

Chemical Analysis Report

NE-DIST-2019-11-14-01

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

Event Description: **ACEPD sample November for FDEP**
Request ID: **RQ-2019-11-04-26**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

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, Chemist Administrator

Date Certified: 09-DEC-2019 10:09



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: Hogtown Creek - North of CR 30

Collection Date/Time: 11/13/2019 10:45

Field ID: G1NE0901

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136057	EPA 8321B	2,4-D	0.0020	U	ug/L	P374121	
		Acesulfame K**	0.10	U	ug/L	P374205	
		AMPA**	0.23	I	ug/L	P374205	
		Sucralose**	0.079		ug/L	P374205	MS
		Acetaminophen**	0.0080	U	ug/L	P374121	
		Acetamiprid**	0.0020	U	ug/L	P374121	
		Endothall**	0.25	U	ug/L	P374205	
		Glufosinate**	0.10	U	ug/L	P374205	
		Glyphosate**	0.15	I	ug/L	P374205	
		Afidopyropen**	0.0020	UJ	ug/L	P374121	RPD
		Bentazon	0.0015	I	ug/L	P374121	
		Benzovindiflupyr**	0.0020	UJ	ug/L	P374121	
		Carbamazepine**	8.0E-04	U	ug/L	P374121	
		Clothianidin**	0.0020	U	ug/L	P374121	
		Dinotefuran**	0.0035	I	ug/L	P374121	
		Diuron	0.0020	U	ug/L	P374121	
		Fenuron	0.016	U	ug/L	P374121	
		Fluridone**	9.6E-04	I	ug/L	P374121	
		Imazapyr**	0.11		ug/L	P374121	
		Hydrocodone**	0.0020	U	ug/L	P374121	
		Ibuprofen**	0.020	U	ug/L	P374121	
		Imidacloprid	0.013		ug/L	P374121	MS
		Linuron	0.0040	U	ug/L	P374121	
		Mandestrobin**	0.0020	UJ	ug/L	P374121	
		MCPP	0.0020	U	ug/L	P374121	
		Naproxen**	0.0080	U	ug/L	P374121	
		Primidone**	0.0040	U	ug/L	P374121	
		Pyraclostrobin**	0.0020	U	ug/L	P374121	
		Thiamethoxam**	0.0020	U	ug/L	P374121	
		Tolfenpyrad**	0.0020	U	ug/L	P374121	
		Triclopyr**	0.0040	U	ug/L	P374121	
2136060	EPA 200.7 Rev. 4.4	Barium	7.1		ug/L	P374233	
		Calcium	33.3		mg/L	P374233	
		Iron	160		ug/L	P374233	
		Magnesium	8.24		mg/L	P374233	
		Potassium	0.98	I	mg/L	P374233	
		Sodium	11.0		mg/L	P374233	
		Zinc	5.0	U	ug/L	P374233	
	EPA 200.8 Rev. 5.4	Aluminum	140		ug/L	P374233	
		Antimony	0.12	I	ug/L	P374233	
		Arsenic	0.78		ug/L	P374233	
		Boron**	28.1		ug/L	P374233	
		Cadmium	0.020	U	ug/L	P374233	
		Chromium	0.67	I	ug/L	P374233	

Field ID: G1NE0901

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136060	EPA 200.8 Rev. 5.4	Copper	0.58	I	ug/L	P374233	
		Lead	0.63		ug/L	P374233	
		Nickel	0.50	U	ug/L	P374233	
		Selenium	0.27	I	ug/L	P374233	
		Silver	0.010	U	ug/L	P374233	
		Thallium	0.10	U	ug/L	P374233	

Ref. Method and Comment:

EPA 8321B: J - second source check standards for some analytes were not available for analysis. MS accuracy for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Possum Creek - S of NW 16th Ave

