 20
2198834	Arsenic	1.50	Spike	P	0 - 20
2198834	Beryllium	2.32	Spike	P	0 - 20
2198834	Cadmium	1.68	Spike	P	0 - 20
2198834	Chromium	2.42	Spike	P	0 - 20
2198834	Copper	1.75	Spike	P	0 - 20
2198834	Lead	1.38	Spike	P	0 - 20
2198834	Nickel	2.17	Spike	P	0 - 20
2198834	Selenium	1.31	Spike	P	0 - 20
2198834	Silver	3.04	Spike	P	0 - 20
2198834	Thallium	0.0750	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198828	Ammonia-N	1.41	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198883	Kjeldahl Nitrogen	1.32	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198804	NO2NO3-N	0.335	Spike	P	0 - 20

Quality Assurance Report

Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P388099

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198828	Total-P	3.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P387985

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198805	O-Phosphate-P	0.596	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P388001

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198705	Acesulfame K	3.12	Spike	P	0 - 30
2198705	AMPA	5.79	Spike	P	0 - 30
2198705	Endothall	2.86	Spike	P	0 - 30
2198705	Glufosinate	1.87	Spike	P	0 - 30
2198705	Glyphosate	0.0514	Spike	P	0 - 30
2198705	Sucralose	0.469	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P388044

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198240	2,4-D	13.4	Spike	P	0 - 30
2198240	Acetaminophen	7.96	Spike	P	0 - 30
2198240	Acetamiprid	4.94	Spike	P	0 - 30
2198240	Afidopyropen	3.98	Spike	P	0 - 30
2198240	Bentazon	3.44	Spike	P	0 - 30
2198240	Benzovindiflupyr	2.04	Spike	P	0 - 30
2198240	Carbamazepine	0.719	Spike	P	0 - 30
2198240	Clothianidin	2.94	Spike	P	0 - 30
2198240	Dinotefuran	0.605	Spike	P	0 - 30
2198240	Diuron	1.33	Spike	P	0 - 30
2198240	Fenuron	3.08	Spike	P	0 - 30
2198240	Fluridone	0.119	Spike	P	0 - 30
2198240	Hydrocodone	11.3	Spike	P	0 - 30
2198240	Ibuprofen	3.60	Spike	P	0 - 30
2198240	Imazapyr	15.9	Spike	P	0 - 30
2198240	Imidacloprid	7.74	Spike	P	0 - 30
2198240	Linuron	4.21	Spike	P	0 - 30
2198240	Mandestrobin	1.79	Spike	P	0 - 30
2198240	MCPP	4.32	Spike	P	0 - 30
2198240	Naproxen	27.1	Spike	P	0 - 30
2198240	Primidone	13.6	Spike	P	0 - 30
2198240	Pyraclostrobin	1.57	Spike	P	0 - 30
2198240	Thiamethoxam	1.38	Spike	P	0 - 30
2198240	Tolfenpyrad	0.718	Spike	P	0 - 30
2198240	Triclopyr	2.34	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P388087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198231	Total Alkalinity	2.24	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011
Batch ID: P388090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198231	Fluoride	0.514	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P388190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198842	Organic Carbon	1.66	Spike	P	0 - 20

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

Quality Assurance Report Surrogates

Lab Sample ID: 2198846

Field Sample ID: G1TLHR0101

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	63.4	P	30 - 160
EPA 8321B	Acetaminophen-d4	58.3	P	30 - 160
EPA 8321B	Carbamazepine-d10	54.0	P	30 - 160
EPA 8321B	Diuron-d6	36.6	P	30 - 160
EPA 8321B	Endothall-d6	116	P	30 - 160
EPA 8321B	Endothall-d6	116	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	68.8	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	68.8	P	30 - 160
EPA 8321B	Ibuprofen-d3	49.6	P	30 - 160
EPA 8321B	Primidone-d5	66.8	P	30 - 160
EPA 8321B	Sucralose-d6	32.3	P	30 - 160
EPA 8321B	Sucralose-d6	32.3	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A101259

Included Lab Sample IDs: 2198841

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A101263

Included Lab Sample IDs: 2198843

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A101272

Included Lab Sample IDs: 2198842

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A101307

Included Lab Sample IDs: 2198841

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

Reference Method: SM 4500 F-C-2011

Run ID: A101307

Included Lab Sample IDs: 2198841

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.5	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A101337

