

Chemical Analysis Report

SO-DIST-2017-07-11-02

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

Event Description: **Lee Co Tracers & Markers**

Request ID: **RQ-2017-07-03-08**

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: Ben Paswater

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Certified by: Colin Wright, Program Administrator

Date Certified: 28-JUL-2017 11:08

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored 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: Bayshore Cr @ SR78;Just East of Railroad Tracks

Collection Date/Time: 07/10/2017 10:19

Field ID: 22-7GR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912606	EPA 8321B	Sucralose**	0.010	U	ug/L	P328334	
	USGS O-2060-01	2,4-D	0.0069	I	ug/L	P328267	
		Diuron	0.0026	I	ug/L	P328267	
		Fenuron	0.0080	U	ug/L	P328267	
		Imidacloprid	9.7E-04	I	ug/L	P328267	
		Bentazon	8.5E-04	I	ug/L	P328267	
		Linuron	0.0040	U	ug/L	P328267	
		Acetaminophen**	0.0080	U	ug/L	P328267	
		MCP	0.0020	U	ug/L	P328267	
		Carbamazepine**	4.0E-04	U	ug/L	P328267	
		Triclopyr**	0.0040	U	ug/L	P328267	
		Primidone**	0.0040	U	ug/L	P328267	
		Fluridone**	4.0E-04	U	ug/L	P328267	

Ref. Method and Comment:

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

Sample Location: Just West of N Evalena Rd

Collection Date/Time: 07/10/2017 12:31

Field ID: POWLGR20

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912607	EPA 8321B	Sucralose**	0.34		ug/L	P328334	
	USGS O-2060-01	2,4-D	0.0028	I	ug/L	P328267	
		Diuron	8.0E-04	U	ug/L	P328267	
		Fenuron	0.0080	U	ug/L	P328267	
		Imidacloprid	0.0035		ug/L	P328267	
		Bentazon	0.0024	I	ug/L	P328267	
		Linuron	0.0040	U	ug/L	P328267	
		Acetaminophen**	0.0080	U	ug/L	P328267	
		MCP	0.0020	U	ug/L	P328267	
		Carbamazepine**	0.0082		ug/L	P328267	
		Triclopyr**	0.0040	U	ug/L	P328267	
		Primidone**	0.0040	U	ug/L	P328267	
		Fluridone**	5.4E-04	I	ug/L	P328267	

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for carbamazepine and 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: P328334

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P328267

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: P328334

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	81.4		P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P328267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	114		P	40 - 150
Acetaminophen	126		P	30 - 150
Bentazon	94.3		P	40 - 150
Carbamazepine	125		P	40 - 150
Diuron	128		P	40 - 150
Fenuron	128		P	40 - 150
Fluridone	127		P	40 - 150
Imidacloprid	118		P	40 - 160
Linuron	129		P	40 - 150
MCP	109		P	40 - 150
Primidone	117		P	40 - 150
Triclopyr	115		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P328334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912610	Sucralose	81.9	94.2	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P328267

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911688	2,4-D	125	110	P/P	40 - 150
1911688	Acetaminophen	114	96.4	P/P	30 - 150
1911688	Bentazon	71.5	86.8	P/P	40 - 150
1911688	Diuron	92.5	97.0	P/P	40 - 150
1911688	Fenuron	99.9	88.6	P/P	40 - 150
1911688	Fluridone	78.1	75.8	P/P	40 - 150
1911688	Linuron	127	127	P/P	40 - 150
1911688	MCP	133	120	P/P	40 - 150
1911688	Primidone	129	118	P/P	40 - 150
1911688	Triclopyr	115	107	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P328334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912610	Sucralose	13.9	Spike	P	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P328267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911688	2,4-D	11.4	Spike	P	0 - 30
1911688	Acetaminophen	17.0	Spike	P	0 - 30
1911688	Bentazon	16.1	Spike	P	0 - 30
1911688	Carbamazepine	8.58	Spike	P	0 - 30
1911688	Diuron	4.14	Spike	P	0 - 30
1911688	Fenuron	12.0	Spike	P	0 - 30
1911688	Fluridone	2.82	Spike	P	0 - 30
1911688	Imidacloprid	8.36	Spike	P	0 - 30
1911688	Linuron	0.567	Spike	P	0 - 30
1911688	MCP	10.2	Spike	P	0 - 30
1911688	Primidone	4.59	Spike	P	0 - 30
1911688	Triclopyr	7.43	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: 1912606
Field Sample ID: 22-7GR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	83.2	P	40 - 160
USGS O-2060-01	2,4-D-d3	123	P	40 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1912606

Field Sample ID: 22-7GR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	Acetaminophen-d4	88.0	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	88.0	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	95.2	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	95.2	P	30 - 160
USGS O-2060-01	Diuron-d6	51.6	P	30 - 160
USGS O-2060-01	Diuron-d6	51.6	P	30 - 160
USGS O-2060-01	Primidone-d5	66.6	P	30 - 160
USGS O-2060-01	Primidone-d5	66.6	P	30 - 160

Lab Sample ID: 1912607

Field Sample ID: POWLGR20

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	86.3	P	40 - 160
USGS O-2060-01	2,4-D-d3	122	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	79.9	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	79.9	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	92.4	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	92.4	P	30 - 160
USGS O-2060-01	Diuron-d6	57.5	P	30 - 160
USGS O-2060-01	Diuron-d6	57.5	P	30 - 160
USGS O-2060-01	Primidone-d5	72.7	P	30 - 160
USGS O-2060-01	Primidone-d5	72.7	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A77777

Included Lab Sample IDs: 1912606, 1912607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	134	114	P/P	60 - 160
Sucralose	98.0	97.3	P/P	60 - 160

Reference Method: USGS O-2060-01

Run ID: A77880

Included Lab Sample IDs: 1912606, 1912607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	83.2	108	P/P	50 - 150
Acetaminophen	97.2	90.1	P/P	60 - 150
Bentazon	100	80.6	P/P	50 - 150
Carbamazepine	82.9	104	P/P	60 - 150
Diuron	81.9	96.0	P/P	60 - 150
Fenuron	84.7	91.3	P/P	60 - 150
Fluridone	103	78.0	P/P	60 - 160
Imidacloprid	72.4	85.1	P/P	60 - 150
Linuron	95.4	89.4	P/P	60 - 150
MCP	85.8	91.5	P/P	50 - 150
Primidone	69.6	96.1	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A77880

Included Lab Sample IDs: 1912606, 1912607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Triclopyr	84.7	79.4	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 8321B	Sucralose	81.4	81.9 94.2			13.9
USGS O-2060-01	2,4-D	114	125 110			11.4
	Acetaminophen	126	114 96.4			17.0
	Bentazon	94.3	71.5 86.8			16.1
	Carbamazepine	125				8.58
	Diuron	128	92.5 97.0			4.14
	Fenuron	128	99.9 88.6			12.0
	Fluridone	127	78.1 75.8			2.82
	Imidacloprid	118				8.36
	Linuron	129	127 127			0.567
	MCP	109	133 120			10.2
	Primidone	117	129 118			4.59
	Triclopyr	115	115 107			7.43

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1912606, 1912607
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1912606, 1912607
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1912606, 1912607

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/11/2017	07/13/2017	Mohammad Ghaffari	07/14/2017	Mohammad Ghaffari	1912606, 1912607
USGS O-2060-01	07/11/2017	07/12/2017	Hoor Shaik	07/20/2017	Juyoung Kim	1912606, 1912607