Collection Date/Time: 11/13/2019 12:15

Field ID: G1NE0900

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136058	EPA 8321B	2,4-D	0.0020	U	ug/L	P374121	
		Acesulfame K**	0.10	U	ug/L	P374205	
		AMPA**	0.20	I	ug/L	P374205	
		Sucralose**	0.15		ug/L	P374205	MS
		Acetaminophen**	0.0080	U	ug/L	P374121	
		Acetamiprid**	0.0020	U	ug/L	P374121	
		Endothall**	0.25	U	ug/L	P374205	
		Glufosinate**	0.10	U	ug/L	P374205	
		Glyphosate**	0.39	I	ug/L	P374205	
		Afidopyropen**	0.0020	UJ	ug/L	P374121	RPD
		Bentazon	9.3E-04	I	ug/L	P374121	
		Benzovindiflupyr**	0.0020	UJ	ug/L	P374121	
		Carbamazepine**	8.0E-04	U	ug/L	P374121	
		Clothianidin**	0.0020	U	ug/L	P374121	
		Dinotefuran**	0.0074	I	ug/L	P374121	
		Diuron	0.0020	U	ug/L	P374121	
		Fenuron	0.016	U	ug/L	P374121	
		Fluridone**	0.0017	I	ug/L	P374121	
		Imazapyr**	0.17		ug/L	P374121	
		Hydrocodone**	0.0020	U	ug/L	P374121	
		Ibuprofen**	0.020	U	ug/L	P374121	
		Imidacloprid	0.016		ug/L	P374121	MS
		Linuron	0.0040	U	ug/L	P374121	
		Mandestrobin**	0.0020	UJ	ug/L	P374121	
		MCPP	0.0020	U	ug/L	P374121	
		Naproxen**	0.0080	U	ug/L	P374121	
		Primidone**	0.0040	U	ug/L	P374121	
		Pyraclostrobin**	0.0020	U	ug/L	P374121	
		Thiamethoxam**	0.0020	U	ug/L	P374121	
		Tolfenpyrad**	0.0020	U	ug/L	P374121	
		Triclopyr**	0.0040	U	ug/L	P374121	
2136061	EPA 200.7 Rev. 4.4	Barium	3.6	I	ug/L	P374233	
		Calcium	30.2		mg/L	P374233	
		Iron	67	I	ug/L	P374233	
		Magnesium	8.26		mg/L	P374233	
		Potassium	0.72	I	mg/L	P374233	
		Sodium	12.9		mg/L	P374233	
		Zinc	5.0	U	ug/L	P374233	
	EPA 200.8 Rev. 5.4	Aluminum	43		ug/L	P374233	
		Antimony	0.065	I	ug/L	P374233	
		Arsenic	0.46		ug/L	P374233	
		Boron**	27.0		ug/L	P374233	
		Cadmium	0.020	U	ug/L	P374233	
		Chromium	0.40	U	ug/L	P374233	

Field ID: G1NE0900

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136061	EPA 200.8 Rev. 5.4	Copper	0.40	U	ug/L	P374233	
		Lead	0.20	U	ug/L	P374233	
		Nickel	0.50	U	ug/L	P374233	
		Selenium	0.40	I	ug/L	P374233	
		Silver	0.010	U	ug/L	P374233	
		Thallium	0.10	U	ug/L	P374233	

Ref. Method and Comment:

EPA 8321B: J - second source check standards for some analytes were not available for analysis. MS accuracy for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Hogtown Creek - Ring Park, N of NW 16th Ave (between NW 18th) **Collection Date/Time:** 11/13/2019 13:00

