

Chemical Analysis Report

NW-DIST-2022-07-08-01

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

Event Description: **Laurel Hill West**
Request ID: **RQ-2022-06-06-59**
Customer: **NW-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 20-JUL-2022 09:13

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular 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 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: Wilkinson Creek upstream of Wilkinson Bluff Road

Collection Date/Time: 07/07/2022 09:30

Field ID: G4NW0357

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339950	EPA 8321B	2,4-D	0.0020	U	ug/L	P416433	
		Acesulfame K	0.10	U	ug/L	P416342	
		2,4,5-T	0.0040	U	ug/L	P416433	
		AMPA	0.10	U	ug/L	P416342	
		Acetaminophen	0.0080	U	ug/L	P416433	
		Acetamiprid	0.0020	U	ug/L	P416433	
		Endothall	0.25	U	ug/L	P416342	
		Glufosinate	0.10	U	ug/L	P416342	
		Glyphosate	0.10	U	ug/L	P416342	
		Afidopyropen	0.0020	U	ug/L	P416433	
		Bentazon	8.0E-04	U	ug/L	P416433	
		Sucralose	0.21		ug/L	P416342	
		Benzovindiflupyr	0.0020	U	ug/L	P416433	
		Carbamazepine	8.0E-04	U	ug/L	P416433	
		Clothianidin	0.0020	U	ug/L	P416433	
		Dinotefuran	0.0020	U	ug/L	P416433	
		Diuron	0.0020	U	ug/L	P416433	
		Fenuron	0.032	U	ug/L	P416433	
		Fluridone	8.0E-04	U	ug/L	P416433	
		Imazapyr	0.0040	U	ug/L	P416433	
		Hydrocodone	0.0020	U	ug/L	P416433	
		Ibuprofen	0.080	U	ug/L	P416433	
		Imidacloprid	0.0078	I	ug/L	P416433	
		Linuron	0.0040	U	ug/L	P416433	
		Mandestrobin	0.0020	U	ug/L	P416433	
		MCPP	0.0040	U	ug/L	P416433	
		Naproxen	0.0080	UJ	ug/L	P416433	RPD
		Primidone	0.0040	U	ug/L	P416433	
		Pyraclostrobin	0.0020	U	ug/L	P416433	
		Silvex	0.0040	U	ug/L	P416433	
		Thiamethoxam	0.0020	U	ug/L	P416433	
		Tolfenpyrad	0.0020	U	ug/L	P416433	
		Triclopyr	0.0040	U	ug/L	P416433	

Ref. Method and Comment:
EPA 8321B: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Trammel Creek above CRX train tracks

Collection Date/Time: 07/07/2022 09:50

Field ID: G4NW0383

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339952	EPA 200.7 Rev. 4.4	Calcium	6.04		mg/L	P416378	
		Iron	820		ug/L	P416378	
		Magnesium	1.22		mg/L	P416378	
		Potassium	1.5		mg/L	P416378	
		Sodium	4.5		mg/L	P416378	
		Strontium	27.0		ug/L	P416378	
		Tin	3.0	U	ug/L	P416378	
		Titanium	2.2	I	ug/L	P416378	
		Vanadium	2.0	U	ug/L	P416378	
		Zinc	5.0	U	ug/L	P416378	
	EPA 200.8 Rev. 5.4	Aluminum	215		ug/L	P416378	
		Antimony	0.050	U	ug/L	P416378	
		Arsenic	0.44		ug/L	P416378	
		Barium	16.5		ug/L	P416378	
		Beryllium	0.013	I	ug/L	P416378	
		Boron	87.5		ug/L	P416378	
		Cadmium	0.020	U	ug/L	P416378	
		Chromium	0.40	U	ug/L	P416378	
		Cobalt	0.081		ug/L	P416378	
		Copper	0.40	U	ug/L	P416616	
		Lead	0.27	I	ug/L	P416616	
		Manganese	12.6		ug/L	P416378	
		Molybdenum	0.15	U	ug/L	P416378	
		Nickel	0.50	U	ug/L	P416616	
		Selenium	0.20	U	ug/L	P416378	
		Silver	0.010	U	ug/L	P416378	
		Thallium	0.10	U	ug/L	P416378	
	SM 2340 B-2011	Hardness	20.1		mg/L	P416378	

