

Chemical Analysis Report

TLH-ROC-2022-08-15-01

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

Event Description: **Run 15**
Request ID: **RQ-2022-07-18-48**
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: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 30-AUG-2022 10:34



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 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: Double Branch Upstream SR270

Collection Date/Time: 08/15/2022 13:45

Field ID: G1TLHR0171

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2349392	EPA 8321B	2,4-D	0.0020	U	ug/L	P418169	
		Acesulfame K	0.10	U	ug/L	P418000	
		2,4,5-T	0.0040	U	ug/L	P418169	
		AMPA	0.10	U	ug/L	P418000	
		Acetaminophen	0.0080	U	ug/L	P418169	
		Acetamiprid	0.0020	U	ug/L	P418169	
		Endothall	0.25	U	ug/L	P418000	
		Glufosinate	0.10	U	ug/L	P418000	
		Glyphosate	0.10	U	ug/L	P418000	
		Afidopyropen	0.0020	U	ug/L	P418169	MS
		Bentazon	8.0E-04	U	ug/L	P418169	
		Sucralose	0.019	I	ug/L	P418000	
		Benzovindiflupyr	0.0020	U	ug/L	P418169	
		Carbamazepine	8.0E-04	U	ug/L	P418169	
		Clothianidin	0.0020	U	ug/L	P418169	
		Dinotefuran	0.0020	U	ug/L	P418169	
		Diuron	0.0020	U	ug/L	P418169	
		Fenuron	0.032	U	ug/L	P418169	
		Fluridone	8.0E-04	U	ug/L	P418169	
		Imazapyr	0.0040	U	ug/L	P418169	
		Hydrocodone	0.0020	U	ug/L	P418169	MS
		Ibuprofen	0.080	U	ug/L	P418169	
		Imidacloprid	0.0020	U	ug/L	P418169	
		Linuron	0.0040	U	ug/L	P418169	
		Mandestrobin	0.0020	U	ug/L	P418169	
		MCPP	0.0040	U	ug/L	P418169	
		Naproxen	0.0080	U	ug/L	P418169	
		Primidone	0.0040	U	ug/L	P418169	
		Pyraclostrobin	0.0020	U	ug/L	P418169	
		Silvex	0.0040	U	ug/L	P418169	
		Thiamethoxam	0.0020	U	ug/L	P418169	
		Tolfenpyrad	0.0020	U	ug/L	P418169	
		Triclopyr	0.0040	U	ug/L	P418169	
2349393	EPA 200.7 Rev. 4.4	Calcium	6.50		mg/L	P418215	
		Iron	2.38E+03		ug/L	P418215	
		Magnesium	1.37		mg/L	P418215	
		Potassium	0.40	I	mg/L	P418215	
		Sodium	2.7		mg/L	P418215	
		Strontium	14.7		ug/L	P418215	
		Tin	3.0	U	ug/L	P418215	
		Titanium	1.4	I	ug/L	P418215	
		Vanadium	2.0	U	ug/L	P418215	
		Zinc	5.0	U	ug/L	P418215	
	EPA 200.8 Rev. 5.4	Aluminum	127		ug/L	P418215	

Field ID: G1TLHR0171

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2349393	EPA 200.8 Rev. 5.4	Antimony	0.050	U	ug/L	P418215	
		Arsenic	1.39		ug/L	P418215	
		Barium	16.1		ug/L	P418215	
		Beryllium	0.020	I	ug/L	P418215	
		Boron	13.1		ug/L	P418215	
		Cadmium	0.020	U	ug/L	P418215	
		Chromium	0.53	I	ug/L	P418215	
		Cobalt	0.268		ug/L	P418215	
		Copper	0.40	U	ug/L	P418215	
		Lead	0.20	U	ug/L	P418215	
		Manganese	246		ug/L	P418215	
		Molybdenum	0.15	I	ug/L	P418215	
		Nickel	0.50	U	ug/L	P418215	
		Selenium	0.20	U	ug/L	P418215	
		Silver	0.010	U	ug/L	P418215	
SM 2340 B-2011		Thallium	0.10	U	ug/L	P418215	
		Hardness	21.9		mg/L	P418215	