Field ID: G1NE0912

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136059	EPA 8321B	2,4-D	0.0020	U	ug/L	P374121	
		Acesulfame K**	0.10	U	ug/L	P374205	
		AMPA**	0.13	I	ug/L	P374205	
		Sucralose**	0.021	I	ug/L	P374205	MS
		Acetaminophen**	0.0080	U	ug/L	P374121	
		Acetamiprid**	0.0020	U	ug/L	P374121	
		Endothall**	0.25	U	ug/L	P374205	
		Glufosinate**	0.10	U	ug/L	P374205	
		Glyphosate**	0.18	I	ug/L	P374205	
		Afidopyropen**	0.0020	UJ	ug/L	P374121	RPD
		Bentazon	0.0018	I	ug/L	P374121	
		Benzovindiflupyr**	0.0020	UJ	ug/L	P374121	
		Carbamazepine**	8.0E-04	U	ug/L	P374121	
		Clothianidin**	0.0020	U	ug/L	P374121	
		Dinotefuran**	0.0020	U	ug/L	P374121	
		Diuron	0.0020	U	ug/L	P374121	
		Fenuron	0.016	U	ug/L	P374121	
		Fluridone**	8.0E-04	U	ug/L	P374121	
		Imazapyr**	0.016		ug/L	P374121	
		Hydrocodone**	0.0020	U	ug/L	P374121	
		Ibuprofen**	0.020	U	ug/L	P374121	
		Imidacloprid	0.0046	I	ug/L	P374121	MS
		Linuron	0.0040	U	ug/L	P374121	
		Mandestrobin**	0.0020	UJ	ug/L	P374121	
		MCP	0.0020	U	ug/L	P374121	
		Naproxen**	0.0080	U	ug/L	P374121	
		Primidone**	0.0040	U	ug/L	P374121	
		Pyraclostrobin**	0.0020	U	ug/L	P374121	
		Thiamethoxam**	0.0020	U	ug/L	P374121	
		Tolfenpyrad**	0.0020	U	ug/L	P374121	
		Triclopyr**	0.0040	U	ug/L	P374121	
2136062	EPA 200.7 Rev. 4.4	Barium	7.0		ug/L	P374233	
		Calcium	34.7		mg/L	P374233	
		Iron	130		ug/L	P374233	
		Magnesium	8.72		mg/L	P374233	
		Potassium	1.0	I	mg/L	P374233	
		Sodium	9.3		mg/L	P374233	
		Zinc	5.0	U	ug/L	P374233	
	EPA 200.8 Rev. 5.4	Aluminum	42		ug/L	P374233	
		Antimony	0.11	I	ug/L	P374233	
		Arsenic	0.89		ug/L	P374233	
		Boron**	30.4		ug/L	P374233	
		Cadmium	0.020	U	ug/L	P374233	

Field ID: G1NE0912

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136062	EPA 200.8 Rev. 5.4	Chromium	0.40	U	ug/L	P374233	
		Copper	0.40	U	ug/L	P374233	
		Lead	0.20	U	ug/L	P374233	
		Nickel	0.50	U	ug/L	P374233	
		Selenium	0.65	I	ug/L	P374233	
		Silver	0.010	U	ug/L	P374233	
		Thallium	0.10	U	ug/L	P374233	

Ref. Method and Comment:

EPA 8321B: J - second source check standards for some analytes were not available for analysis. MS accuracy for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples 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: P374233

Component	Result	Code	Units
Barium	1.0	U	ug/L
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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374233

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	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 8321B
Batch ID: P374121

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P374121

Component	Result	Code	Units
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P374205

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 Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	91.8		P	85 - 115
Iron	94.3		P	85 - 115
Magnesium	93.1		P	85 - 115
Potassium	97.8		P	85 - 115
Sodium	90.4		P	85 - 115
Zinc	98.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.7		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	98.8		P	85 - 115
Boron	96.0		P	85 - 115
Cadmium	97.1		P	85 - 115
Chromium	99.0		P	85 - 115
Copper	99.6		P	85 - 115
Lead	93.3		P	85 - 115
Nickel	99.2		P	85 - 115
Selenium	95.5		P	85 - 115
Silver	97.9		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 8321B
Batch ID: P374121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	134		P	40 - 160
Acetaminophen	95.4		P	30 - 160
Acetamiprid	92.2		P	40 - 160
Afidopyropen	90.6		P	40 - 160
Bentazon	78.3		P	30 - 160
Benzovindiflupyr	83.0		P	40 - 160
Carbamazepine	103		P	40 - 160
Clothianidin	71.8		P	40 - 160
Dinotefuran	85.9		P	40 - 160
Diuron	79.4		P	40 - 160
Fenuron	106		P	40 - 160
Fluridone	90.5		P	40 - 160
Hydrocodone	104		P	40 - 160
Ibuprofen	93.2		P	30 - 160
Imazapyr	108		P	40 - 160
Imidacloprid	115		P	40 - 160
Linuron	80.4		P	40 - 160
Mandestrobin	89.3		P	40 - 160
MCPP	134		P	40 - 160
Naproxen	58.5		P	40 - 160
Primidone	88.2		P	40 - 160
Pyraclostrobin	75.1		P	30 - 160
Thiamethoxam	96.8		P	40 - 160