Sample Location: Oak Creek below Tommy Steele Road

Collection Date/Time: 07/07/2022 11:50

Field ID: G4NW0395

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339953	EPA 200.7 Rev. 4.4	Calcium	2.09		mg/L	P416378	
		Iron	2.61E+03		ug/L	P416378	
		Magnesium	0.88		mg/L	P416378	
		Potassium	0.70	I	mg/L	P416378	
		Sodium	1.8	I	mg/L	P416378	
		Strontium	11.6		ug/L	P416378	
		Tin	3.0	U	ug/L	P416378	
		Titanium	0.95	I	ug/L	P416378	
		Vanadium	2.0	U	ug/L	P416378	
		Zinc	5.0	U	ug/L	P416378	
	EPA 200.8 Rev. 5.4	Aluminum	76		ug/L	P416378	
		Antimony	0.050	U	ug/L	P416378	
		Arsenic	0.63		ug/L	P416378	
		Barium	26.7		ug/L	P416378	
		Beryllium	0.087		ug/L	P416378	
		Boron	10.3		ug/L	P416378	
		Cadmium	0.020	U	ug/L	P416378	
		Chromium	0.40	U	ug/L	P416378	
		Cobalt	0.546		ug/L	P416378	
		Copper	0.40	U	ug/L	P416616	
		Lead	0.42		ug/L	P416616	
		Manganese	57.7		ug/L	P416378	
		Molybdenum	0.15	U	ug/L	P416378	
		Nickel	0.87	I	ug/L	P416616	
		Selenium	0.20	U	ug/L	P416378	
		Silver	0.010	U	ug/L	P416378	
		Thallium	0.10	U	ug/L	P416378	
	SM 2340 B-2011	Hardness	8.9		mg/L	P416378	

Sample Location: Panther Creek above Sherman Kennedy Rd

Collection Date/Time: 07/07/2022 12:30

Field ID: G4NW0417

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339951	EPA 8321B	2,4-D	0.0020	U	ug/L	P416433	
		Acesulfame K	0.10	U	ug/L	P416342	
		2,4,5-T	0.0040	U	ug/L	P416433	
		AMPA	0.10	U	ug/L	P416342	
		Acetaminophen	0.0080	U	ug/L	P416433	
		Acetamiprid	0.0020	U	ug/L	P416433	
		Endothall	0.25	U	ug/L	P416342	
		Glufosinate	0.10	U	ug/L	P416342	
		Glyphosate	0.10	U	ug/L	P416342	
		Afidopyropen	0.0020	U	ug/L	P416433	
		Bentazon	8.0E-04	U	ug/L	P416433	
		Sucralose	0.022	I	ug/L	P416342	
		Benzovindiflupyr	0.0020	U	ug/L	P416433	
		Carbamazepine	8.0E-04	U	ug/L	P416433	
		Clothianidin	0.0020	U	ug/L	P416433	
		Dinotefuran	0.0020	U	ug/L	P416433	
		Diuron	0.0020	U	ug/L	P416433	
		Fenuron	0.032	U	ug/L	P416433	
		Fluridone	8.0E-04	U	ug/L	P416433	
		Imazapyr	0.0040	U	ug/L	P416433	
		Hydrocodone	0.0020	U	ug/L	P416433	
		Ibuprofen	0.080	U	ug/L	P416433	
		Imidacloprid	0.0020	U	ug/L	P416433	
		Linuron	0.0040	U	ug/L	P416433	
		Mandestrobin	0.0020	U	ug/L	P416433	
		MCPP	0.0040	U	ug/L	P416433	
		Naproxen	0.0080	U	ug/L	P416433	RPD
		Primidone	0.0040	U	ug/L	P416433	
		Pyraclostrobin	0.0020	U	ug/L	P416433	
		Silvex	0.0040	U	ug/L	P416433	
		Thiamethoxam	0.0020	U	ug/L	P416433	
		Tolfenpyrad	0.0020	U	ug/L	P416433	
		Triclopyr	0.0040	U	ug/L	P416433	

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416378

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: P416378

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
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416616

Component	Result	Code	Units
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L

Reference Method: EPA 8321B

Batch ID: P416342

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P416433

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
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: P416378

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	102		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	103		P	85 - 115
Sodium	103		P	85 - 115
Strontium	101		P	85 - 115
Tin	101		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	100		P	85 - 115
Zinc	97.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416378

