

Chemical Analysis Report

SW-DIST-2019-05-02-01

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

Event Description: **Alligator Creek- PC Site#14-10**

Request ID: **RQ-2019-04-29-03**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Judy Ashton

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: 22-MAY-2019 11:00



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 group are included in this report: 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: Alligator Crk @ GlenOak

Collection Date/Time: 05/01/2019 13:10

Field ID: G1SW0057

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2082693	EPA 8321B	2,4-D	0.028		ug/L	P363186	
		Acesulfame K**	0.13	I	ug/L	P363369	
		AMPA**	1.2		ug/L	P363369	
		Sucralose**	1.6		ug/L	P363369	
		Acetaminophen**	0.0080	U	ug/L	P363186	
		Endothall**	0.25	U	ug/L	P363369	
		Glufosinate**	0.10	U	ug/L	P363369	
		Bentazon	0.028		ug/L	P363186	
		Glyphosate**	2.0		ug/L	P363369	
		Carbamazepine**	0.0019	I	ug/L	P363186	
		Diuron	0.0073	I	ug/L	P363186	
		Fenuron	0.016	U	ug/L	P363186	
		Fluridone**	0.32		ug/L	P363186	
		Imazapyr**	0.33		ug/L	P363186	
		Hydrocodone**	0.0020	U	ug/L	P363186	
		Ibuprofen**	0.020	U	ug/L	P363186	
		Imidacloprid	0.019		ug/L	P363186	
		Linuron	0.0040	U	ug/L	P363186	
		MCPP	0.0051	I	ug/L	P363186	
		Naproxen**	0.0080	U	ug/L	P363186	
		Primidone**	0.0040	U	ug/L	P363186	
		Pyraclostrobin**	0.0020	U	ug/L	P363186	
		Triclopyr**	0.0040	U	ug/L	P363186	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P363186

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	8.0E-04	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
MCP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P363369

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 8321B
Batch ID: P363186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	89.4		P	40 - 150
Acetaminophen	94.5		P	30 - 150
Bentazon	110		P	30 - 150
Carbamazepine	97.6		P	40 - 150
Diuron	91.0		P	40 - 150
Fenuron	112		P	40 - 150
Fluridone	97.1		P	40 - 150
Hydrocodone	96.5		P	40 - 150
Ibuprofen	77.1		P	40 - 150
Imazapyr	98.6		P	40 - 150
Imidacloprid	105		P	40 - 150
Linuron	73.3		P	40 - 150
MCPP	104		P	40 - 150
Naproxen	83.9		P	40 - 150
Primidone	93.3		P	40 - 150
Pyraclostrobin	74.0		P	40 - 150
Triclopyr	64.6		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P363369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	90.3		P	40 - 150
AMPA	106		P	40 - 150
Endothall	67.3		P	40 - 150
Glufosinate	104		P	40 - 150
Glyphosate	105		P	40 - 140
Sucralose	99.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P363186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082381	2,4-D	97.4	124	P/P	40 - 150
2082381	Acetaminophen	90.0	92.9	P/P	30 - 150
2082381	Bentazon	81.8	82.5	P/P	30 - 150
2082381	Carbamazepine	72.4	78.5	P/P	40 - 150
2082381	Diuron	67.6	71.7	P/P	40 - 150
2082381	Fenuron	83.9	85.0	P/P	40 - 150
2082381	Fluridone	91.9	97.2	P/P	40 - 150
2082381	Hydrocodone	86.6	83.6	P/P	40 - 150
2082381	Ibuprofen	73.2	77.2	P/P	40 - 150
2082381	Imazapyr	125	134	P/P	40 - 150
2082381	Imidacloprid	131	133	P/P	40 - 150
2082381	Linuron	57.6	65.5	P/P	40 - 150
2082381	MCPP	126	145	P/P	40 - 150
2082381	Naproxen	78.0	82.2	P/P	40 - 150
2082381	Primidone	90.7	100	P/P	40 - 150
2082381	Pyraclostrobin	89.6	92.1	P/P	40 - 150
2082381	Triclopyr	79.0	94.0	P/P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P363369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082693	Acesulfame K	67.3	67.2	P/P	40 - 150
2082693	AMPA	63.4	66.8	P/P	40 - 150
2082693	Endothall	62.1	62.6	P/P	40 - 150
2082693	Glufosinate	92.6	97.0	P/P	40 - 150
2082693	Glyphosate	83.1	106	P/P	40 - 140
2082693	Sucralose	98.8	99.4	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P363186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082381	2,4-D	24.1	Spike	P	0 - 30
2082381	Acetaminophen	3.18	Spike	P	0 - 30
2082381	Bentazon	0.905	Spike	P	0 - 30
2082381	Carbamazepine	8.07	Spike	P	0 - 30
2082381	Diuron	5.79	Spike	P	0 - 30
2082381	Fenuron	1.22	Spike	P	0 - 30
2082381	Fluridone	5.61	Spike	P	0 - 30
2082381	Hydrocodone	3.45	Spike	P	0 - 30
2082381	Ibuprofen	5.30	Spike	P	0 - 30
2082381	Imazapyr	6.41	Spike	P	0 - 30
2082381	Imidacloprid	1.59	Spike	P	0 - 30
2082381	Linuron	12.7	Spike	P	0 - 30
2082381	MCPP	13.5	Spike	P	0 - 30
2082381	Naproxen	5.31	Spike	P	0 - 30
2082381	Primidone	10.0	Spike	P	0 - 30
2082381	Pyraclostrobin	2.78	Spike	P	0 - 30
2082381	Triclopyr	17.3	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P363369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082693	Acesulfame K	0.0712	Spike	P	0 - 30
2082693	AMPA	1.82	Spike	P	0 - 30
2082693	Endothall	0.794	Spike	P	0 - 30
2082693	Glufosinate	4.60	Spike	P	0 - 30
2082693	Glyphosate	7.83	Spike	P	0 - 30
2082693	Sucralose	0.388	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2082693