Included Lab Sample IDs: 2198846

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	82.0	96.5	P/P	60 - 160
Endothall	104	107	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A101338

Included Lab Sample IDs: 2198842

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.3	92.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A101343

Included Lab Sample IDs: 2198842

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	98.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A101348

Included Lab Sample IDs: 2198842

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

Reference Method: EPA 8321B

Run ID: A101349

Included Lab Sample IDs: 2198846

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	98.1	102	P/P	60 - 160
Glufosinate	102	107	P/P	60 - 160
Glyphosate	101	105	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A101350

Included Lab Sample IDs: 2198846

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	96.8	100	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A101358

Included Lab Sample IDs: 2198842

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101368

Included Lab Sample IDs: 2198847

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.7	97.5	P/P	90 - 110
Antimony	102	102	P/P	90 - 110
Arsenic	97.8	95.7	P/P	90 - 110
Beryllium	94.7	94.8	P/P	90 - 110
Cadmium	96.7	96.3	P/P	90 - 110
Chromium	96.9	97.3	P/P	90 - 110
Copper	99.1	95.3	P/P	90 - 110
Lead	97.9	96.1	P/P	90 - 110
Nickel	99.6	95.5	P/P	90 - 110
Selenium	96.9	95.9	P/P	90 - 110
Silver	97.1	96.4	P/P	90 - 110
Thallium	95.3	93.9	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A101380

Included Lab Sample IDs: 2198846

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	91.9	119	P/P	50 - 150
Acetaminophen	97.0	89.1	P/P	60 - 160
Acetamiprid	106	111	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A101380
 Included Lab Sample IDs: 2198846

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Afidopyropen	92.4	90.0	P/P	50 - 150
Bentazon	92.0	89.0	P/P	50 - 160
Benzovindiflupyr	97.9	76.9	P/P	50 - 150
Carbamazepine	103	105	P/P	60 - 150
Clothianidin	99.2	90.4	P/P	60 - 150
Dinotefuran	99.1	98.3	P/P	50 - 150
Diuron	103	103	P/P	60 - 160
Fenuron	106	114	P/P	60 - 150
Fluridone	101	96.0	P/P	60 - 160
Hydrocodone	114	112	P/P	60 - 150
Ibuprofen	72.5	69.1	P/P	50 - 160
Imazapyr	93.5	125	P/P	50 - 160
Imidacloprid	111	122	P/P	60 - 150
Linuron	78.3	90.9	P/P	60 - 150
Mandestrobin	99.7	91.7	P/P	50 - 150
MCPD	91.6	116	P/P	50 - 150
Naproxen	81.1	108	P/P	50 - 160
Primidone	94.5	97.4	P/P	60 - 150
Pyraclostrobin	94.2	88.0	P/P	60 - 150
Thiamethoxam	105	104	P/P	50 - 150
Tolfenpyrad	90.6	85.4	P/P	60 - 150
Triclopyr	85.2	98.1	P/P	50 - 150

Reference Method: EPA 300.0 Rev. 2.1
 Run ID: A101391
 Included Lab Sample IDs: 2198841

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	107	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
 Run ID: A101466
 Included Lab Sample IDs: 2198847