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	101		P	85 - 115
Barium	104		P	85 - 115
Beryllium	93.8		P	85 - 115
Boron	107		P	85 - 115
Cadmium	96.1		P	85 - 115
Chromium	98.4		P	85 - 115
Cobalt	101		P	85 - 115
Manganese	98.6		P	85 - 115
Molybdenum	99.3		P	85 - 115
Selenium	99.0		P	85 - 115
Silver	98.9		P	85 - 115
Thallium	98.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	99.5		P	85 - 115
Lead	99.6		P	85 - 115
Nickel	102		P	85 - 115

Reference Method: EPA 8321B

Batch ID: P416342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	95.5		P	40 - 150
AMPA	108		P	40 - 150
Endothall	93.8		P	40 - 150
Glufosinate	104		P	40 - 150
Glyphosate	99.2		P	40 - 150
Sucralose	96.4		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P416433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	86.0		P	40 - 150
2,4,5-T	74.9		P	40 - 150
Acetaminophen	86.0		P	30 - 150
Acetamiprid	89.8		P	40 - 150
Afidopyropen	62.8		P	30 - 150
Bentazon	84.2		P	30 - 150
Benzovindiflupyr	74.1		P	40 - 150
Carbamazepine	83.3		P	40 - 150
Clothianidin	92.5		P	40 - 150
Dinotefuran	91.6		P	40 - 150
Diuron	53.5		P	40 - 150
Fenuron	84.9		P	40 - 150
Fluridone	79.6		P	40 - 150
Hydrocodone	86.0		P	40 - 150
Ibuprofen	75.1		P	40 - 150
Imazapyr	90.6		P	40 - 150
Imidacloprid	115		P	40 - 150
Linuron	80.3		P	40 - 150
Mandestrobin	76.7		P	40 - 150
MCPP	84.1		P	40 - 150
Naproxen	59.1		P	40 - 150
Primidone	90.9		P	40 - 150
Pyraclostrobin	82.0		P	40 - 150
Silvex	68.2		P	40 - 150
Thiamethoxam	86.5		P	40 - 150
Tolfenpyrad	56.5		P	30 - 150
Triclopyr	83.1		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338848	Calcium	105	105	P/P	80 - 120
2338848	Iron	98.8	104	P/P	80 - 120
2338848	Magnesium	100	103	P/P	80 - 120
2338848	Potassium	106	105	P/P	80 - 120
2338848	Sodium	101	105	P/P	80 - 120
2338848	Strontium	101	102	P/P	80 - 120
2338848	Tin	102	101	P/P	80 - 120
2338848	Titanium	102	102	P/P	80 - 120
2338848	Vanadium	101	100	P/P	80 - 120
2338848	Zinc	97.0	96.7	P/P	80 - 120
2339748	Calcium	105		P	80 - 120
2339748	Iron	105		P	80 - 120
2339748	Magnesium	104		P	80 - 120
2339748	Potassium	105		P	80 - 120
2339748	Sodium	106		P	80 - 120
2339748	Strontium	104		P	80 - 120
2339748	Tin	100		P	80 - 120
2339748	Titanium	104		P	80 - 120
2339748	Vanadium	103		P	80 - 120
2339748	Zinc	97.0		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338848	Aluminum	100	99.8	P/P	80 - 120
2338848	Antimony	98.6	99.3	P/P	80 - 120
2338848	Arsenic	97.4	99.5	P/P	80 - 120
2338848	Barium	102	103	P/P	80 - 120
2338848	Beryllium	94.2	94.3	P/P	80 - 120
2338848	Boron	105	104	P/P	80 - 120
2338848	Cadmium	94.7	95.3	P/P	80 - 120
2338848	Chromium	96.9	97.9	P/P	80 - 120
2338848	Cobalt	98.3	99.4	P/P	80 - 120
2338848	Manganese	96.2	96.4	P/P	80 - 120
2338848	Molybdenum	98.8	98.9	P/P	80 - 120
2338848	Selenium	95.8	98.1	P/P	80 - 120
2338848	Silver	97.0	97.4	P/P	80 - 120
2338848	Thallium	97.3	99.0	P/P	80 - 120
2339748	Aluminum	99.6		P	80 - 120
2339748	Antimony	101		P	80 - 120
2339748	Arsenic	102		P	80 - 120
2339748	Barium	103		P	80 - 120
2339748	Beryllium	96.2		P	80 - 120
2339748	Boron	105		P	80 - 120
2339748	Cadmium	95.4		P	80 - 120
2339748	Chromium	93.7		P	80 - 120
2339748	Cobalt	99.6		P	80 - 120
2339748	Manganese	96.1		P	80 - 120
2339748	Molybdenum	101		P	80 - 120
2339748	Selenium	97.8		P	80 - 120
2339748	Silver	96.3		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P416378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339748	Thallium	97.3		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P416616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339618	Copper	91.4	96.9	P/P	80 - 120
2339618	Lead	93.6	99.0	P/P	80 - 120
2339618	Nickel	91.6	97.4	P/P	80 - 120
2339698	Copper	98.2		P	80 - 120
2339698	Lead	98.9		P	80 - 120
2339698	Nickel	97.6		P	80 - 120

