

Chemical Analysis Report

SO-DIST-2017-08-04-02

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-2017-07-03-07**
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: 23-AUG-2017 11:48

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: IMKFSHCK

Collection Date/Time: 08/03/2017 09:38

Field ID: AF39861

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919036	EPA 8321B	Sucralose**	0.010	U	ug/L	P329553	
	USGS O-2060-01	2,4-D	0.23		ug/L	P329539	
		Diuron	0.071		ug/L	P329539	
		Fenuron	0.013	I	ug/L	P329539	RPD
		Imidacloprid	0.18		ug/L	P329539	
		Bentazon	8.0E-04	U	ug/L	P329539	
		Linuron	0.0040	U	ug/L	P329539	RPD
		Acetaminophen**	0.0080	U	ug/L	P329539	
		MCP	0.0020	U	ug/L	P329539	
		Carbamazepine**	4.0E-04	U	ug/L	P329539	
		Triclopyr**	0.0040	U	ug/L	P329539	
		Primidone**	0.0040	U	ug/L	P329539	
		Fluridone**	4.0E-04	U	ug/L	P329539	

Ref. Method and Comment:

USGS O-2060-01: Result for imidacloprid was confirmed in re-extraction beyond routine holding time due to method blank positive; imidacloprid = 0.24 ug/L in the reanalysis.

Sample Location: IMKSLGH

Collection Date/Time: 08/03/2017 11:07

Field ID: AF39862

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919037	EPA 8321B	Sucralose**	0.010	U	ug/L	P329553	
	USGS O-2060-01	2,4-D	0.042		ug/L	P329539	
		Diuron	0.0068		ug/L	P329539	
		Fenuron	0.0080	U	ug/L	P329539	RPD
		Imidacloprid	0.024		ug/L	P329539	
		Bentazon	8.0E-04	U	ug/L	P329539	
		Linuron	0.0040	U	ug/L	P329539	RPD
		Acetaminophen**	0.0080	U	ug/L	P329539	
		MCP	0.0020	U	ug/L	P329539	
		Carbamazepine**	4.0E-04	U	ug/L	P329539	
		Triclopyr**	0.0040	U	ug/L	P329539	
		Primidone**	0.0040	U	ug/L	P329539	
		Fluridone**	4.0E-04	U	ug/L	P329539	

Ref. Method and Comment:

USGS O-2060-01: Result for imidacloprid was confirmed in re-extraction beyond routine holding time due to method blank positive; imidacloprid = 0.022 ug/L in the reanalysis.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P329553

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P329539

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	0.0016	I	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: P329553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	70.0		P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P329539

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	102		P	40 - 150
Acetaminophen	98.2		P	30 - 150
Bentazon	93.8		P	40 - 150
Carbamazepine	102		P	40 - 150
Diuron	111		P	40 - 150
Fenuron	97.6		P	40 - 150
Fluridone	97.5		P	40 - 150
Imidacloprid	100		P	40 - 160
Linuron	112		P	40 - 150
MCP	99.3		P	40 - 150
Primidone	113		P	40 - 150
Triclopyr	107		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P329553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918333	Sucralose	117	116	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P329539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918088	2,4-D	96.8	84.4	P/P	40 - 150
1918088	Acetaminophen	68.1	76.9	P/P	30 - 150
1918088	Bentazon	102	87.2	P/P	40 - 150
1918088	Carbamazepine	110	107	P/P	40 - 150
1918088	Diuron	87.2	93.7	P/P	40 - 150
1918088	Fenuron	54.9	78.6	P/P	40 - 150
1918088	Fluridone	100	102	P/P	40 - 150
1918088	Imidacloprid	49.4	72.2	P/P	40 - 160
1918088	Linuron	118	71.4	P/P	40 - 150
1918088	MCP	82.9	81.3	P/P	40 - 150
1918088	Primidone	80.2	85.4	P/P	40 - 150
1918088	Triclopyr	98.0	97.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P329553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918333	Sucralose	1.08	Spike	P	0 - 30

Reference Method: USGS O-2060-01
 Batch ID: P329539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918088	2,4-D	13.7	Spike	P	0 - 30
1918088	Acetaminophen	12.1	Spike	P	0 - 30
1918088	Bentazon	15.8	Spike	P	0 - 30
1918088	Carbamazepine	2.49	Spike	P	0 - 30
1918088	Diuron	7.25	Spike	P	0 - 30
1918088	Fenuron	35.5	Spike	F	0 - 30
1918088	Fluridone	1.92	Spike	P	0 - 30
1918088	Imidacloprid	22.8	Spike	P	0 - 30
1918088	Linuron	49.0	Spike	F	0 - 30
1918088	MCP	1.96	Spike	P	0 - 30
1918088	Primidone	6.22	Spike	P	0 - 30
1918088	Triclopyr	0.339	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: 1919036
 Field Sample ID: AF39861

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
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Quality Assurance Report Surrogates

Lab Sample ID: 1919036
 Field Sample ID: AF39861

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	108	P	40 - 160
USGS O-2060-01	2,4-D-d3	153	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	111	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	65.8	P	30 - 160
USGS O-2060-01	Diuron-d6	59.3	P	30 - 160
USGS O-2060-01	Primidone-d5	90.5	P	30 - 160

Lab Sample ID: 1919037
 Field Sample ID: AF39862

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	72.6	P	40 - 160
USGS O-2060-01	2,4-D-d3	138	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	131	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	84.8	P	30 - 160
USGS O-2060-01	Diuron-d6	63.5	P	30 - 160
USGS O-2060-01	Primidone-d5	97.7	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A78269
 Included Lab Sample IDs: 1919036, 1919037

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	105	93.3	P/P	50 - 150
Acetaminophen	112	106	P/P	60 - 150
Bentazon	122	118	P/P	50 - 150
Carbamazepine	109	84.5	P/P	60 - 150
Diuron	97.6	111	P/P	60 - 150
Fenuron	101	98.2	P/P	60 - 150
Fluridone	110	108	P/P	60 - 160
Imidacloprid	93.5	102	P/P	60 - 150
Linuron	112	98.6	P/P	60 - 150
MCP	105	101	P/P	50 - 150
Primidone	120	106	P/P	60 - 150
Triclopyr	99.5	127	P/P	50 - 150

Reference Method: EPA 8321B
 Run ID: A78344
 Included Lab Sample IDs: 1919036, 1919037

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	116	63.4	P/P	60 - 160
Sucralose	77.0	137	P/P	60 - 160

* 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
EPA 8321B USGS O-2060-01	Sucralose	70.0	117	116		1.08
	2,4-D	102	96.8	84.4		13.7
	Acetaminophen	98.2	68.1	76.9		12.1
	Bentazon	93.8	102	87.2		15.8
	Carbamazepine	102	110	107		2.49
	Diuron	111	87.2	93.7		7.25
	Fenuron	97.6	54.9	78.6		35.5
	Fluridone	97.5	100	102		1.92
	Imidacloprid	100	49.4	72.2		22.8
	Linuron	112	118	71.4		49.0
	MCP	99.3	82.9	81.3		1.96
	Primidone	113	80.2	85.4		6.22
	Triclopyr	107	98.0	97.6		0.339

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1919036, 1919037
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1919036, 1919037
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1919036, 1919037

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	08/04/2017	08/08/2017	Julie Michelle Frank	08/10/2017	Mohammad Ghaffari	1919036, 1919037
USGS O-2060-01	08/04/2017	08/04/2017	Fe-Val Siddell	08/08/2017	Juyoung Kim	1919036, 1919037