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P418215

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418215

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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 8321B

Batch ID: P418000

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: P418169

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
2,4,5-T	0.0040	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P418169

Component	Result	Code	Units
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	0.032	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.080	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	0.0040	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Silvex	0.0040	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P418215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	93.0		P	80 - 120
Iron	96.7		P	80 - 120
Magnesium	95.9		P	80 - 120
Potassium	96.2		P	80 - 120
Sodium	93.3		P	80 - 120
Strontium	98.3		P	80 - 120
Tin	96.0		P	80 - 120
Titanium	97.5		P	80 - 120
Vanadium	96.8		P	80 - 120
Zinc	96.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	106		P	85 - 115
Arsenic	103		P	85 - 115
Barium	108		P	85 - 115
Beryllium	97.0		P	85 - 115
Boron	98.7		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	103		P	85 - 115
Cobalt	101		P	85 - 115
Copper	99.4		P	85 - 115
Lead	97.1		P	85 - 115
Manganese	104		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	101		P	85 - 115
Selenium	103		P	85 - 115
Silver	102		P	85 - 115
Thallium	98.5		P	85 - 115

Reference Method: EPA 8321B

Batch ID: P418000

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	104		P	40 - 150
AMPA	108		P	40 - 150
Endothall	112		P	40 - 150
Glufosinate	125		P	40 - 150
Glyphosate	111		P	40 - 150
Sucralose	109		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P418169

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	112		P	40 - 150
2,4,5-T	94.3		P	40 - 150
Acetaminophen	93.8		P	30 - 150
Acetamiprid	105		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P418169

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Afidopyropen	89.4		P	30 - 150
Bentazon	106		P	30 - 150
Benzovindiflupyr	96.9		P	40 - 150
Carbamazepine	82.2		P	40 - 150
Clothianidin	101		P	40 - 150
Dinotefuran	104		P	40 - 150
Diuron	98.3		P	40 - 150
Fenuron	115		P	40 - 150
Fluridone	104		P	40 - 150
Hydrocodone	120		P	40 - 150
Ibuprofen	96.9		P	40 - 150
Imazapyr	112		P	40 - 150
Imidacloprid	91.4		P	40 - 150
Linuron	105		P	40 - 150
Mandestrobin	113		P	40 - 150
MCPP	119		P	40 - 150
Naproxen	144		P	40 - 150
Primidone	83.6		P	40 - 150
Pyraclostrobin	97.8		P	40 - 150
Silvex	107		P	40 - 150
Thiamethoxam	114		P	40 - 150
Tolfenpyrad	85.3		P	30 - 150
Triclopyr	81.1		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P418215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349420	Calcium	98.8		P	80 - 120
2349420	Iron	104	104	P/P	80 - 120
2349420	Magnesium	104	103	P/P	80 - 120
2349420	Potassium	101	104	P/P	80 - 120
2349420	Sodium	97.4		P	80 - 120
2349420	Strontium	103	106	P/P	80 - 120
2349420	Tin	100	103	P/P	80 - 120
2349420	Titanium	101	105	P/P	80 - 120
2349420	Vanadium	102	104	P/P	80 - 120
2349420	Zinc	101	102	P/P	80 - 120
2349422	Calcium	97.7		P	80 - 120
2349422	Iron	101		P	80 - 120
2349422	Magnesium	97.8		P	80 - 120
2349422	Potassium	98.9		P	80 - 120
2349422	Sodium	96.9		P	80 - 120
2349422	Strontium	102		P	80 - 120
2349422	Tin	98.9		P	80 - 120
2349422	Titanium	100		P	80 - 120
2349422	Vanadium	102		P	80 - 120
2349422	Zinc	98.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349420	Aluminum	111	113	P/P	80 - 120
2349420	Antimony	107	105	P/P	80 - 120
2349420	Arsenic	103	102	P/P	80 - 120
2349420	Barium	110	106	P/P	80 - 120
2349420	Beryllium	98.6	96.8	P/P	80 - 120
2349420	Boron	107	105	P/P	80 - 120
2349420	Cadmium	102	99.7	P/P	80 - 120
2349420	Chromium	106	104	P/P	80 - 120
2349420	Cobalt	100	98.6	P/P	80 - 120
2349420	Copper	98.7	97.0	P/P	80 - 120
2349420	Lead	98.9	97.7	P/P	80 - 120
2349420	Manganese	117	109	P/P	80 - 120
2349420	Molybdenum	102	102	P/P	80 - 120
2349420	Nickel	101	98.9	P/P	80 - 120
2349420	Selenium	99.3	96.4	P/P	80 - 120
2349420	Silver	102	99.8	P/P	80 - 120
2349420	Thallium	102	102	P/P	80 - 120
2349422	Aluminum	104		P	80 - 120
2349422	Antimony	106		P	80 - 120
2349422	Arsenic	102		P	80 - 120
2349422	Barium	105		P	80 - 120
2349422	Beryllium	95.3		P	80 - 120
2349422	Boron	101		P	80 - 120
2349422	Cadmium	103		P	80 - 120
2349422	Chromium	104		P	80 - 120
2349422	Cobalt	99.5		P	80 - 120
2349422	Copper	94.6		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349422	Lead	96.9		P	80 - 120
2349422	Manganese	102		P	80 - 120
2349422	Molybdenum	102		P	80 - 120
2349422	Nickel	99.2		P	80 - 120
2349422	Selenium	99.6		P	80 - 120
2349422	Silver	102		P	80 - 120
2349422	Thallium	99.9		P	80 - 120