Reference Method: EPA 8321B
Batch ID: P416342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339950	Acesulfame K	79.5	92.9	P/P	40 - 150
2339950	AMPA	102	128	P/P	40 - 150
2339950	Endothall	78.7	89.5	P/P	40 - 150
2339950	Glufosinate	88.9	106	P/P	40 - 150
2339950	Glyphosate	70.1	88.1	P/P	40 - 150
2339950	Sucralose	79.5	94.8	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P416433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339950	2,4-D	93.4	96.3	P/P	40 - 150
2339950	2,4,5-T	80.3	89.6	P/P	40 - 150
2339950	Acetaminophen	90.6	93.3	P/P	30 - 150
2339950	Acetamiprid	77.9	92.8	P/P	40 - 150
2339950	Afidopyropen	58.5	63.3	P/P	30 - 150
2339950	Bentazon	79.0	76.6	P/P	30 - 150
2339950	Benzovindiflupyr	89.1	86.5	P/P	40 - 150
2339950	Carbamazepine	88.6	93.8	P/P	40 - 150
2339950	Clothianidin	103	95.3	P/P	40 - 150
2339950	Dinotefuran	100	107	P/P	40 - 150
2339950	Diuron	79.5	65.2	P/P	40 - 150
2339950	Fenuron	85.8	88.7	P/P	40 - 150
2339950	Fluridone	81.8	80.5	P/P	40 - 150
2339950	Hydrocodone	91.9	92.9	P/P	40 - 150
2339950	Ibuprofen	83.7	66.5	P/P	40 - 150
2339950	Imazapyr	87.5	89.9	P/P	40 - 150
2339950	Imidacloprid	133	128	P/P	40 - 150
2339950	Linuron	80.1	77.3	P/P	40 - 150
2339950	Mandestrobin	78.6	81.1	P/P	40 - 150
2339950	MCPP	91.9	99.6	P/P	40 - 150
2339950	Naproxen	54.2	75.8	P/P	40 - 150
2339950	Primidone	92.8	97.6	P/P	40 - 150
2339950	Pyraclostrobin	81.8	86.5	P/P	40 - 150
2339950	Silvex	82.2	82.6	P/P	40 - 150