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P374121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Tolfenpyrad	67.4		P	40 - 160
Triclopyr	82.0		P	30 - 160

Reference Method: EPA 8321B
Batch ID: P374205

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	95.5		P	40 - 150
AMPA	141		P	40 - 150
Endothall	68.0		P	40 - 150
Glufosinate	111		P	40 - 150
Glyphosate	129		P	40 - 140
Sucralose	82.8		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135411	Barium	100		P	80 - 120
2135411	Iron	93.8		P	80 - 120
2135411	Magnesium	95.0		P	80 - 120
2135411	Potassium	107		P	80 - 120
2135411	Sodium	96.4		P	80 - 120
2135411	Zinc	98.9		P	80 - 120
2135719	Barium	99.1	97.4	P/P	80 - 120
2135719	Calcium	91.5		P	80 - 120
2135719	Iron	93.9	96.1	P/P	80 - 120
2135719	Magnesium	93.9		P	80 - 120
2135719	Potassium	93.6	94.2	P/P	80 - 120
2135719	Sodium	91.2		P	80 - 120
2135719	Zinc	97.6	95.3	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135411	Aluminum	92.8		P	80 - 120
2135411	Antimony	102		P	80 - 120
2135411	Arsenic	98.1		P	80 - 120
2135411	Boron	94.7		P	80 - 120
2135411	Cadmium	97.9		P	80 - 120
2135411	Chromium	95.9		P	80 - 120
2135411	Copper	95.6		P	80 - 120
2135411	Lead	92.9		P	80 - 120
2135411	Nickel	94.6		P	80 - 120
2135411	Selenium	93.3		P	80 - 120
2135411	Silver	97.2		P	80 - 120
2135411	Thallium	101		P	80 - 120
2135719	Aluminum	96.1	97.6	P/P	80 - 120
2135719	Antimony	102	103	P/P	80 - 120
2135719	Arsenic	101	103	P/P	80 - 120
2135719	Boron	98.1	100	P/P	80 - 120
2135719	Cadmium	99.3	99.8	P/P	80 - 120
2135719	Chromium	98.6	100	P/P	80 - 120
2135719	Copper	95.6	98.0	P/P	80 - 120
2135719	Lead	94.1	95.6	P/P	80 - 120
2135719	Nickel	97.8	98.6	P/P	80 - 120
2135719	Selenium	92.9	97.1	P/P	80 - 120
2135719	Silver	96.1	98.6	P/P	80 - 120
2135719	Thallium	112	106	P/P	80 - 120