Reference Method: EPA 8321B

Batch ID: P418000

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348451	Acesulfame K	91.9	91.1	P/P	40 - 150
2348451	AMPA	105	104	P/P	40 - 150
2348451	Endothall	107	106	P/P	40 - 150
2348451	Glufosinate	106	111	P/P	40 - 150
2348451	Glyphosate	101	99.6	P/P	40 - 150
2348451	Sucralose	99.1	103	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P418169

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348670	2,4-D	103	76.1	P/P	40 - 150
2348670	2,4,5-T	101	77.8	P/P	40 - 150
2348670	Acetaminophen	110	99.8	P/P	30 - 150
2348670	Acetamiprid	77.5	77.8	P/P	40 - 150
2348670	Afidopyropen	24.4	28.2	F/F	30 - 150
2348670	Bentazon	108	91.8	P/P	30 - 150
2348670	Benzovindiflupyr	102	103	P/P	40 - 150
2348670	Carbamazepine	81.8	101	P/P	40 - 150
2348670	Clothianidin	92.0	83.0	P/P	40 - 150
2348670	Dinotefuran	130	116	P/P	40 - 150
2348670	Diuron	108	101	P/P	40 - 150
2348670	Fenuron	119	108	P/P	40 - 150
2348670	Fluridone	90.4	77.2	P/P	40 - 150
2348670	Hydrocodone	39.9	38.7	F/F	40 - 150
2348670	Ibuprofen	64.9	73.0	P/P	40 - 150
2348670	Imazapyr	136	109	P/P	40 - 150
2348670	Imidacloprid	81.2	75.9	P/P	40 - 150
2348670	Linuron	99.9	98.2	P/P	40 - 150
2348670	Mandestrobin	117	94.7	P/P	40 - 150
2348670	MCPP	86.5	81.8	P/P	40 - 150
2348670	Naproxen	68.7	83.2	P/P	40 - 150
2348670	Primidone	64.3	57.7	P/P	40 - 150
2348670	Pyraclostrobin	110	99.6	P/P	40 - 150
2348670	Silvex	85.8	76.0	P/P	40 - 150
2348670	Thiamethoxam	128	97.6	P/P	40 - 150
2348670	Tolfenpyrad	67.8	69.1	P/P	30 - 150
2348670	Triclopyr	89.6	72.3	P/P	40 - 150