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P416433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339950	Thiamethoxam	94.0	101	P/P	40 - 150
2339950	Tolfenpyrad	55.1	54.0	P/P	30 - 150
2339950	Triclopyr	87.4	106	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338848	Calcium	0.135	Spike	P	0 - 20
2338848	Iron	5.50	Spike	P	0 - 20
2338848	Magnesium	2.46	Spike	P	0 - 20
2338848	Potassium	0.980	Spike	P	0 - 20
2338848	Sodium	2.79	Spike	P	0 - 20
2338848	Strontium	0.826	Spike	P	0 - 20
2338848	Tin	1.10	Spike	P	0 - 20
2338848	Titanium	0.371	Spike	P	0 - 20
2338848	Vanadium	0.343	Spike	P	0 - 20
2338848	Zinc	0.330	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338848	Aluminum	0.500	Spike	P	0 - 20
2338848	Antimony	0.754	Spike	P	0 - 20
2338848	Arsenic	2.07	Spike	P	0 - 20
2338848	Barium	0.873	Spike	P	0 - 20
2338848	Beryllium	0.146	Spike	P	0 - 20
2338848	Boron	0.344	Spike	P	0 - 20
2338848	Cadmium	0.588	Spike	P	0 - 20
2338848	Chromium	0.967	Spike	P	0 - 20
2338848	Cobalt	1.15	Spike	P	0 - 20
2338848	Manganese	0.202	Spike	P	0 - 20
2338848	Molybdenum	0.114	Spike	P	0 - 20
2338848	Selenium	2.31	Spike	P	0 - 20
2338848	Silver	0.413	Spike	P	0 - 20
2338848	Thallium	1.72	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339618	Copper	5.79	Spike	P	0 - 20
2339618	Lead	5.58	Spike	P	0 - 20
2339618	Nickel	6.08	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P416342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339950	Acesulfame K	15.6	Spike	P	0 - 30
2339950	AMPA	22.3	Spike	P	0 - 30
2339950	Endothall	12.9	Spike	P	0 - 30
2339950	Glufosinate	17.8	Spike	P	0 - 30
2339950	Glyphosate	22.7	Spike	P	0 - 30
2339950	Sucralose	16.0	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P416433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339950	2,4-D	3.12	Spike	P	0 - 30
2339950	2,4,5-T	10.9	Spike	P	0 - 30
2339950	Acetaminophen	2.96	Spike	P	0 - 30
2339950	Acetamiprid	17.4	Spike	P	0 - 30
2339950	Afidopyropen	7.88	Spike	P	0 - 30
2339950	Bentazon	3.06	Spike	P	0 - 30
2339950	Benzovindiflupyr	2.96	Spike	P	0 - 30
2339950	Carbamazepine	5.73	Spike	P	0 - 30
2339950	Clothianidin	7.88	Spike	P	0 - 30
2339950	Dinotefuran	6.83	Spike	P	0 - 30
2339950	Diuron	19.7	Spike	P	0 - 30
2339950	Fenuron	3.41	Spike	P	0 - 30
2339950	Fluridone	1.57	Spike	P	0 - 30
2339950	Hydrocodone	1.12	Spike	P	0 - 30
2339950	Ibuprofen	22.9	Spike	P	0 - 30
2339950	Imazapyr	2.70	Spike	P	0 - 30
2339950	Imidacloprid	3.87	Spike	P	0 - 30
2339950	Linuron	3.52	Spike	P	0 - 30
2339950	Mandestrobin	3.05	Spike	P	0 - 30
2339950	MCPP	8.06	Spike	P	0 - 30
2339950	Naproxen	33.2	Spike	F	0 - 30
2339950	Primidone	5.04	Spike	P	0 - 30
2339950	Pyraclostrobin	5.62	Spike	P	0 - 30
2339950	Silvex	0.531	Spike	P	0 - 30
2339950	Thiamethoxam	7.59	Spike	P	0 - 30
2339950	Tolfenpyrad	1.97	Spike	P	0 - 30
2339950	Triclopyr	19.5	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2339950

Field Sample ID: G4NW0357

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	91.8	P	30 - 160
EPA 8321B	Acetaminophen-d4	98.9	P	30 - 160
EPA 8321B	Carbamazepine-d10	97.5	P	30 - 160
EPA 8321B	Diuron-d6	84.7	P	30 - 160
EPA 8321B	Endothall-d6	101	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	84.7	P	30 - 160
EPA 8321B	Ibuprofen-d3	69.8	P	30 - 160
EPA 8321B	Primidone-d5	91.0	P	30 - 160
EPA 8321B	Sucralose-d6	96.1	P	30 - 160

Lab Sample ID: 2339951

Field Sample ID: G4NW0417

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	90.5	P	30 - 160
EPA 8321B	Acetaminophen-d4	82.6	P	30 - 160
EPA 8321B	Carbamazepine-d10	78.2	P	30 - 160
EPA 8321B	Diuron-d6	81.5	P	30 - 160
EPA 8321B	Endothall-d6	97.7	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	86.9	P	30 - 160
EPA 8321B	Ibuprofen-d3	49.2	P	30 - 160
EPA 8321B	Primidone-d5	80.4	P	30 - 160
EPA 8321B	Sucralose-d6	96.6	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A113424