Field Sample ID: G1SW0057

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	122	P	30 - 160
EPA 8321B	Acetaminophen-d4	89.8	P	30 - 160
EPA 8321B	Carbamazepine-d10	62.7	P	30 - 160
EPA 8321B	Diuron-d6	57.6	P	30 - 160
EPA 8321B	Endothall-d6	102	P	30 - 160
EPA 8321B	Endothall-d6	102	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	83.4	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	83.4	P	30 - 160
EPA 8321B	Ibuprofen-d3	69.0	P	30 - 160
EPA 8321B	Primidone-d5	82.7	P	30 - 160
EPA 8321B	Sucralose-d6	132	P	30 - 160
EPA 8321B	Sucralose-d6	132	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A91264
 Included Lab Sample IDs: 2082693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	91.3	82.8	P/P	60 - 160
Endothall	69.3	61.4	P/P	60 - 160

Reference Method: EPA 8321B
 Run ID: A91267
 Included Lab Sample IDs: 2082693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	109	94.4	P/P	60 - 160
Glufosinate	108	106	P/P	60 - 160
Glyphosate	110	115	P/P	60 - 160

Reference Method: EPA 8321B
 Run ID: A91295
 Included Lab Sample IDs: 2082693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	104	104	P/P	60 - 160

Reference Method: EPA 8321B
 Run ID: A91464
 Included Lab Sample IDs: 2082693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	88.2	100	P/P	50 - 150
Acetaminophen	115	115	P/P	60 - 160
Bentazon	99.8	106	P/P	50 - 160
Carbamazepine	103	102	P/P	60 - 150
Diuron	102	106	P/P	60 - 150
Fenuron	102	103	P/P	60 - 150
Fluridone	102	106	P/P	60 - 160
Hydrocodone	105	103	P/P	60 - 150
Ibuprofen	114	119	P/P	50 - 160
Imazapyr	101	98.4	P/P	50 - 150
Imidacloprid	97.6	102	P/P	60 - 150
Linuron	96.8	98.0	P/P	60 - 150
MCPP	100	93.2	P/P	50 - 150
Naproxen	94.3	102	P/P	50 - 160
Primidone	109	104	P/P	60 - 150
Pyraclostrobin	104	104	P/P	60 - 150
Triclopyr	99.1	99.8	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 8321B	2,4-D	89.4	97.4	124		24.1
	Acesulfame K	90.3	67.3	67.2		0.0712
	Acetaminophen	94.5	90.0	92.9		3.18
	AMPA	106	63.4	66.8		1.82
	Bentazon	110	81.8	82.5		0.905
	Carbamazepine	97.6	72.4	78.5		8.07
	Diuron	91.0	67.6	71.7		5.79
	Endothall	67.3	62.1	62.6		0.794
	Fenuron	112	83.9	85.0		1.22
	Fluridone	97.1	91.9	97.2		5.61
	Glufosinate	104	92.6	97.0		4.60
	Glyphosate	105	83.1	106		7.83
	Hydrocodone	96.5	86.6	83.6		3.45
	Ibuprofen	77.1	73.2	77.2		5.30
	Imazapyr	98.6	125	134		6.41
	Imidacloprid	105	131	133		1.59
	Linuron	73.3	57.6	65.5		12.7
	MCPP	104	126	145		13.5
	Naproxen	83.9	78.0	82.2		5.31
	Primidone	93.3	90.7	100		10.0
	Pyraclostrobin	74.0	89.6	92.1		2.78
	Sucralose	99.5	98.8	99.4		0.388
	Triclopyr	64.6	79.0	94.0		17.3

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2082693
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2082693

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/06/2019 15:36	Rebecca Ware	2082693
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 01:52	Rebecca Ware	2082693
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 20:01	Rebecca Ware	2082693
	05/02/2019	05/06/2019 12:00	Hoor Shaik	05/16/2019 11:21	Juyoung Kim	2082693
	05/02/2019	05/06/2019 12:00	Hoor Shaik	05/16/2019 18:16	Juyoung Kim	2082693