Quality Assurance Report

Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P418215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349420	Calcium	0.204	Spike	P	0 - 20
2349420	Iron	0.176	Spike	P	0 - 20
2349420	Magnesium	0.811	Spike	P	0 - 20
2349420	Potassium	2.21	Spike	P	0 - 20
2349420	Sodium	0.401	Spike	P	0 - 20
2349420	Strontium	2.13	Spike	P	0 - 20
2349420	Tin	2.26	Spike	P	0 - 20
2349420	Titanium	3.42	Spike	P	0 - 20
2349420	Vanadium	1.95	Spike	P	0 - 20
2349420	Zinc	1.36	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349420	Aluminum	1.57	Spike	P	0 - 20
2349420	Antimony	2.43	Spike	P	0 - 20
2349420	Arsenic	1.29	Spike	P	0 - 20
2349420	Barium	2.83	Spike	P	0 - 20
2349420	Beryllium	1.80	Spike	P	0 - 20
2349420	Boron	1.21	Spike	P	0 - 20
2349420	Cadmium	2.14	Spike	P	0 - 20
2349420	Chromium	2.48	Spike	P	0 - 20
2349420	Cobalt	1.82	Spike	P	0 - 20
2349420	Copper	1.67	Spike	P	0 - 20
2349420	Lead	1.26	Spike	P	0 - 20
2349420	Manganese	2.43	Spike	P	0 - 20
2349420	Molybdenum	0.552	Spike	P	0 - 20
2349420	Nickel	2.20	Spike	P	0 - 20
2349420	Selenium	2.98	Spike	P	0 - 20
2349420	Silver	1.84	Spike	P	0 - 20
2349420	Thallium	0.0532	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P418000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348451	Acesulfame K	0.887	Spike	P	0 - 30
2348451	AMPA	1.08	Spike	P	0 - 30
2348451	Endothall	1.04	Spike	P	0 - 30
2348451	Glufosinate	3.93	Spike	P	0 - 30
2348451	Glyphosate	1.19	Spike	P	0 - 30
2348451	Sucralose	4.24	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P418169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P418169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348670	2,4-D	29.2	Spike	P	0 - 30
2348670	2,4,5-T	26.2	Spike	P	0 - 30
2348670	Acetaminophen	10.2	Spike	P	0 - 30
2348670	Acetamiprid	0.394	Spike	P	0 - 30
2348670	Afidopyropen	14.5	Spike	P	0 - 30
2348670	Bentazon	16.6	Spike	P	0 - 30
2348670	Benzovindiflupyr	1.22	Spike	P	0 - 30
2348670	Carbamazepine	21.4	Spike	P	0 - 30
2348670	Clothianidin	10.3	Spike	P	0 - 30
2348670	Dinotefuran	11.0	Spike	P	0 - 30
2348670	Diuron	6.71	Spike	P	0 - 30
2348670	Fenuron	9.60	Spike	P	0 - 30
2348670	Fluridone	15.7	Spike	P	0 - 30
2348670	Hydrocodone	3.17	Spike	P	0 - 30
2348670	Ibuprofen	11.7	Spike	P	0 - 30
2348670	Imazapyr	14.5	Spike	P	0 - 30
2348670	Imidacloprid	6.73	Spike	P	0 - 30
2348670	Linuron	1.69	Spike	P	0 - 30
2348670	Mandestrobin	20.8	Spike	P	0 - 30
2348670	MCPP	5.57	Spike	P	0 - 30
2348670	Naproxen	19.0	Spike	P	0 - 30
2348670	Primidone	10.8	Spike	P	0 - 30
2348670	Pyraclostrobin	9.59	Spike	P	0 - 30
2348670	Silvex	12.2	Spike	P	0 - 30
2348670	Thiamethoxam	27.1	Spike	P	0 - 30
2348670	Tolfenpyrad	1.91	Spike	P	0 - 30
2348670	Triclopyr	21.3	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2349392

