

Chemical Analysis Report

SO-DIST-2017-07-14-01

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
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 07-AUG-2017 10:28



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: Cypress Creek @ SR78; upstream side

Collection Date/Time: 07/13/2017 10:15

Field ID: CYPRESSGR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913607	EPA 8321B	Sucralose**	0.010	U	ug/L	P328677	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P328536	
		Diuron	0.0010	I	ug/L	P328536	
		Fenuron	0.0080	U	ug/L	P328536	
		Imidacloprid	0.0044		ug/L	P328536	MS
		Bentazon	0.0013	I	ug/L	P328536	
		Linuron	0.0040	U	ug/L	P328536	
		Acetaminophen**	0.0080	U	ug/L	P328536	
		MCP	0.0020	U	ug/L	P328536	
		Carbamazepine**	4.0E-04	U	ug/L	P328536	
		Triclopyr**	0.0040	U	ug/L	P328536	
		Primidone**	0.0040	U	ug/L	P328536	
		Fluridone**	4.0E-04	U	ug/L	P328536	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for 2,4-D could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Telegraph Creek @ SR78; upstream side

Collection Date/Time: 07/13/2017 10:44

Field ID: 29-8GR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913608	EPA 8321B	Sucralose**	0.010	U	ug/L	P328677	
	USGS O-2060-01	2,4-D	0.0028	I	ug/L	P328536	
		Diuron	8.0E-04	U	ug/L	P328536	
		Fenuron	0.0080	U	ug/L	P328536	
		Imidacloprid	0.0012	I	ug/L	P328536	MS
		Bentazon	8.0E-04	U	ug/L	P328536	
		Linuron	0.0040	U	ug/L	P328536	
		Acetaminophen**	0.0080	U	ug/L	P328536	
		MCP	0.015		ug/L	P328536	
		Carbamazepine**	4.0E-04	U	ug/L	P328536	
		Triclopyr**	0.0040	U	ug/L	P328536	
		Primidone**	0.0040	U	ug/L	P328536	
		Fluridone**	4.0E-04	U	ug/L	P328536	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for 2,4-D could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Trout Creek @ SR78; upstream side

Collection Date/Time: 07/13/2017 11:11

Field ID: 27-6-GR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913609	EPA 8321B	Sucralose**	0.010	U	ug/L	P328677	
	USGS O-2060-01	2,4-D	0.0054	I	ug/L	P328536	
		Diuron	0.0032	I	ug/L	P328536	
		Fenuron	0.0080	U	ug/L	P328536	
		Imidacloprid	8.0E-04	U	ug/L	P328536	MS

Field ID: 27-6-GR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913609	USGS O-2060-01	Bentazon	0.0013	I	ug/L	P328536	
		Linuron	0.0040	U	ug/L	P328536	
		Acetaminophen**	0.0080	U	ug/L	P328536	
		MCP	0.0097		ug/L	P328536	
		Carbamazepine**	4.0E-04	U	ug/L	P328536	
		Triclopyr**	0.0040	U	ug/L	P328536	
		Primidone**	0.0040	U	ug/L	P328536	
		Fluridone**	4.0E-04	U	ug/L	P328536	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for 2,4-D could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Owl Creek @ SR78; upstream side

Collection Date/Time: 07/13/2017 11:22

Field ID: 27O-GR20

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913610	EPA 8321B	Sucralose**	0.029	I	ug/L	P328677	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P328536	
		Diuron	8.0E-04	U	ug/L	P328536	
		Fenuron	0.032		ug/L	P328536	
		Imidacloprid	0.0012	I	ug/L	P328536	MS
		Bentazon	0.0013	I	ug/L	P328536	
		Linuron	0.0040	U	ug/L	P328536	
		Acetaminophen**	0.0080	U	ug/L	P328536	
		MCP	0.0020	U	ug/L	P328536	
		Carbamazepine**	4.0E-04	U	ug/L	P328536	
		Triclopyr**	0.0040	U	ug/L	P328536	
		Primidone**	0.0040	U	ug/L	P328536	
		Fluridone**	4.0E-04	U	ug/L	P328536	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for 2,4-D 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: P328677

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P328536

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

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P328536

Component	Result	Code	Units
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: P328677