Reference Method: EPA 8321B
Batch ID: P374121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135814	2,4-D	108	133	P/P	40 - 160
2135814	Acetaminophen	110	112	P/P	30 - 160
2135814	Acetamiprid	108	109	P/P	40 - 160
2135814	Afidopyropen	142	105	P/P	40 - 160
2135814	Benzovindiflupyr	86.8	88.8	P/P	40 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P374121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135814	Carbamazepine	104	94.1	P/P	40 - 160
2135814	Clothianidin	94.4	87.9	P/P	40 - 160
2135814	Dinotefuran	115	107	P/P	40 - 160
2135814	Diuron	81.5	74.5	P/P	40 - 160
2135814	Fenuron	96.5	96.6	P/P	40 - 160
2135814	Fluridone	95.0	94.3	P/P	40 - 160
2135814	Hydrocodone	117	114	P/P	40 - 160
2135814	Ibuprofen	81.6	81.6	P/P	30 - 160
2135814	Imazapyr	144	151	P/P	40 - 160
2135814	Imidacloprid	182	172	F/F	40 - 160
2135814	Linuron	84.9	82.1	P/P	40 - 160
2135814	Mandestrobin	94.5	94.1	P/P	40 - 160
2135814	MCPP	117	134	P/P	40 - 160
2135814	Naproxen	74.4	72.7	P/P	40 - 160
2135814	Primidone	102	111	P/P	40 - 160
2135814	Pyraclostrobin	86.0	70.8	P/P	30 - 160
2135814	Thiamethoxam	154	143	P/P	40 - 160
2135814	Tolfenpyrad	47.5	43.6	P/P	40 - 160
2135814	Triclopyr	67.2	75.0	P/P	30 - 160

Reference Method: EPA 8321B
Batch ID: P374205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135449	Acesulfame K	111	116	P/P	40 - 150
2135449	AMPA	86.8	96.6	P/P	40 - 150
2135449	Endothall	117	122	P/P	40 - 150
2135449	Glufosinate	81.1	81.8	P/P	40 - 150
2135449	Glyphosate	63.2	64.0	P/P	40 - 140
2135449	Sucralose	27.3	28.2	F/F	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135719	Barium	1.57	Spike	P	0 - 20
2135719	Calcium	0.176	Spike	P	0 - 20
2135719	Iron	2.29	Spike	P	0 - 20
2135719	Magnesium	1.59	Spike	P	0 - 20
2135719	Potassium	0.343	Spike	P	0 - 20
2135719	Sodium	0.511	Spike	P	0 - 20
2135719	Zinc	2.39	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135719	Aluminum	1.47	Spike	P	0 - 20
2135719	Antimony	0.406	Spike	P	0 - 20
2135719	Arsenic	2.15	Spike	P	0 - 20
2135719	Boron	1.50	Spike	P	0 - 20
2135719	Cadmium	0.450	Spike	P	0 - 20
2135719	Chromium	1.41	Spike	P	0 - 20
2135719	Copper	2.32	Spike	P	0 - 20
2135719	Lead	1.60	Spike	P	0 - 20
2135719	Nickel	0.818	Spike	P	0 - 20
2135719	Selenium	4.48	Spike	P	0 - 20
2135719	Silver	2.53	Spike	P	0 - 20
2135719	Thallium	5.92	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P374121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135814	2,4-D	18.6	Spike	P	0 - 30
2135814	Acetaminophen	1.61	Spike	P	0 - 30
2135814	Acetamiprid	0.825	Spike	P	0 - 30
2135814	Afidopyropen	30.1	Spike	F	0 - 30
2135814	Bentazon	5.69	Spike	P	0 - 30
2135814	Benzovindiflupyr	2.27	Spike	P	0 - 30
2135814	Carbamazepine	9.84	Spike	P	0 - 30
2135814	Clothianidin	7.16	Spike	P	0 - 30
2135814	Dinotefuran	6.73	Spike	P	0 - 30
2135814	Diuron	8.60	Spike	P	0 - 30
2135814	Fenuron	0.0609	Spike	P	0 - 30
2135814	Fluridone	0.545	Spike	P	0 - 30
2135814	Hydrocodone	2.90	Spike	P	0 - 30
2135814	Ibuprofen	0.000883	Spike	P	0 - 30
2135814	Imazapyr	2.79	Spike	P	0 - 30
2135814	Imidacloprid	4.61	Spike	P	0 - 30
2135814	Linuron	3.42	Spike	P	0 - 30
2135814	Mandestrobin	0.386	Spike	P	0 - 30
2135814	MCP	13.0	Spike	P	0 - 30
2135814	Naproxen	2.37	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P374121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135814	Primidone	8.16	Spike	P	0 - 30
2135814	Pyraclostrobin	19.4	Spike	P	0 - 30
2135814	Thiamethoxam	7.39	Spike	P	0 - 30
2135814	Tolfenpyrad	8.63	Spike	P	0 - 30
2135814	Triclopyr	11.0	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P374205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135449	Acesulfame K	4.65	Spike	P	0 - 30
2135449	AMPA	6.06	Spike	P	0 - 30
2135449	Endothall	4.23	Spike	P	0 - 30
2135449	Glufosinate	0.872	Spike	P	0 - 30
2135449	Glyphosate	0.602	Spike	P	0 - 30
2135449	Sucralose	3.18	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2136057
Field Sample ID: G1NE0901

