

Chemical Analysis Report

SO-DIST-2017-09-28-01

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

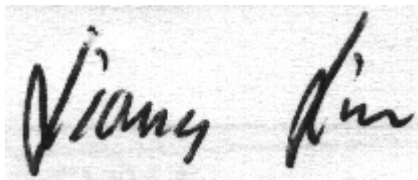
Event Description: **Collier Co Tracers & Markers**
Request ID: **RQ-2017-09-04-01**
Customer: **SO-DIST**
Project ID: **SMP**

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
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 12-OCT-2017 15:15

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: COCAT41

Collection Date/Time: 09/27/2017 11:50

Field ID: AF42349

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1932393	EPA 8321B	Sucralose**	0.28		ug/L	P332449	
	USGS O-2060-01	2,4-D	0.017		ug/L	P332448	
		Diuron	0.0028	I	ug/L	P332448	
		Fenuron	0.0080	U	ug/L	P332448	
		Imidacloprid	0.19		ug/L	P332448	MS
		Bentazon	0.057		ug/L	P332448	MS
		Linuron	0.0040	U	ug/L	P332448	
		Acetaminophen**	0.0080	U	ug/L	P332448	
		MCP	0.0020	U	ug/L	P332448	
		Carbamazepine**	4.0E-04	U	ug/L	P332448	
		Triclopyr**	0.0040	U	ug/L	P332448	
		Primidone**	0.0040	U	ug/L	P332448	
		Fluridone**	0.024		ug/L	P332448	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P332449

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P332448

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: P332449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	86.6		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P332448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	69.5		P	40 - 150
Acetaminophen	126		P	30 - 150
Bentazon	41.3		P	40 - 150
Carbamazepine	124		P	40 - 150
Diuron	111		P	40 - 150
Fenuron	115		P	40 - 150
Fluridone	101		P	40 - 150
Imidacloprid	107		P	40 - 160
Linuron	115		P	40 - 150
MCP	72.8		P	40 - 150
Primidone	107		P	40 - 150
Triclopyr	75.6		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P332449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932400	Sucralose	88.4	77.9	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P332448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932495	2,4-D	73.9	74.8	P/P	40 - 150
1932495	Acetaminophen	85.1	95.2	P/P	30 - 150
1932495	Bentazon	29.1	30.2	F/F	40 - 150
1932495	Carbamazepine	96.0	91.3	P/P	40 - 150
1932495	Diuron	76.4	69.4	P/P	40 - 150
1932495	Fenuron	90.4	83.0	P/P	40 - 150
1932495	Fluridone	49.3	49.3	P/P	40 - 150
1932495	Imidacloprid	213	192	F/F	40 - 160
1932495	Linuron	97.8	95.8	P/P	40 - 150
1932495	MCP	59.6	56.8	P/P	40 - 150
1932495	Primidone	109	101	P/P	40 - 150
1932495	Triclopyr	55.5	59.0	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P332449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932400	Sucralose	6.88	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P332448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932495	2,4-D	0.857	Spike	P	0 - 30
1932495	Acetaminophen	11.2	Spike	P	0 - 30
1932495	Bentazon	3.30	Spike	P	0 - 30
1932495	Carbamazepine	4.90	Spike	P	0 - 30
1932495	Diuron	5.00	Spike	P	0 - 30
1932495	Fenuron	8.51	Spike	P	0 - 30
1932495	Fluridone	0.0367	Spike	P	0 - 30
1932495	Imidacloprid	8.31	Spike	P	0 - 30
1932495	Linuron	1.98	Spike	P	0 - 30
1932495	MCP	4.71	Spike	P	0 - 30
1932495	Primidone	7.65	Spike	P	0 - 30
1932495	Triclopyr	6.15	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: 1932393
Field Sample ID: AF42349

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	96.3	P	30 - 160
EPA 8321B	Carbamazepine-d10	73.6	P	30 - 160
EPA 8321B	Diuron-d6	52.2	P	30 - 160
EPA 8321B	Primidone-d5	86.0	P	30 - 160
EPA 8321B	Sucralose-d6	131	P	40 - 160
USGS O-2060-01	2,4-D-d3	68.7	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	96.3	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	73.6	P	30 - 160
USGS O-2060-01	Diuron-d6	52.2	P	30 - 160
USGS O-2060-01	Primidone-d5	86.0	P	30 - 160
USGS O-2060-01	Sucralose-d6	131	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A79377
Included Lab Sample IDs: 1932393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	103	108	P/P	50 - 150
Acetaminophen	103	104	P/P	60 - 150
Bentazon	117	120	P/P	50 - 150
Carbamazepine	110	109	P/P	60 - 150
Diuron	108	102	P/P	60 - 150
Fenuron	103	101	P/P	60 - 150
Fluridone	103	104	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A79377
Included Lab Sample IDs: 1932393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Imidacloprid	97.1	96.3	P/P	60 - 150
Linuron	105	109	P/P	60 - 150
MCP	98.5	101	P/P	50 - 150
Primidone	101	90.4	P/P	60 - 150
Triclopyr	106	97.8	P/P	50 - 150

Reference Method: EPA 8321B
Run ID: A79445
Included Lab Sample IDs: 1932393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	105	93.1	P/P	60 - 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	MS
						SMP	
EPA 8321B	Sucralose	86.6	88.4	77.9			6.88
USGS O-2060-01	2,4-D	69.5	73.9	74.8			0.857
	Acetaminophen	126	85.1	95.2			11.2
	Bentazon	41.3	29.1	30.2			3.30
	Carbamazepine	124	96.0	91.3			4.90
	Diuron	111	76.4	69.4			5.00
	Fenuron	115	90.4	83.0			8.51
	Fluridone	101	49.3	49.3			0.0367
	Imidacloprid	107	213	192			8.31
	Linuron	115	97.8	95.8			1.98
	MCP	72.8	59.6	56.8			4.71
	Primidone	107	109	101			7.65
	Triclopyr	75.6	55.5	59.0			6.15

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1932393
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1932393
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1932393

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	09/28/2017	10/03/2017	Hoor Shaik	10/05/2017	Juyoung Kim	1932393
USGS O-2060-01	09/28/2017	10/03/2017	Hoor Shaik	10/07/2017	Julie Michelle Frank	1932393