Field Sample ID: G1TLHR0171

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	74.7	P	30 - 160
EPA 8321B	Acetaminophen-d4	104	P	30 - 160
EPA 8321B	Carbamazepine-d10	115	P	30 - 160
EPA 8321B	Diuron-d6	105	P	30 - 160
EPA 8321B	Endothall-d6	120	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	91.5	P	30 - 160
EPA 8321B	Ibuprofen-d3	63.4	P	30 - 160
EPA 8321B	Primidone-d5	54.3	P	30 - 160
EPA 8321B	Sucralose-d6	103	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A114141
Included Lab Sample IDs: 2349392

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	92.7	89.9	P/P	60 - 160
Sucralose	98.1	98.2	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A114174
Included Lab Sample IDs: 2349392

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	117	121	P/P	60 - 160
Endothall	123	123	P/P	60 - 160
Glufosinate	129	129	P/P	60 - 160
Glyphosate	118	119	P/P	60 - 160

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A114229
Included Lab Sample IDs: 2349393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.0	101	P/P	90 - 110
Antimony	100	101	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Barium	99.9	99.8	P/P	90 - 110
Beryllium	96.2	95.8	P/P	90 - 110
Boron	94.1	98.5	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	101	102	P/P	90 - 110
Cobalt	98.4	99.0	P/P	90 - 110
Copper	95.6	98.4	P/P	90 - 110
Lead	93.9	93.7	P/P	90 - 110
Manganese	102	103	P/P	90 - 110
Molybdenum	97.5	98.3	P/P	90 - 110
Nickel	98.0	98.0	P/P	90 - 110
Selenium	103	102	P/P	90 - 110
Silver	98.4	98.8	P/P	90 - 110
Thallium	102	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A114269
Included Lab Sample IDs: 2349393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.0	97.1	P/P	90 - 110
Iron	95.3	98.1	P/P	90 - 110
Magnesium	95.1	97.4	P/P	90 - 110
Potassium	96.6	98.0	P/P	90 - 110
Sodium	95.0	96.1	P/P	90 - 110
Strontium	98.3	97.7	P/P	90 - 110
Tin	95.9	97.9	P/P	90 - 110
Titanium	95.6	97.5	P/P	90 - 110
Vanadium	97.2	97.3	P/P	90 - 110
Zinc	96.1	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A114375
Included Lab Sample IDs: 2349392

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	91.8	116	P/P	50 - 150
2,4,5-T	120	102	P/P	50 - 150
Acetaminophen	103	114	P/P	60 - 160
Acetamiprid	112	140	P/P	50 - 150
Afidopyropen	95.6	96.9	P/P	50 - 150
Bentazon	62.9	110	P/P	50 - 160
Benzovindiflupyr	91.2	117	P/P	50 - 150
Carbamazepine	84.7	118	P/P	60 - 150
Clothianidin	99.6	111	P/P	60 - 150
Dinotefuran	106	121	P/P	50 - 150
Diuron	135	113	P/P	60 - 160
Fenuron	109	120	P/P	60 - 150
Fluridone	105	114	P/P	60 - 160
Hydrocodone	114	118	P/P	60 - 150
Ibuprofen	91.9	79.5	P/P	50 - 160
Imazapyr	101	108	P/P	50 - 150
Imidacloprid	117	134	P/P	60 - 150
Linuron	82.9	106	P/P	60 - 150
Mandestrobin	117	126	P/P	50 - 150
MCPP	99.7	91.7	P/P	50 - 150
Naproxen	79.9	61.7	P/P	50 - 160
Primidone	102	97.0	P/P	60 - 150
Pyraclostrobin	115	114	P/P	60 - 150
Silvex	98.0	97.1	P/P	50 - 150
Thiamethoxam	113	121	P/P	50 - 150
Tolfenpyrad	108	120	P/P	60 - 150
Triclopyr	126	97.2	P/P	50 - 150