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	104	P	30 - 160
EPA 8321B	Acetaminophen-d4	121	P	30 - 160
EPA 8321B	Carbamazepine-d10	99.9	P	30 - 160
EPA 8321B	Diuron-d6	82.9	P	30 - 160
EPA 8321B	Endothall-d6	77.5	P	30 - 160
EPA 8321B	Endothall-d6	77.5	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	145	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	145	P	30 - 160
EPA 8321B	Ibuprofen-d3	97.7	P	30 - 160
EPA 8321B	Primidone-d5	106	P	30 - 160
EPA 8321B	Sucralose-d6	85.6	P	30 - 160
EPA 8321B	Sucralose-d6	85.6	P	30 - 160

Lab Sample ID: 2136058
Field Sample ID: G1NE0900

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	124	P	30 - 160
EPA 8321B	Acetaminophen-d4	132	P	30 - 160
EPA 8321B	Carbamazepine-d10	107	P	30 - 160
EPA 8321B	Diuron-d6	80.3	P	30 - 160
EPA 8321B	Endothall-d6	124	P	30 - 160
EPA 8321B	Endothall-d6	124	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	132	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	132	P	30 - 160
EPA 8321B	Ibuprofen-d3	101	P	30 - 160
EPA 8321B	Primidone-d5	114	P	30 - 160
EPA 8321B	Sucralose-d6	58.5	P	30 - 160
EPA 8321B	Sucralose-d6	58.5	P	30 - 160

Lab Sample ID: 2136059
Field Sample ID: G1NE0912

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	89.7	P	30 - 160
EPA 8321B	Acetaminophen-d4	98.6	P	30 - 160
EPA 8321B	Carbamazepine-d10	96.6	P	30 - 160
EPA 8321B	Diuron-d6	79.7	P	30 - 160
EPA 8321B	Endothall-d6	85.3	P	30 - 160
EPA 8321B	Endothall-d6	85.3	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	124	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	124	P	30 - 160
EPA 8321B	Ibuprofen-d3	83.5	P	30 - 160
EPA 8321B	Primidone-d5	93.2	P	30 - 160
EPA 8321B	Sucralose-d6	75.7	P	30 - 160
EPA 8321B	Sucralose-d6	75.7	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A95779

Included Lab Sample IDs: 2136057, 2136058, 2136059

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	104	79.4	P/P	50 - 150
Acetaminophen	116	108	P/P	60 - 160
Acetamiprid	108	110	P/P	50 - 150
Afidopyropen	105	85.7	P/P	50 - 150
Bentazon	108	110	P/P	50 - 160
Benzovindiflupyr	103	101	P/P	50 - 150
Carbamazepine	118	120	P/P	60 - 150
Clothianidin	85.9	97.0	P/P	60 - 150
Dinotefuran	102	98.9	P/P	50 - 150
Diuron	113	107	P/P	60 - 150
Fenuron	114	117	P/P	60 - 150
Fluridone	114	114	P/P	60 - 160
Hydrocodone	121	122	P/P	60 - 150
Ibuprofen	79.3	95.3	P/P	50 - 160
Imazapyr	112	120	P/P	50 - 150
Imidacloprid	101	93.6	P/P	60 - 150
Linuron	114	115	P/P	60 - 150
Mandestrobin	113	110	P/P	50 - 150
MCPP	97.0	92.1	P/P	50 - 150
Naproxen	74.9	102	P/P	50 - 160
Primidone	108	99.8	P/P	60 - 150
Pyraclostrobin	86.8	98.0	P/P	60 - 150
Thiamethoxam	101	108	P/P	50 - 150
Tolfenpyrad	121	86.8	P/P	60 - 150
Triclopyr	99.6	96.5	P/P	50 - 150