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	103	103	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Zinc	101	101	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						10.1	
EPA 200.7 Rev. 4.4	Iron	105	108	110	110			2.09
	Manganese	99.1	106	107	108			0.999
	Zinc	94.0	100	102	103			1.23
EPA 200.8 Rev. 5.4	Aluminum	101	101	99.2	100			1.09
	Antimony	102	103	101	102			2.42
	Arsenic	101	103	101	100			1.50
	Beryllium	94.8	92.5	94.7	93.7			2.32
	Cadmium	98.8	102	100	100			1.68
	Chromium	101	103	101	101			2.42
	Copper	102	105	103	100			1.75
	Lead	97.1	99.7	98.3	97.8			1.38
	Nickel	102	106	103	99.8			2.17
	Selenium	101	103	101	98.0			1.31
	Silver	96.7	99.1	96.2	97.1			3.04
	Thallium	98.8	102	102	101			0.0750
EPA 300.0 Rev. 2.1	Bromide	106	94.2					
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	103				1.41
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	107	105				1.32
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100	99.4				0.335
EPA 365.1 Rev. 2.0	Total-P	109	103	106				3.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	101	100				0.596
EPA 8321B	2,4-D	87.0	87.4	76.4				13.4
	Acesulfame K	133	137	133				3.12
	Acetaminophen	66.2	57.0	61.7				7.96
	Acetamiprid	82.1	80.2	84.3				4.94
	Afidopyropen	40.5	43.7	45.4				3.98
	AMPA	47.8	112	119				5.79
	Bentazon	46.0	39.3	38.0				3.44
	Benzovindiflupyr	71.4	73.2	71.7				2.04
	Carbamazepine	59.0	56.4	56.0				0.719
	Clothianidin	80.4	75.3	72.7				2.94
	Dinotefuran	88.0	96.1	96.7				0.605
	Diuron	56.8	52.5	53.3				1.33
	Endothall	95.3	88.3	85.8				2.86
	Fenuron	84.3	77.6	80.0				3.08
	Fluridone	71.9	74.2	74.3				0.119
	Glufosinate	85.4	93.9	95.7				1.87
	Glyphosate	96.9	79.7	79.7				0.0514
	Hydrocodone	87.7	75.5	84.6				11.3
	Ibuprofen	44.7	45.3	47.0				3.60
	Imazapyr	84.4	87.8	74.9				15.9
	Imidacloprid	116						7.74
	Linuron	61.8	69.9	67.1				4.21
	Mandestrobin	72.7	79.1	80.5				1.79
	MCPP	74.3	66.0	68.9				4.32
	Naproxen	63.3	72.5	55.2				27.1
	Primidone	60.0	84.5	73.8				13.6
	Pyraclostrobin	60.5	63.8	64.8				1.57
	Sucralose	103	103	103				0.469
	Thiamethoxam	79.2	75.6	74.2				1.38
	Tolfenpyrad	51.8	57.9	58.3				0.718
	Triclopyr	61.3	52.4	53.7				2.34
SM 2320 B-2011	Total Alkalinity	99.2					2.24	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision LCS	SMP	MS
SM 4500 F-C-2011	Fluoride	97.3	97.6	98.2			0.514
SM 5310 B-2011	Organic Carbon	101	104	107			1.66

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2198841
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2198847
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2198847
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2198841
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2198842
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2198842
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2198842
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2198842
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2198843
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2198846
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2198846
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2198841
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2198841
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2198841
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2198842

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	09/29/2020			09/29/2020 15:34	Yen Ta	2198841
EPA 200.7 Rev. 4.4	09/29/2020	09/30/2020 15:30	Elliott D. Healy	10/09/2020 14:02	Betina Topolski	2198847
EPA 200.8 Rev. 5.4	09/29/2020	09/30/2020 15:30	Elliott D. Healy	10/05/2020 20:07	Alexander Thompson	2198847
EPA 300.0 Rev. 2.1	09/29/2020			10/09/2020 01:24	Lipi Saha	2198841
EPA 350.1 Rev. 2.0	09/29/2020			10/03/2020 13:43	Ping Hua	2198842
EPA 351.2 Rev. 2.0	09/29/2020	10/01/2020 14:05	David Boose	10/02/2020 13:23	Elliott Rodriguez	2198842
EPA 353.2 Rev. 2.0	09/29/2020			09/30/2020 09:57	Beverly Y. Sanders	2198842
EPA 365.1 Rev. 2.0	09/29/2020	10/01/2020 12:32	Yen Ta	10/05/2020 08:51	Benjamin T. Nordmann	2198842
EPA 365.1 Rev. 2.0 dissolved	09/29/2020			09/29/2020 15:27	Virginia P. Brown	2198843
EPA 8321B	09/29/2020	09/30/2020 14:45	Rebecca Ware	09/30/2020 23:48	Rebecca Ware	2198846
	09/29/2020	09/30/2020 14:45	Rebecca Ware	10/01/2020 15:18	Rebecca Ware	2198846
	09/29/2020	09/30/2020 14:45	Rebecca Ware	10/02/2020 12:53	Rebecca Ware	2198846
	09/29/2020	10/01/2020 09:00	Hoor Shaik	10/06/2020 12:52	Juyoung Kim	2198846
SM 2320 B-2011	09/29/2020			10/01/2020 00:25	Dale L. Simmons	2198841
SM 2540 D-2011	09/29/2020			10/01/2020 15:15	Yijie Li	2198841
SM 4500 F-C-2011	09/29/2020			10/01/2020 00:25	Dale L. Simmons	2198841
SM 5310 B-2011	09/29/2020			10/02/2020 14:04	Lauren Lees	2198842