

Chemical Analysis Report

SO-DIST-2017-05-05-02

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

Event Description: **Lee County Tracers & Markers**
Request ID: **RQ-2017-04-17-08**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Corey Anderson

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 24-MAY-2017 10:49



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 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: Just West of N Evalena Rd

Collection Date/Time: 05/04/2017 10:19

Field ID: POWLGR20

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896809	EPA 8321B	Sucralose**	0.30		ug/L	P324692	
	USGS O-2060-01	2,4-D	0.011		ug/L	P324620	
		Diuron	0.0078		ug/L	P324620	
		Fenuron	0.0040	U	ug/L	P324620	
		Imidacloprid	0.0034		ug/L	P324620	MS
		Bentazon	0.0031	I	ug/L	P324620	
		Linuron	0.0040	U	ug/L	P324620	
		Acetaminophen**	0.0080	U	ug/L	P324620	
		MCP	8.0E-04	U	ug/L	P324620	
		Carbamazepine**	0.0050		ug/L	P324620	
		Triclopyr**	0.0040	U	ug/L	P324620	
		Primidone**	0.0040	U	ug/L	P324620	
		Fluridone**	0.0043		ug/L	P324620	

Ref. Method and Comment:
 USGS O-2060-01: Indaziflam = 0.0013 I ug/L.

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P324692

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P324620

Component	Result	Code	Units
2,4-D	8.0E-04	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	8.0E-04	U	ug/L
Fenuron	0.0040	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	8.0E-04	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P324692

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	83.0		P	40 - 140

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P324620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	69.8		P	40 - 140
Acetaminophen	103		P	40 - 140
Bentazon	65.8		P	40 - 140
Carbamazepine	121		P	40 - 140
Diuron	120		P	40 - 140
Fenuron	107		P	40 - 140
Fluridone	107		P	40 - 140
Imidacloprid	117		P	40 - 160
Linuron	120		P	40 - 140
MCP	80.9		P	40 - 140
Primidone	104		P	40 - 140
Triclopyr	69.4		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P324692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896739	Sucralose	108	104	P/P	40 - 140

Reference Method: USGS O-2060-01
 Batch ID: P324620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896649	2,4-D	75.0	66.1	P/P	40 - 140
1896649	Acetaminophen	97.3	101	P/P	40 - 140
1896649	Bentazon	73.9	61.4	P/P	40 - 140
1896649	Carbamazepine	111	115	P/P	40 - 140
1896649	Diuron	102	107	P/P	40 - 140
1896649	Fenuron	118	109	P/P	40 - 140
1896649	Fluridone	90.6	93.1	P/P	40 - 140
1896649	Imidacloprid	213	202	F/F	40 - 160
1896649	Linuron	106	104	P/P	40 - 140
1896649	MCP	69.0	57.4	P/P	40 - 140
1896649	Primidone	108	118	P/P	40 - 140
1896649	Triclopyr	69.4	57.6	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P324692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896739	Sucralose	3.67	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P324620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896649	2,4-D	12.1	Spike	P	0 - 30
1896649	Acetaminophen	3.79	Spike	P	0 - 30
1896649	Bentazon	18.3	Spike	P	0 - 30
1896649	Carbamazepine	3.07	Spike	P	0 - 30
1896649	Diuron	5.07	Spike	P	0 - 30
1896649	Fenuron	8.22	Spike	P	0 - 30
1896649	Fluridone	2.71	Spike	P	0 - 30
1896649	Imidacloprid	5.29	Spike	P	0 - 30
1896649	Linuron	1.67	Spike	P	0 - 30
1896649	MCP	18.2	Spike	P	0 - 30
1896649	Primidone	8.62	Spike	P	0 - 30
1896649	Triclopyr	18.6	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: 1896809
Field Sample ID: POWLGR20

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	95.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	67.8	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	99.0	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	85.3	P	30 - 160
USGS O-2060-01	Diuron-d6	81.1	P	30 - 150
USGS O-2060-01	Primidone-d5	94.5	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A76477
Included Lab Sample IDs: 1896809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	88.4	89.2	P/P	50 - 150
Acetaminophen	115	122	P/P	60 - 150
Bentazon	105	102	P/P	50 - 150
Carbamazepine	124	119	P/P	60 - 150
Diuron	103	134	P/P	60 - 150
Fenuron	120	110	P/P	60 - 150
Fluridone	111	126	P/P	60 - 150
Imidacloprid	106	112	P/P	60 - 150
Linuron	116	118	P/P	60 - 150
MCP	73.2	83.6	P/P	50 - 150
Primidone	97.6	106	P/P	60 - 150
Triclopyr	84.4	94.0	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A76559
Included Lab Sample IDs: 1896809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	79.5	93.1	P/P	60 - 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 8321B	Sucralose	83.0	108 104			3.67
USGS O-2060-01	2,4-D	69.8	75.0 66.1			12.1
	Acetaminophen	103	97.3 101			3.79
	Bentazon	65.8	73.9 61.4			18.3
	Carbamazepine	121	111 115			3.07
	Diuron	120	102 107			5.07
	Fenuron	107	118 109			8.22
	Fluridone	107	93.1 90.6			2.71
	Imidacloprid	117	213 202			5.29
	Linuron	120	106 104			1.67
	MCP	80.9	69.0 57.4			18.2
	Primidone	104	108 118			8.62
	Triclopyr	69.4	69.4 57.6			18.6

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1896809
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1896809
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1896809

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	05/05/2017	05/17/2017	Mohammad Ghaffari	05/18/2017	Mohammad Ghaffari	1896809
USGS O-2060-01	05/05/2017	05/10/2017	Hoor Shaik	05/16/2017	Juyoung Kim	1896809