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A95796

Included Lab Sample IDs: 2136060, 2136061, 2136062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	99.4	101	P/P	90 - 110
Calcium	99.0	99.4	P/P	90 - 110
Iron	99.6	99.2	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Potassium	95.6	95.6	P/P	90 - 110
Sodium	99.3	99.8	P/P	90 - 110
Zinc	98.7	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A95814

Included Lab Sample IDs: 2136057, 2136058, 2136059

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	101	100	P/P	60 - 160
Endothall	111	102	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A95818

Included Lab Sample IDs: 2136057, 2136058, 2136059

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	71.2	84.0	P/P	60 - 160
Glufosinate	109	107	P/P	60 - 160
Glyphosate	102	105	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A95849

Included Lab Sample IDs: 2136057, 2136058, 2136059

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	108	103	P/P	60 - 160

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A95873

Included Lab Sample IDs: 2136060, 2136061

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.7	101	P/P	90 - 110
Antimony	99.6	102	P/P	90 - 110
Arsenic	102	103	P/P	90 - 110
Boron	102	101	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Copper	104	103	P/P	90 - 110
Lead	95.4	96.7	P/P	90 - 110
Nickel	103	102	P/P	90 - 110
Selenium	99.3	100	P/P	90 - 110
Silver	99.1	99.3	P/P	90 - 110
Thallium	96.5	97.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A95924

Included Lab Sample IDs: 2136060, 2136061

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.1	97.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A96141

Included Lab Sample IDs: 2136062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.3	96.1	P/P	90 - 110
Antimony	97.2	95.9	P/P	90 - 110
Arsenic	96.6	95.9	P/P	90 - 110
Boron	102	101	P/P	90 - 110
Cadmium	96.2	95.3	P/P	90 - 110
Chromium	96.4	98.8	P/P	90 - 110
Copper	97.0	96.8	P/P	90 - 110
Lead	96.7	97.3	P/P	90 - 110
Nickel	97.2	96.9	P/P	90 - 110
Selenium	96.7	96.2	P/P	90 - 110
Silver	104	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A96141