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	96.2		P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P328536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	73.7		P	40 - 150
Acetaminophen	40.5		P	30 - 150
Bentazon	57.8		P	40 - 150
Carbamazepine	108		P	40 - 150
Diuron	98.5		P	40 - 150
Fenuron	104		P	40 - 150
Fluridone	120		P	40 - 150
Imidacloprid	85.6		P	40 - 160
Linuron	99.7		P	40 - 150
MCP	79.6		P	40 - 150
Primidone	129		P	40 - 150
Triclopyr	76.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P328677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913607	Sucralose	96.7	101	P/P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P328536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913525	Acetaminophen	91.5	96.1	P/P	30 - 150
1913525	Bentazon	51.7	44.9	P/P	40 - 150
1913525	Carbamazepine	77.0	88.9	P/P	40 - 150
1913525	Diuron	61.8	68.4	P/P	40 - 150
1913525	Fenuron	58.3	60.8	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P328536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913525	Fluridone	36.3	43.4	F/P	40 - 150
1913525	Imidacloprid	169	169	F/F	40 - 160
1913525	Linuron	67.0	67.2	P/P	40 - 150
1913525	MCP	74.9	83.2	P/P	40 - 150
1913525	Primidone	93.3	103	P/P	40 - 150
1913525	Triclopyr	71.0	79.2	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P328677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913607	Sucralose	4.75	Spike	P	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P328536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913525	2,4-D	3.38	Spike	P	0 - 30
1913525	Acetaminophen	4.92	Spike	P	0 - 30
1913525	Bentazon	5.53	Spike	P	0 - 30
1913525	Carbamazepine	14.1	Spike	P	0 - 30
1913525	Diuron	6.88	Spike	P	0 - 30
1913525	Fenuron	3.04	Spike	P	0 - 30
1913525	Fluridone	10.1	Spike	P	0 - 30
1913525	Imidacloprid	0.158	Spike	P	0 - 30
1913525	Linuron	0.179	Spike	P	0 - 30
1913525	MCP	9.58	Spike	P	0 - 30
1913525	Primidone	9.90	Spike	P	0 - 30
1913525	Triclopyr	10.9	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: 1913607
Field Sample ID: CYPRESSGR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	108	P	40 - 160
USGS O-2060-01	2,4-D-d3	88.0	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	81.4	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	60.0	P	30 - 160
USGS O-2060-01	Diuron-d6	38.0	P	30 - 160
USGS O-2060-01	Primidone-d5	60.5	P	30 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1913608
Field Sample ID: 29-8GR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	99.0	P	40 - 160
USGS O-2060-01	2,4-D-d3	95.8	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	101	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	75.8	P	30 - 160
USGS O-2060-01	Diuron-d6	60.1	P	30 - 160
USGS O-2060-01	Primidone-d5	68.0	P	30 - 160

Lab Sample ID: 1913609
Field Sample ID: 27-6-GR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	102	P	40 - 160
USGS O-2060-01	2,4-D-d3	102	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	92.0	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	77.9	P	30 - 160
USGS O-2060-01	Diuron-d6	53.1	P	30 - 160
USGS O-2060-01	Primidone-d5	91.6	P	30 - 160

Lab Sample ID: 1913610
Field Sample ID: 27O-GR20

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	113	P	40 - 160
USGS O-2060-01	2,4-D-d3	96.7	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	107	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	73.6	P	30 - 160
USGS O-2060-01	Diuron-d6	56.3	P	30 - 160
USGS O-2060-01	Primidone-d5	84.8	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A78008
Included Lab Sample IDs: 1913607, 1913608, 1913609, 1913610

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	102	99.5	P/P	60 - 160
Sucralose	99.5	98.8	P/P	60 - 160

Reference Method: USGS O-2060-01
Run ID: A78009
Included Lab Sample IDs: 1913607, 1913608, 1913609, 1913610

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	99.4	91.0	P/P	50 - 150
Acetaminophen	108	100	P/P	60 - 150
Bentazon	115	98.0	P/P	50 - 150
Carbamazepine	109	99.4	P/P	60 - 150
Diuron	102	99.0	P/P	60 - 150
Fenuron	104	104	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A78009

Included Lab Sample IDs: 1913607, 1913608, 1913609, 1913610

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluridone	132	119	P/P	60 - 160
Imidacloprid	94.2	93.1	P/P	60 - 150
Linuron	114	104	P/P	60 - 150
MCP	80.5	88.1	P/P	50 - 150
Primidone	110	112	P/P	60 - 150
Triclopyr	92.2	83.6	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	96.2	96.7 101			4.75
USGS O-2060-01	2,4-D	73.7				3.38
	Acetaminophen	40.5	91.5 96.1			4.92
	Bentazon	57.8	51.7 44.9			5.53
	Carbamazepine	108	77.0 88.9			14.1
	Diuron	98.5	61.8 68.4			6.88
	Fenuron	104	58.3 60.8			3.04
	Fluridone	120	36.3 43.4			10.1
	Imidacloprid	85.6	169 169			0.158
	Linuron	99.7	67.0 67.2			0.179
	MCP	79.6	74.9 83.2			9.58
	Primidone	129	93.3 103			9.90
	Triclopyr	76.5	71.0 79.2			10.9

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1913607, 1913608, 1913609, 1913610
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1913607, 1913608, 1913609, 1913610
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1913607, 1913608, 1913609, 1913610

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/14/2017	07/26/2017	Julie Michelle Frank	07/26/2017	Mohammad Ghaffari	1913607, 1913608, 1913609, 1913610
USGS O-2060-01	07/14/2017	07/18/2017	Hoor Shaik	07/26/2017	Juyoung Kim	1913607, 1913608
	07/14/2017	07/18/2017	Hoor Shaik	07/27/2017	Juyoung Kim	1913609, 1913610