

Chemical Analysis Report

CEN-DIST-2022-08-12-01

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

Event Description: **Turnbull x3 and Spruce x2 + Blank**
Request ID: **RQ-2022-08-08-23**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 30-AUG-2022 10:32



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: Spruce Creek @ 0.68 miles upstream of RR bridge

Collection Date/Time: 08/11/2022 11:18

Field ID: G5CE0099

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2348729	EPA 200.7 Rev. 4.4	Calcium	268		mg/L	P418088	
		Iron	330	I	ug/L	P418088	
		Magnesium	716		mg/L	P418088	
		Strontium	4.83E+03		ug/L	P418088	
		Tin	150	U	ug/L	P418088	
		Titanium	6.0	I	ug/L	P418088	
		Vanadium	6.0	U	ug/L	P418088	
	EPA 200.8 Rev. 5.4	Zinc	15	U	ug/L	P418088	
		Aluminum	276		ug/L	P418088	
		Antimony	0.20	U	ug/L	P418088	
		Arsenic	2.44		ug/L	P418088	
		Beryllium	0.040	U	ug/L	P418088	
		Cadmium	0.080	U	ug/L	P418088	
		Chromium	1.6	U	ug/L	P418088	
		Cobalt	0.14	I	ug/L	P418088	
		Copper	1.6	U	ug/L	P418088	
		Lead	0.80	U	ug/L	P418088	
		Manganese	23.0		ug/L	P418088	
		Molybdenum	7.6		ug/L	P418088	
		Nickel	2.0	U	ug/L	P418088	
		Selenium	0.80	U	ug/L	P418088	
		Silver	0.040	U	ug/L	P418088	
		Thallium	0.40	U	ug/L	P418088	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium and strontium are unavailable because of high analyte concentration in the QC sample.

Sample Location: Spruce Creek @ 500m Upstream of RR Bridge Collection Date/Time: 08/11/2022 11:30

Field ID: G5CE0091

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2348725	EPA 8321B	Acesulfame K	0.10	U	ug/L	P418000	
		2,4-D	0.0068	I	ug/L	P418169	
		AMPA	10	U	ug/L	P418000	
		2,4,5-T	0.0040	U	ug/L	P418169	
		Acetaminophen	0.014	I	ug/L	P418169	
		Endothall	0.25	U	ug/L	P418000	
		Acetamiprid	0.0020	U	ug/L	P418169	
		Glufosinate	10	U	ug/L	P418000	
		Glyphosate	10	U	ug/L	P418000	
		Afidopyropen	0.0020	U	ug/L	P418169	MS
		Sucralose	0.93		ug/L	P418000	
		Bentazon	0.29		ug/L	P418169	
		Benzovindiflupyr	0.0020	U	ug/L	P418169	
		Carbamazepine	0.0030	I	ug/L	P418169	
		Clothianidin	0.0087		ug/L	P418169	
		Dinotefuran	0.0024	I	ug/L	P418169	
		Diuron	0.0042	I	ug/L	P418169	
		Fenuron	0.032	U	ug/L	P418169	
		Fluridone	0.038		ug/L	P418169	
		Imazapyr	0.40		ug/L	P418169	
		Hydrocodone	0.0020	U	ug/L	P418169	MS
		Ibuprofen	0.080	U	ug/L	P418169	
		Imidacloprid	0.0065	I	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	
2348728	EPA 200.7 Rev. 4.4	Calcium	256		mg/L	P418088	
		Iron	290	I	ug/L	P418088	
		Magnesium	693		mg/L	P418088	
		Strontium	4.53E+03		ug/L	P418088	
		Tin	150	U	ug/L	P418088	
		Titanium	5.4	I	ug/L	P418088	
		Vanadium	6.0	U	ug/L	P418088	
		Zinc	15	U	ug/L	P418088	
	EPA 200.8 Rev. 5.4	Aluminum	227		ug/L	P418088	
		Antimony	0.20	U	ug/L	P418088	
		Arsenic	2.43		ug/L	P418088	

Field ID: G5CE0091

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2348728	EPA 200.8 Rev. 5.4	Beryllium	0.040	U	ug/L	P418088	
		Cadmium	0.080	U	ug/L	P418088	
		Chromium	1.6	U	ug/L	P418088	
		Cobalt	0.19	I	ug/L	P418088	
		Copper	1.6	U	ug/L	P418088	
		Lead	0.80	U	ug/L	P418088	
		Manganese	22.8		ug/L	P418088	
		Molybdenum	7.3		ug/L	P418088	
		Nickel	2.0	U	ug/L	P418088	
		Selenium	0.80	U	ug/L	P418088	
		Silver	0.040	U	ug/L	P418088	
		Thallium	0.40	U	ug/L	P418088	

Ref. Method and Comment:
EPA 8321B: Some MDLs are elevated due to required dilution of sample matrix.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium and strontium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P418088