Included Lab Sample IDs: 2136062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	94.1	93.8	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	Barium	101	100	99.1	97.4		1.57
	Calcium	91.8		91.5			0.176
	Iron	94.3	93.8	93.9	96.1		2.29
	Magnesium	93.1	95.0	93.9			1.59
	Potassium	97.8	107	93.6	94.2		0.343
	Sodium	90.4	96.4	91.2			0.511
	Zinc	98.7	98.9	97.6	95.3		2.39
EPA 200.8 Rev. 5.4	Aluminum	96.7	92.8	96.1	97.6		1.47
	Antimony	101	102	102	103		0.406
	Arsenic	98.8	98.1	101	103		2.15
	Boron	96.0	94.7	98.1	100		1.50
	Cadmium	97.1	97.9	99.3	99.8		0.450
	Chromium	99.0	95.9	98.6	100		1.41
	Copper	99.6	95.6	95.6	98.0		2.32
	Lead	93.3	92.9	94.1	95.6		1.60
	Nickel	99.2	94.6	97.8	98.6		0.818
	Selenium	95.5	93.3	92.9	97.1		4.48
	Silver	97.9	97.2	96.1	98.6		2.53
	Thallium	100	101	112	106		5.92
	2,4-D	134	108	133			18.6
	Acesulfame K	95.5	111	116			4.65
EPA 8321B	Acetaminophen	95.4	112	110			1.61
	Acetamiprid	92.2	108	109			0.825
	Afidopyropen	90.6	142	105			30.1
	AMPA	141	86.8	96.6			6.06
	Bentazon	78.3					5.69
	Benzovindiflupyr	83.0	86.8	88.8			2.27
	Carbamazepine	103	104	94.1			9.84
	Clothianidin	71.8	94.4	87.9			7.16
	Dinotefuran	85.9	107	115			6.73
	Diuron	79.4	81.5	74.5			8.60
	Endothall	68.0	117	122			4.23
	Fenuron	106	96.5	96.6			0.0609
	Fluridone	90.5	95.0	94.3			0.545
	Glufosinate	111	81.1	81.8			0.872
	Glyphosate	129	63.2	64.0			0.602
	Hydrocodone	104	114	117			2.90
	Ibuprofen	93.2	81.6	81.6			0.0008
	Imazapyr	108	144	151			2.79
	Imidacloprid	115	182	172			4.61
	Linuron	80.4	84.9	82.1			3.42
	Mandestrobin	89.3	94.5	94.1			0.386
	MCPP	134	117	134			13.0
	Naproxen	58.5	74.4	72.7			2.37
	Primidone	88.2	111	102			8.16
	Pyraclostrobin	75.1	86.0	70.8			19.4
	Sucralose	82.8	27.3	28.2			3.18
	Thiamethoxam	96.8	154	143			7.39
	Tolfenpyrad	67.4	47.5	43.6			8.63
	Triclopyr	82.0	67.2	75.0			11.0

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2136060, 2136061, 2136062
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2136060, 2136061, 2136062
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2136057, 2136058, 2136059
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2136057, 2136058, 2136059

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	11/14/2019	11/14/2019 15:00	Elliott D. Healy	11/18/2019 15:36	Betina Topolski	2136060
	11/14/2019	11/14/2019 15:00	Elliott D. Healy	11/18/2019 15:42	Betina Topolski	2136061
	11/14/2019	11/14/2019 15:00	Elliott D. Healy	11/18/2019 15:48	Betina Topolski	2136062
EPA 200.8 Rev. 5.4	11/14/2019	11/14/2019 15:00	Elliott D. Healy	11/21/2019 08:04	Justin Cutchin	2136060
	11/14/2019	11/14/2019 15:00	Elliott D. Healy	11/21/2019 08:13	Justin Cutchin	2136061
	11/14/2019	11/14/2019 15:00	Elliott D. Healy	11/22/2019 18:17	Robert K Palmer	2136060
	11/14/2019	11/14/2019 15:00	Elliott D. Healy	11/22/2019 18:23	Robert K Palmer	2136061
EPA 8321B	11/14/2019	11/14/2019 15:00	Elliott D. Healy	12/05/2019 18:46	Alexander Thompson	2136062
	11/14/2019	11/14/2019 14:00	Hoor Shaik	11/16/2019 08:20	Juyoung Kim	2136057
	11/14/2019	11/14/2019 14:00	Hoor Shaik	11/16/2019 08:54	Juyoung Kim	2136058
	11/14/2019	11/14/2019 14:00	Hoor Shaik	11/16/2019 09:29	Juyoung Kim	2136059
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/15/2019 15:05	Rebecca Ware	2136057
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/15/2019 15:19	Rebecca Ware	2136058
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/15/2019 15:33	Rebecca Ware	2136059
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/18/2019 15:09	Rebecca Ware	2136057
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/18/2019 15:20	Rebecca Ware	2136058
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/18/2019 15:30	Rebecca Ware	2136059
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/19/2019 18:16	Rebecca Ware	2136057
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/19/2019 18:28	Rebecca Ware	2136058
	11/14/2019	11/14/2019 14:30	Rebecca Ware	11/19/2019 18:40	Rebecca Ware	2136059