

Chemical Analysis Report

SO-DIST-2017-09-26-03

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

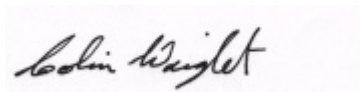
Event Description: **Lee County Tracers & Markers**
Request ID: **RQ-2017-08-21-03**
Customer: **SO-DIST**
Project ID: **SMP**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 12-OCT-2017 10:31

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 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: Whiskey Creek Golf Course Cart Bridge, Upstream

Collection Date/Time: 09/25/2017 09:53

Field ID: AD53681

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1931503	EPA 8321B	Sucralose**	0.12		ug/L	P332225	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P332226	
		Diuron	0.0041		ug/L	P332226	
		Fenuron	0.0080	U	ug/L	P332226	
		Imidacloprid	0.032		ug/L	P332226	
		Bentazon	0.011		ug/L	P332226	MS
		Linuron	0.0040	U	ug/L	P332226	
		Acetaminophen**	0.044		ug/L	P332226	
		MCP	0.0020	U	ug/L	P332226	
		Carbamazepine**	0.0066		ug/L	P332226	
		Triclopyr**	0.0040	U	ug/L	P332226	
		Primidone**	0.0040	U	ug/L	P332226	
		Fluridone**	0.017		ug/L	P332226	

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for imidacloprid could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P332225

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P332226

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	4.0E-04	U	ug/L
Diuron	8.0E-04	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	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: P332225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	105		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P332226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	71.9		P	40 - 150
Acetaminophen	139		P	30 - 150
Bentazon	47.7		P	40 - 150
Carbamazepine	118		P	40 - 150
Diuron	102		P	40 - 150
Fenuron	109		P	40 - 150
Fluridone	120		P	40 - 150
Imidacloprid	97.8		P	40 - 160
Linuron	106		P	40 - 150
MCP	79.1		P	40 - 150
Primidone	100		P	40 - 150
Triclopyr	72.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P332225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1931706	Sucralose	40.2	42.5	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P332226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1931706	2,4-D	61.9	64.6	P/P	40 - 150
1931706	Acetaminophen	88.5	88.5	P/P	30 - 150
1931706	Bentazon	23.7	24.1	F/F	40 - 150
1931706	Carbamazepine	92.7	89.6	P/P	40 - 150
1931706	Diuron	72.1	73.7	P/P	40 - 150
1931706	Fenuron	90.0	87.9	P/P	40 - 150
1931706	Fluridone	50.4	43.2	P/P	40 - 150
1931706	Linuron	87.8	90.6	P/P	40 - 150
1931706	MCP	64.9	65.0	P/P	40 - 150
1931706	Primidone	103	102	P/P	40 - 150
1931706	Triclopyr	55.0	54.9	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P332225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1931706	Sucralose	0.847	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
 Batch ID: P332226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1931706	2,4-D	3.03	Spike	P	0 - 30
1931706	Acetaminophen	0.0452	Spike	P	0 - 30
1931706	Bentazon	0.719	Spike	P	0 - 30
1931706	Carbamazepine	3.23	Spike	P	0 - 30
1931706	Diuron	2.08	Spike	P	0 - 30
1931706	Fenuron	2.43	Spike	P	0 - 30
1931706	Fluridone	10.3	Spike	P	0 - 30
1931706	Imidacloprid	4.13	Spike	P	0 - 30
1931706	Linuron	3.12	Spike	P	0 - 30
1931706	MCP	0.154	Spike	P	0 - 30
1931706	Primidone	0.775	Spike	P	0 - 30
1931706	Triclopyr	0.255	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: 1931503
 Field Sample ID: AD53681

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	83.5	P	30 - 160
EPA 8321B	Carbamazepine-d10	104	P	30 - 160
EPA 8321B	Diuron-d6	70.8	P	30 - 160
EPA 8321B	Primidone-d5	94.8	P	30 - 160
EPA 8321B	Sucralose-d6	77.6	P	40 - 160
USGS O-2060-01	2,4-D-d3	62.0	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	83.5	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	104	P	30 - 160
USGS O-2060-01	Diuron-d6	70.8	P	30 - 160
USGS O-2060-01	Primidone-d5	94.8	P	30 - 160
USGS O-2060-01	Sucralose-d6	77.6	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A79376
 Included Lab Sample IDs: 1931503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	89.8	93.1	P/P	50 - 150
Acetaminophen	103	107	P/P	60 - 150
Bentazon	96.2	96.1	P/P	50 - 150
Carbamazepine	106	109	P/P	60 - 150
Diuron	102	111	P/P	60 - 150
Fenuron	101	101	P/P	60 - 150
Fluridone	121	117	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A79376

Included Lab Sample IDs: 1931503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Imidacloprid	93.8	100	P/P	60 - 150
Linuron	103	112	P/P	60 - 150
MCP	98.3	97.0	P/P	50 - 150
Primidone	94.0	108	P/P	60 - 150
Triclopyr	105	97.3	P/P	50 - 150

Reference Method: EPA 8321B

Run ID: A79445

Included Lab Sample IDs: 1931503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	95.5	103	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	105	40.2 42.5			0.847
USGS O-2060-01	2,4-D	71.9	61.9 64.6			3.03
	Acetaminophen	139	88.5 88.5			0.0452
	Bentazon	47.7	23.7 24.1			0.719
	Carbamazepine	118	92.7 89.6			3.23
	Diuron	102	72.1 73.7			2.08
	Fenuron	109	90.0 87.9			2.43
	Fluridone	120	50.4 43.2			10.3
	Imidacloprid	97.8				4.13
	Linuron	106	87.8 90.6			3.12
	MCP	79.1	64.9 65.0			0.154
	Primidone	100	103 102			0.775
	Triclopyr	72.5	55.0 54.9			0.255

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1931503
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1931503
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1931503

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	09/26/2017	09/29/2017	Hoor Shaik	10/06/2017	Juyoung Kim	1931503
USGS O-2060-01	09/26/2017	09/29/2017	Hoor Shaik	10/03/2017	Julie Michelle Frank	1931503