

Chemical Analysis Report

SO-DIST-2017-07-18-02

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

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 10-AUG-2017 09:45

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: COC AT 41

Collection Date/Time: 07/17/2017 11:04

Field ID: AF35872

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1914063	EPA 8321B	Sucralose**	0.26		ug/L	P328678	
	USGS O-2060-01	2,4-D	0.030		ug/L	P328669	
		Diuron	0.011		ug/L	P328669	
		Fenuron	0.0080	U	ug/L	P328669	
		Imidacloprid	0.086		ug/L	P328669	
		Bentazon	0.11		ug/L	P328669	
		Linuron	0.0040	U	ug/L	P328669	
		Acetaminophen**	0.0080	U	ug/L	P328669	
		MCP	0.0039	I	ug/L	P328669	
		Carbamazepine**	5.9E-04	I	ug/L	P328669	
		Triclopyr**	0.0040	U	ug/L	P328669	
		Primidone**	0.0040	U	ug/L	P328669	
		Fluridone**	0.044		ug/L	P328669	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P328678

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P328669

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: P328678

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	90.0		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P328669

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	91.9		P	40 - 150
Acetaminophen	78.9		P	30 - 150
Bentazon	85.8		P	40 - 150
Carbamazepine	96.7		P	40 - 150
Diuron	102		P	40 - 150
Fenuron	90.5		P	40 - 150
Fluridone	91.9		P	40 - 150
Imidacloprid	92.6		P	40 - 160
Linuron	92.4		P	40 - 150
MCP	76.9		P	40 - 150
Primidone	99.6		P	40 - 150
Triclopyr	67.3		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P328678

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913980	Sucralose	103	105	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P328669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913836	2,4-D	116	107	P/P	40 - 150
1913836	Acetaminophen	116	128	P/P	30 - 150
1913836	Bentazon	74.7	77.1	P/P	40 - 150
1913836	Carbamazepine	120	120	P/P	40 - 150
1913836	Diuron	100	108	P/P	40 - 150
1913836	Fenuron	81.1	91.9	P/P	40 - 150
1913836	Fluridone	92.4	100	P/P	40 - 150
1913836	Imidacloprid	130	143	P/P	40 - 160
1913836	Linuron	102	96.4	P/P	40 - 150
1913836	MCP	98.9	116	P/P	40 - 150
1913836	Primidone	100	118	P/P	40 - 150
1913836	Triclopyr	88.5	76.4	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P328678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913980	Sucralose	1.94	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P328669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913836	2,4-D	7.78	Spike	P	0 - 30
1913836	Acetaminophen	10.4	Spike	P	0 - 30
1913836	Bentazon	3.14	Spike	P	0 - 30
1913836	Carbamazepine	0.384	Spike	P	0 - 30
1913836	Diuron	7.44	Spike	P	0 - 30
1913836	Fenuron	12.5	Spike	P	0 - 30
1913836	Fluridone	8.44	Spike	P	0 - 30
1913836	Imidacloprid	9.09	Spike	P	0 - 30
1913836	Linuron	6.04	Spike	P	0 - 30
1913836	MCP	15.6	Spike	P	0 - 30
1913836	Primidone	16.2	Spike	P	0 - 30
1913836	Triclopyr	14.7	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: 1914063
Field Sample ID: AF35872

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	104	P	40 - 160
USGS O-2060-01	2,4-D-d3	130	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	133	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	98.1	P	30 - 160
USGS O-2060-01	Diuron-d6	83.6	P	30 - 160
USGS O-2060-01	Primidone-d5	98.3	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A78008
Included Lab Sample IDs: 1914063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	91.5	103	P/P	60 - 160

Reference Method: USGS O-2060-01
Run ID: A78113
Included Lab Sample IDs: 1914063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	117	97.0	P/P	50 - 150
Acetaminophen	113	110	P/P	60 - 150
Bentazon	103	130	P/P	50 - 150
Carbamazepine	121	106	P/P	60 - 150
Diuron	114	112	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A78113
 Included Lab Sample IDs: 1914063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fenuron	98.9	109	P/P	60 - 150
Fluridone	92.4	130	P/P	60 - 160
Imidacloprid	98.2	112	P/P	60 - 150
Linuron	116	118	P/P	60 - 150
MCPP	99.8	101	P/P	50 - 150
Primidone	88.2	122	P/P	60 - 150
Triclopyr	73.1	87.1	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	90.0	103 105			1.94
USGS O-2060-01	2,4-D	91.9	116 107			7.78
	Acetaminophen	78.9	116 128			10.4
	Bentazon	85.8	74.7 77.1			3.14
	Carbamazepine	96.7	120 120			0.384
	Diuron	102	100 108			7.44
	Fenuron	90.5	81.1 91.9			12.5
	Fluridone	91.9	92.4 100			8.44
	Imidacloprid	92.6	130 143			9.09
	Linuron	92.4	102 96.4			6.04
	MCPP	76.9	98.9 116			15.6
	Primidone	99.6	100 118			16.2
	Triclopyr	67.3	88.5 76.4			14.7

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1914063
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1914063
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1914063

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/18/2017	07/26/2017	Julie Michelle Frank	07/27/2017	Mohammad Ghaffari	1914063
USGS O-2060-01	07/18/2017	07/20/2017	Hoor Shaik	07/29/2017	Juyoung Kim	1914063