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30.0	U	ug/L
Magnesium	0.040	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: P418088

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
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
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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P418169

Component	Result	Code	Units
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: P418088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	97.0		P	85 - 115
Iron	101		P	85 - 115
Magnesium	96.3		P	85 - 115
Strontium	103		P	85 - 115
Tin	99.2		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.6		P	85 - 115
Antimony	98.4		P	85 - 115
Arsenic	97.4		P	85 - 115
Beryllium	86.9		P	85 - 115
Cadmium	96.6		P	85 - 115
Chromium	96.7		P	85 - 115
Cobalt	94.6		P	85 - 115
Copper	96.4		P	85 - 115
Lead	91.2		P	85 - 115
Manganese	97.7		P	85 - 115
Molybdenum	94.8		P	85 - 115
Nickel	97.4		P	85 - 115
Selenium	97.4		P	85 - 115
Silver	96.0		P	85 - 115
Thallium	96.7		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
Afidopyropen	89.4		P	30 - 150
Bentazon	106		P	30 - 150
Benzovindiflupyr	96.9		P	40 - 150
Carbamazepine	82.2		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
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: P418088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348802	Iron	101	99.4	P/P	70 - 130
2348802	Tin	83.8	79.6	P/P	70 - 130
2348802	Titanium	103	101	P/P	70 - 130
2348802	Vanadium	105	104	P/P	70 - 130
2348802	Zinc	96.8	96.0	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348802	Aluminum	106	107	P/P	70 - 130
2348802	Antimony	96.8	96.9	P/P	70 - 130
2348802	Arsenic	109	109	P/P	70 - 130
2348802	Beryllium	92.4	93.0	P/P	70 - 130
2348802	Cadmium	90.3	87.2	P/P	70 - 130
2348802	Chromium	84.1	83.7	P/P	70 - 130
2348802	Cobalt	102	102	P/P	70 - 130
2348802	Copper	107	108	P/P	70 - 130
2348802	Lead	98.1	97.4	P/P	70 - 130
2348802	Manganese	93.2	93.4	P/P	70 - 130
2348802	Molybdenum	111	111	P/P	70 - 130
2348802	Nickel	106	106	P/P	70 - 130
2348802	Selenium	96.8	95.9	P/P	70 - 130
2348802	Silver	88.2	87.4	P/P	70 - 130
2348802	Thallium	102	103	P/P	70 - 130

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	Afidopyrophen	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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P418169

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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: P418088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348802	Calcium	1.11	Spike	P	0 - 20
2348802	Iron	1.58	Spike	P	0 - 20
2348802	Magnesium	1.92	Spike	P	0 - 20
2348802	Strontium	0.806	Spike	P	0 - 20
2348802	Tin	5.09	Spike	P	0 - 20
2348802	Titanium	1.81	Spike	P	0 - 20
2348802	Vanadium	0.830	Spike	P	0 - 20
2348802	Zinc	0.851	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348802	Aluminum	1.02	Spike	P	0 - 20
2348802	Antimony	0.171	Spike	P	0 - 20
2348802	Arsenic	0.201	Spike	P	0 - 20
2348802	Beryllium	0.591	Spike	P	0 - 20
2348802	Cadmium	3.48	Spike	P	0 - 20
2348802	Chromium	0.478	Spike	P	0 - 20
2348802	Cobalt	0.364	Spike	P	0 - 20
2348802	Copper	0.554	Spike	P	0 - 20
2348802	Lead	0.700	Spike	P	0 - 20
2348802	Manganese	0.199	Spike	P	0 - 20
2348802	Molybdenum	0.169	Spike	P	0 - 20
2348802	Nickel	0.636	Spike	P	0 - 20
2348802	Selenium	0.950	Spike	P	0 - 20
2348802	Silver	0.921	Spike	P	0 - 20
2348802	Thallium	0.606	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
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	Acetamidrid	0.394	Spike	P	0 - 30

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	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: 2348725

Field Sample ID: G5CE0091

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	89.9	P	30 - 160
EPA 8321B	Acetaminophen-d4	109	P	30 - 160
EPA 8321B	Carbamazepine-d10	112	P	30 - 160
EPA 8321B	Diuron-d6	99.1	P	30 - 160
EPA 8321B	Endothall-d6	89.2	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	93.3	P	30 - 160
EPA 8321B	Ibuprofen-d3	76.1	P	30 - 160
EPA 8321B	Primidone-d5	60.8	P	30 - 160
EPA 8321B	Sucralose-d6	64.5	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114133

Included Lab Sample IDs: 2348728, 2348729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	102	P/P	90 - 110
Antimony	99.5	96.8	P/P	90 - 110
Arsenic	105	102	P/P	90 - 110
Beryllium	98.3	95.9	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Chromium	101	97.9	P/P	90 - 110
Cobalt	101	99.0	P/P	90 - 110
Copper	106	104	P/P	90 - 110
Lead	92.2	91.5	P/P	90 - 110
Manganese	102	100	P/P	90 - 110
Molybdenum	98.7	97.4	P/P	90 - 110
Nickel	105	103	P/P	90 - 110
Selenium	103	99.6	P/P	90 - 110
Silver	98.7	97.0	P/P	90 - 110
Thallium	104	103	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A114141

