

Chemical Analysis Report

SO-DIST-2017-07-13-01

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

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

Request ID: **RQ-2017-06-05-09**

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: Liang Lin, Environmental Administrator

Date Certified: 04-AUG-2017 17:23

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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: IMKSLGH

Collection Date/Time: 07/12/2017 13:09

Field ID: AF35955

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913393	EPA 8321B	Sucralose**	0.010	U	ug/L	P328419	
	USGS O-2060-01	2,4-D	0.059		ug/L	P328403	
		Diuron	0.014		ug/L	P328403	
		Fenuron	0.0080	U	ug/L	P328403	RPD
		Imidacloprid	0.0055		ug/L	P328403	MS
		Bentazon	0.0019	I	ug/L	P328403	
		Linuron	0.0040	U	ug/L	P328403	
		Acetaminophen**	0.0080	U	ug/L	P328403	
		MCP	0.0020	U	ug/L	P328403	
		Carbamazepine**	4.0E-04	U	ug/L	P328403	
		Triclopyr**	0.0040	U	ug/L	P328403	
		Primidone**	0.0040	U	ug/L	P328403	
		Fluridone**	4.0E-04	U	ug/L	P328403	

Sample Location: IMKFSHCK

Collection Date/Time: 07/12/2017 10:59

Field ID: AF35954

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1913394	EPA 8321B	Sucralose**	0.010	U	ug/L	P328419	
	USGS O-2060-01	2,4-D	0.10		ug/L	P328403	
		Diuron	0.85		ug/L	P328403	
		Fenuron	0.0080	U	ug/L	P328403	RPD
		Imidacloprid	0.048		ug/L	P328403	MS
		Bentazon	0.0019	I	ug/L	P328403	
		Linuron	0.0040	U	ug/L	P328403	
		Acetaminophen**	0.0080	U	ug/L	P328403	
		MCP	0.0020	U	ug/L	P328403	
		Carbamazepine**	4.0E-04	U	ug/L	P328403	
		Triclopyr**	0.0040	U	ug/L	P328403	
		Primidone**	0.0040	U	ug/L	P328403	
		Fluridone**	7.0E-04	I	ug/L	P328403	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P328419

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01
Batch ID: P328403

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
Batch ID: P328403

Component	Result	Code	Units
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
MCPP	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: P328419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	88.9		P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P328403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	91.1		P	40 - 150
Acetaminophen	148		P	30 - 150
Bentazon	87.1		P	40 - 150
Carbamazepine	123		P	40 - 150
Diuron	106		P	40 - 150
Fenuron	109		P	40 - 150
Fluridone	123		P	40 - 150
Imidacloprid	76.0		P	40 - 160
Linuron	111		P	40 - 150
MCPP	95.6		P	40 - 150
Primidone	107		P	40 - 150
Triclopyr	96.1		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P328419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913119	Sucralose	100	86.0	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P328403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912972	2,4-D	120	122	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P328403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912972	Acetaminophen	105	112	P/P	30 - 150
1912972	Bentazon	92.8	85.9	P/P	40 - 150
1912972	Carbamazepine	128	128	P/P	40 - 150
1912972	Diuron	101	98.9	P/P	40 - 150
1912972	Fenuron	71.9	98.7	P/P	40 - 150
1912972	Fluridone	79.8	71.2	P/P	40 - 150
1912972	Imidacloprid	158	202	P/F	40 - 160
1912972	Linuron	109	106	P/P	40 - 150
1912972	MCP	111	104	P/P	40 - 150
1912972	Primidone	104	115	P/P	40 - 150
1912972	Triclopyr	109	102	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P328419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913119	Sucralose	15.1	Spike	P	0 - 30

Reference Method: USGS O-2060-01
 Batch ID: P328403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912972	2,4-D	1.82	Spike	P	0 - 30
1912972	Acetaminophen	6.81	Spike	P	0 - 30
1912972	Bentazon	7.66	Spike	P	0 - 30
1912972	Carbamazepine	0.298	Spike	P	0 - 30
1912972	Diuron	1.88	Spike	P	0 - 30
1912972	Fenuron	31.4	Spike	F	0 - 30
1912972	Fluridone	11.4	Spike	P	0 - 30
1912972	Imidacloprid	24.4	Spike	P	0 - 30
1912972	Linuron	2.67	Spike	P	0 - 30
1912972	MCP	6.43	Spike	P	0 - 30
1912972	Primidone	10.3	Spike	P	0 - 30
1912972	Triclopyr	6.65	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: 1913393
 Field Sample ID: AF35955

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	106	P	40 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1913393
 Field Sample ID: AF35955

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	2,4-D-d3	110	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	108	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	79.8	P	30 - 160
USGS O-2060-01	Diuron-d6	62.2	P	30 - 160
USGS O-2060-01	Primidone-d5	110	P	30 - 160

Lab Sample ID: 1913394
 Field Sample ID: AF35954

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	110	P	40 - 160
USGS O-2060-01	2,4-D-d3	93.8	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	97.6	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	76.1	P	30 - 160
USGS O-2060-01	Diuron-d6	54.6	P	30 - 160
USGS O-2060-01	Primidone-d5	88.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A77777
 Included Lab Sample IDs: 1913393, 1913394

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	102	92.4	P/P	60 - 160
Sucralose	95.7	102	P/P	60 - 160

Reference Method: USGS O-2060-01
 Run ID: A78009
 Included Lab Sample IDs: 1913393, 1913394

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	109	79.4	P/P	50 - 150
Acetaminophen	106	102	P/P	60 - 150
Bentazon	98.0	103	P/P	50 - 150
Carbamazepine	102	108	P/P	60 - 150
Diuron	87.0	101	P/P	60 - 150
Diuron	97.1	98.2	P/P	60 - 150
Fenuron	112	95.3	P/P	60 - 150
Fluridone	114	116	P/P	60 - 160
Imidacloprid	103	80.6	P/P	60 - 150
Linuron	93.5	107	P/P	60 - 150
MCPP	86.1	76.3	P/P	50 - 150
Primidone	105	120	P/P	60 - 150
Triclopyr	92.5	84.9	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 LCS	SMP	MS
EPA 8321B	Sucralose	88.9	100	86.0			15.1
USGS O-2060-01	2,4-D	91.1	120	122			1.82
	Acetaminophen	148	105	112			6.81
	Bentazon	87.1	92.8	85.9			7.66
	Carbamazepine	123	128	128			0.298
	Diuron	106	101	98.9			1.88
	Fenuron	109	71.9	98.7			31.4
	Fluridone	123	79.8	71.2			11.4
	Imidacloprid	76.0	158	202			24.4
	Linuron	111	109	106			2.67
	MCP	95.6	111	104			6.43
	Primidone	107	104	115			10.3
	Triclopyr	96.1	109	102			6.65

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1913393, 1913394
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1913393, 1913394
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1913393, 1913394

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/13/2017	07/14/2017	Mohammad Ghaffari	07/14/2017	Mohammad Ghaffari	1913393, 1913394
USGS O-2060-01	07/13/2017	07/17/2017	Hoor Shaik	07/26/2017	Juyoung Kim	1913393, 1913394
	07/13/2017	07/17/2017	Hoor Shaik	07/28/2017	Juyoung Kim	1913394