* 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 200.7 Rev. 4.4	Calcium	93.0	98.8	97.7			0.204
	Iron	96.7	104	104	101		0.176
	Magnesium	95.9	104	103	97.8		0.811
	Potassium	96.2	101	104	98.9		2.21
	Sodium	93.3	97.4	96.9			0.401
	Strontium	98.3	103	106	102		2.13
	Tin	96.0	100	103	98.9		2.26
	Titanium	97.5	101	105	100		3.42
	Vanadium	96.8	102	104	102		1.95
	Zinc	96.5	101	102	98.5		1.36
EPA 200.8 Rev. 5.4	Aluminum	102	104	111	113		1.57
	Antimony	106	106	107	105		2.43
	Arsenic	103	102	103	102		1.29
	Barium	108	105	110	106		2.83
	Beryllium	97.0	95.3	98.6	96.8		1.80
	Boron	98.7	101	107	105		1.21
	Cadmium	103	103	102	99.7		2.14
	Chromium	103	104	106	104		2.48
	Cobalt	101	99.5	100	98.6		1.82
	Copper	99.4	94.6	98.7	97.0		1.67
	Lead	97.1	96.9	98.9	97.7		1.26
	Manganese	104	102	117	109		2.43
	Molybdenum	101	102	102	102		0.552
	Nickel	101	99.2	101	98.9		2.20
	Selenium	103	99.6	99.3	96.4		2.98
	Silver	102	102	102	99.8		1.84
	Thallium	98.5	99.9	102	102		0.0532
EPA 8321B	2,4-D	112	103	76.1			29.2
	2,4,5-T	94.3	77.8	101			26.2
	Acesulfame K	104	91.9	91.1			0.887
	Acetaminophen	93.8	110	99.8			10.2
	Acetamiprid	105	77.5	77.8			0.394
	Afidopyropen	89.4	24.4	28.2			14.5
	AMPA	108	105	104			1.08
	Bentazon	106	108	91.8			16.6
	Benzovindiflupyr	96.9	102	103			1.22
	Carbamazepine	82.2	81.8	101			21.4
	Clothianidin	101	92.0	83.0			10.3
	Dinotefuran	104	130	116			11.0
	Diuron	98.3	108	101			6.71
	Endothall	112	107	106			1.04
	Fenuron	115	119	108			9.60
	Fluridone	104	90.4	77.2			15.7
	Glufosinate	125	106	111			3.93
	Glyphosate	111	101	99.6			1.19
	Hydrocodone	120	39.9	38.7			3.17
	Ibuprofen	96.9	73.0	64.9			11.7
	Imazapyr	112	136	109			14.5
	Imidacloprid	91.4	81.2	75.9			6.73
	Linuron	105	99.9	98.2			1.69
	Mandestrobin	113	117	94.7			20.8
	MCPP	119	81.8	86.5			5.57
	Naproxen	144	68.7	83.2			19.0
	Primidone	83.6	64.3	57.7			10.8

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
EPA 8321B	Pyraclostrobin	97.8	110	99.6		9.59
	Silvex	107	76.0	85.8		12.2
	Sucralose	109	99.1	103		4.24
	Thiamethoxam	114	128	97.6		27.1
	Tolfenpyrad	85.3	67.8	69.1		1.91
	Triclopyr	81.1	89.6	72.3		21.3

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2349393
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2349393
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2349392
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2349393

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	08/15/2022	08/17/2022 11:10	Megan Whitefoot	08/22/2022 20:17	Alexander Thompson	2349393
EPA 200.8 Rev. 5.4	08/15/2022	08/17/2022 11:10	Megan Whitefoot	08/19/2022 15:18	Emily M Philpot	2349393
EPA 8321B	08/15/2022	08/16/2022 13:00	Umesh Chiluwal	08/16/2022 19:43	Umesh Chiluwal	2349392
	08/15/2022	08/16/2022 13:00	Umesh Chiluwal	08/17/2022 09:55	Umesh Chiluwal	2349392
	08/15/2022	08/17/2022 09:00	Hoor Shaik	08/18/2022 01:45	Juyoung Kim	2349392
SM 2340 B-2011	08/15/2022			08/22/2022 20:17	Alexander Thompson	2349393