Included Lab Sample IDs: 2339952, 2339953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	100	P/P	90 - 110
Antimony	98.6	98.3	P/P	90 - 110
Arsenic	100	100	P/P	90 - 110
Barium	99.3	99.7	P/P	90 - 110
Beryllium	95.8	96.2	P/P	90 - 110
Boron	102	99.8	P/P	90 - 110
Cadmium	98.4	97.6	P/P	90 - 110
Chromium	99.0	99.1	P/P	90 - 110
Cobalt	100	101	P/P	90 - 110
Manganese	98.6	98.9	P/P	90 - 110
Molybdenum	99.4	98.6	P/P	90 - 110
Selenium	97.5	97.0	P/P	90 - 110
Silver	99.4	98.6	P/P	90 - 110
Thallium	94.7	93.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A113427

Included Lab Sample IDs: 2339952, 2339953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	98.9	P/P	90 - 110
Iron	103	102	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Potassium	101	100	P/P	90 - 110
Sodium	104	101	P/P	90 - 110
Strontium	102	99.0	P/P	90 - 110
Tin	98.2	96.7	P/P	90 - 110
Titanium	101	99.2	P/P	90 - 110
Vanadium	99.7	98.2	P/P	90 - 110
Zinc	94.9	94.2	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A113489

Included Lab Sample IDs: 2339950, 2339951

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	110	111	P/P	60 - 160
Endothall	96.9	90.3	P/P	60 - 160
Glufosinate	90.4	97.8	P/P	60 - 160
Glyphosate	97.4	84.2	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A113494

Included Lab Sample IDs: 2339950, 2339951

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	92.3	92.6	P/P	60 - 160
Sucralose	95.9	95.9	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A113508

Included Lab Sample IDs: 2339950, 2339951

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	97.1	90.1	P/P	50 - 150
2,4,5-T	113	115	P/P	50 - 150
Acetaminophen	104	99.6	P/P	60 - 160
Acetamiprid	106	99.4	P/P	50 - 150
Afidopyropen	96.7	98.5	P/P	50 - 150
Bentazon	120	120	P/P	50 - 160
Benzovindiflupyr	113	94.5	P/P	50 - 150
Carbamazepine	101	101	P/P	60 - 150
Clothianidin	108	110	P/P	60 - 150
Dinotefuran	104	104	P/P	50 - 150
Diuron	103	95.6	P/P	60 - 160
Fenuron	98.8	97.6	P/P	60 - 150
Fluridone	114	110	P/P	60 - 160
Hydrocodone	100	99.7	P/P	60 - 150
Ibuprofen	128	117	P/P	50 - 160
Imazapyr	99.3	99.8	P/P	50 - 150
Imidacloprid	102	104	P/P	60 - 150
Linuron	94.3	93.9	P/P	60 - 150
Mandestrobin	107	104	P/P	50 - 150
MCPP	109	101	P/P	50 - 150
Naproxen	89.8	109	P/P	50 - 160
Primidone	100	87.9	P/P	60 - 150
Pyraclostrobin	106	104	P/P	60 - 150
Silvex	97.2	85.4	P/P	50 - 150
Thiamethoxam	99.1	104	P/P	50 - 150
Tolfenpyrad	101	99.4	P/P	60 - 150
Triclopyr	101	112	P/P	50 - 150

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A113519

Included Lab Sample IDs: 2339952, 2339953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	92.4	91.8	P/P	90 - 110
Lead	91.9	92.7	P/P	90 - 110
Nickel	92.6	92.7	P/P	90 - 110