Included Lab Sample IDs: 2348725

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: 2348725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	117	121	P/P	60 - 160
Endothall	81.3	123	P/P	60 - 160
Glufosinate	129	129	P/P	60 - 160
Glyphosate	118	119	P/P	60 - 160

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114269

Included Lab Sample IDs: 2348728, 2348729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.6	96.8	P/P	90 - 110
Calcium	96.8	96.9	P/P	90 - 110
Iron	98.1	98.8	P/P	90 - 110
Iron	98.8	99.2	P/P	90 - 110
Magnesium	97.1	98.6	P/P	90 - 110
Magnesium	98.6	98.3	P/P	90 - 110
Strontium	100	98.6	P/P	90 - 110
Strontium	98.6	97.6	P/P	90 - 110
Tin	95.6	96.5	P/P	90 - 110
Tin	96.5	95.5	P/P	90 - 110
Titanium	95.8	97.7	P/P	90 - 110
Titanium	97.7	95.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114269

Included Lab Sample IDs: 2348728, 2348729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Vanadium	97.2	97.7	P/P	90 - 110
Vanadium	97.7	96.9	P/P	90 - 110
Zinc	94.5	97.6	P/P	90 - 110
Zinc	97.6	97.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A114369

Included Lab Sample IDs: 2348725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bentazon	115	83.4	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A114375

Included Lab Sample IDs: 2348725

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
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		LCS	Precision SMP	MS
EPA 200.7 Rev. 4.4	Calcium	97.0					1.11
	Iron	101	101	99.4			1.58
	Magnesium	96.3					1.92
	Strontium	103					0.806
	Tin	99.2	83.8	79.6			5.09
	Titanium	101	103	101			1.81
	Vanadium	101	105	104			0.830
	Zinc	100	96.8	96.0			0.851
EPA 200.8 Rev. 5.4	Aluminum	99.6	106	107			1.02
	Antimony	98.4	96.8	96.9			0.171
	Arsenic	97.4	109	109			0.201
	Beryllium	86.9	92.4	93.0			0.591
	Cadmium	96.6	90.3	87.2			3.48
	Chromium	96.7	84.1	83.7			0.478
	Cobalt	94.6	102	102			0.364
	Copper	96.4	107	108			0.554
	Lead	91.2	98.1	97.4			0.700
	Manganese	97.7	93.2	93.4			0.199
	Molybdenum	94.8	111	111			0.169
	Nickel	97.4	106	106			0.636
	Selenium	97.4	96.8	95.9			0.950
	Silver	96.0	88.2	87.4			0.921
	Thallium	96.7	102	103			0.606
	2,4-D	112	103	76.1			29.2
	2,4,5-T	94.3	77.8	101			26.2
EPA 8321B	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
	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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	SMP
EPA 8321B	Tolfenpyrad	85.3	67.8	69.1		1.91
	Triclopyr	81.1	89.6	72.3		21.3

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2348728, 2348729
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2348728, 2348729
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2348725

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	08/12/2022	08/15/2022 09:56	Mackenzie Hunt	08/22/2022 16:07	Alexander Thompson	2348728
	08/12/2022	08/15/2022 09:56	Mackenzie Hunt	08/22/2022 16:15	Alexander Thompson	2348728
	08/12/2022	08/15/2022 09:56	Mackenzie Hunt	08/22/2022 16:51	Alexander Thompson	2348729
	08/12/2022	08/15/2022 09:56	Mackenzie Hunt	08/22/2022 16:59	Alexander Thompson	2348729
EPA 200.8 Rev. 5.4	08/12/2022	08/15/2022 09:56	Mackenzie Hunt	08/16/2022 18:13	Alexander Thompson	2348728
	08/12/2022	08/15/2022 09:56	Mackenzie Hunt	08/16/2022 18:22	Alexander Thompson	2348729
EPA 8321B	08/12/2022	08/16/2022 13:00	Umesh Chiluwal	08/16/2022 18:12	Umesh Chiluwal	2348725
	08/12/2022	08/16/2022 13:00	Umesh Chiluwal	08/17/2022 08:24	Umesh Chiluwal	2348725
	08/12/2022	08/16/2022 13:00	Umesh Chiluwal	08/17/2022 11:13	Umesh Chiluwal	2348725
	08/12/2022	08/17/2022 09:00	Hoor Shaik	08/17/2022 23:40	Juyoung Kim	2348725
	08/12/2022	08/17/2022 09:00	Hoor Shaik	08/25/2022 22:15	Juyoung Kim	2348725