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements. Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	104	105	105	105		0.135
	Iron	102	98.8	104	105		5.50
	Magnesium	101	100	103	104		2.46
	Potassium	103	106	105	105		0.980
	Sodium	103	101	105	106		2.79
	Strontium	101	101	102	104		0.826
	Tin	101	102	101	100		1.10
	Titanium	101	102	102	104		0.371
	Vanadium	100	103	101	100		0.343
	Zinc	97.5	97.0	96.7	97.0		0.330
EPA 200.8 Rev. 5.4	Aluminum	102	100	99.8	99.6		0.500
	Antimony	100	98.6	99.3	101		0.754
	Arsenic	101	97.4	99.5	102		2.07
	Barium	104	102	103	103		0.873
	Beryllium	93.8	94.2	94.3	96.2		0.146
	Boron	107	105	104	105		0.344
	Cadmium	96.1	94.7	95.3	95.4		0.588
	Chromium	98.4	96.9	97.9	93.7		0.967
	Cobalt	101	98.3	99.4	99.6		1.15
	Copper	99.5	91.4	96.9	98.2		5.79
	Lead	99.6	93.6	99.0	98.9		5.58
	Manganese	98.6	96.2	96.4	96.1		0.202
	Molybdenum	99.3	98.8	98.9	101		0.114
	Nickel	102	91.6	97.4	97.6		6.08
	Selenium	99.0	95.8	98.1	97.8		2.31
	Silver	98.9	97.0	97.4	96.3		0.413
	Thallium	98.6	97.3	99.0	97.3		1.72
EPA 8321B	2,4-D	86.0	93.4	96.3			3.12
	2,4,5-T	74.9	80.3	89.6			10.9
	Acesulfame K	95.5	79.5	92.9			15.6
	Acetaminophen	86.0	90.6	93.3			2.96
	Acetamiprid	89.8	77.9	92.8			17.4
	Afidopyropen	62.8	58.5	63.3			7.88
	AMPA	108	102	128			22.3
	Bentazon	84.2	79.0	76.6			3.06
	Benzovindiflupyr	74.1	89.1	86.5			2.96
	Carbamazepine	83.3	88.6	93.8			5.73
	Clothianidin	92.5	103	95.3			7.88
	Dinotefuran	91.6	100	107			6.83
	Diuron	53.5	79.5	65.2			19.7
	Endothall	93.8	78.7	89.5			12.9
	Fenuron	84.9	85.8	88.7			3.41
	Fluridone	79.6	81.8	80.5			1.57
	Glufosinate	104	88.9	106			17.8
	Glyphosate	99.2	70.1	88.1			22.7
	Hydrocodone	86.0	91.9	92.9			1.12
	Ibuprofen	75.1	83.7	66.5			22.9
	Imazapyr	90.6	87.5	89.9			2.70
	Imidacloprid	115	133	128			3.87
	Linuron	80.3	80.1	77.3			3.52
	Mandestrobin	76.7	78.6	81.1			3.05
	MCPP	84.1	91.9	99.6			8.06
	Naproxen	59.1	54.2	75.8			33.2
	Primidone	90.9	92.8	97.6			5.04

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	SMP
EPA 8321B	Pyraclostrobin	82.0	81.8	86.5		5.62
	Silvex	68.2	82.2	82.6		0.531
	Sucralose	96.4	79.5	94.8		16.0
	Thiamethoxam	86.5	94.0	101		7.59
	Tolfenpyrad	56.5	55.1	54.0		1.97
	Triclopyr	83.1	87.4	106		19.5

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	2339952, 2339953
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2339952, 2339953
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2339950, 2339951
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2339952, 2339953

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	07/08/2022	07/11/2022 09:57	Mackenzie Hunt	07/11/2022 21:29	McKinley C Carter	2339952
	07/08/2022	07/11/2022 09:57	Mackenzie Hunt	07/11/2022 21:36	McKinley C Carter	2339953
EPA 200.8 Rev. 5.4	07/08/2022	07/11/2022 09:57	Mackenzie Hunt	07/11/2022 19:36	Alexander Thompson	2339952
	07/08/2022	07/11/2022 09:57	Mackenzie Hunt	07/11/2022 19:46	Alexander Thompson	2339953
	07/08/2022	07/14/2022 09:21	Mackenzie Hunt	07/15/2022 01:50	Emily M Philpot	2339952
	07/08/2022	07/14/2022 09:21	Mackenzie Hunt	07/15/2022 01:56	Emily M Philpot	2339953
	07/08/2022	07/12/2022 09:00	Manjita Shrestha	07/12/2022 10:39	Umesh Chiluwal	2339950
EPA 8321B	07/08/2022	07/12/2022 09:00	Manjita Shrestha	07/12/2022 10:54	Umesh Chiluwal	2339951
	07/08/2022	07/12/2022 09:00	Manjita Shrestha	07/12/2022 19:32	Manjita Shrestha	2339950
	07/08/2022	07/12/2022 09:00	Manjita Shrestha	07/12/2022 19:45	Manjita Shrestha	2339951
	07/08/2022	07/13/2022 09:00	Hoor Shaik	07/14/2022 07:04	Juyoung Kim	2339950
	07/08/2022	07/13/2022 09:00	Hoor Shaik	07/14/2022 07:25	Juyoung Kim	2339951
SM 2340 B-2011	07/08/2022			07/11/2022 21:29	McKinley C Carter	2339952
	07/08/2022			07/11/2022 21:36	McKinley C Carter	2339953