

Chemical Analysis Report

WQAP-2017-11-14-01

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-2017-11-20-21**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection - SROC
2295 Victoria AVE
Suite 364
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Date Certified: 04-DEC-2017 12:56



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: Bayshore Cr @ SR78; Just East of Railroad Tracks

Collection Date/Time: 11/13/2017 09:52

Field ID: AD58449

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945852	EPA 8321B	Sucralose**	0.53		ug/L	P335805	
	USGS O-2060-01	2,4-D	0.0020	UJ	ug/L	P335308	MS
		Diuron	8.0E-04	U	ug/L	P335308	
		Fenuron	0.0080	U	ug/L	P335308	
		Imidacloprid	0.037		ug/L	P335308	
		Bentazon	0.0049	J	ug/L	P335308	MS
		Linuron	0.0040	U	ug/L	P335308	
		Acetaminophen**	0.0080	U	ug/L	P335308	
		MCP	0.0020	UJ	ug/L	P335308	MS
		Carbamazepine**	0.0013	I	ug/L	P335308	
		Triclopyr**	0.0040	UJ	ug/L	P335308	MS
		Primidone**	0.0040	U	ug/L	P335308	
		Fluridone**	4.0E-04	U	ug/L	P335308	

Ref. Method and Comment:

USGS O-2060-01: Refer to the narrative for an explanation of QC Codes.

USGS O-2060-01: Fenuron was detected in the method blank slightly above the MDL.

Sample Location: Just West of N Evalena Rd

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

Field ID: AD58456

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945853	EPA 8321B	Sucralose**	0.74		ug/L	P335805	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P335308	MS
		Diuron	8.0E-04	U	ug/L	P335308	
		Fenuron	0.0080	U	ug/L	P335308	
		Imidacloprid	0.0065		ug/L	P335308	
		Bentazon	0.0011	I	ug/L	P335308	MS
		Linuron	0.0040	U	ug/L	P335308	
		Acetaminophen**	0.0080	U	ug/L	P335308	
		MCP	0.0020	U	ug/L	P335308	MS
		Carbamazepine**	0.014		ug/L	P335308	
		Triclopyr**	0.0040	U	ug/L	P335308	MS
		Primidone**	0.0040	U	ug/L	P335308	
		Fluridone**	9.8E-04	I	ug/L	P335308	

Ref. Method and Comment:

USGS O-2060-01: Results confirmed in re-extraction.

USGS O-2060-01: Results confirmed in re-extraction. Fenuron was detected in the method blank slightly above the MDL.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P335805

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P335308

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	0.011	I	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCPD	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: P335805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	73.8		P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P335308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	68.9	66.4	P/P	40 - 150
Acetaminophen	114	125	P/P	30 - 150
Bentazon	63.7	66.4	P/P	30 - 150
Carbamazepine	132	140	P/P	40 - 150
Diuron	107	103	P/P	40 - 150
Fenuron	140	129	P/P	40 - 150
Fluridone	133	143	P/P	40 - 150
Imidacloprid	108	116	P/P	40 - 160
Linuron	100	107	P/P	40 - 150
MCPD	76.5	70.8	P/P	40 - 150
Primidone	99.8	106	P/P	40 - 150
Triclopyr	74.0	71.2	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P335805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947930	Sucralose	107	115	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P335308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945852	2,4-D	30.7	34.0	F/F	40 - 150
1945852	Acetaminophen	116	121	P/P	30 - 150
1945852	Bentazon	26.0	29.2	F/F	30 - 150
1945852	Carbamazepine	66.3	70.9	P/P	40 - 150
1945852	Diuron	44.7	48.4	P/P	40 - 150
1945852	Fenuron	55.0	57.5	P/P	40 - 150
1945852	Fluridone	65.0	69.3	P/P	40 - 150
1945852	Imidacloprid	135	137	P/P	40 - 160
1945852	Linuron	83.5	83.7	P/P	40 - 150
1945852	MCP	35.7	39.0	F/F	40 - 150
1945852	Primidone	73.0	63.4	P/P	40 - 150
1945852	Triclopyr	30.4	31.1	F/F	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P335805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947930	Sucralose	6.99	Spike	P	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P335308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945852	2,4-D	10.3	Spike	P	0 - 30
1945852	Acetaminophen	4.53	Spike	P	0 - 30
1945852	Bentazon	8.03	Spike	P	0 - 30
1945852	Carbamazepine	6.41	Spike	P	0 - 30
1945852	Diuron	7.92	Spike	P	0 - 30
1945852	Fenuron	4.39	Spike	P	0 - 30
1945852	Fluridone	6.37	Spike	P	0 - 30
1945852	Imidacloprid	0.766	Spike	P	0 - 30
1945852	Linuron	0.129	Spike	P	0 - 30
1945852	MCP	8.88	Spike	P	0 - 30
1945852	Primidone	14.1	Spike	P	0 - 30
1945852	Triclopyr	2.37	Spike	P	0 - 30
LFB	2,4-D	3.65	LCS	P	0 - 30
LFB	Acetaminophen	9.48	LCS	P	0 - 30
LFB	Bentazon	4.15	LCS	P	0 - 30
LFB	Carbamazepine	5.82	LCS	P	0 - 30
LFB	Diuron	4.60	LCS	P	0 - 30
LFB	Fenuron	8.40	LCS	P	0 - 30
LFB	Fluridone	7.15	LCS	P	0 - 30
LFB	Imidacloprid	7.86	LCS	P	0 - 30
LFB	Linuron	6.22	LCS	P	0 - 30
LFB	MCP	7.70	LCS	P	0 - 30
LFB	Primidone	5.86	LCS	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P335308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
LFB	Triclopyr	3.92	LCS	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: 1945852
Field Sample ID: AD58449

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	109	P	30 - 160
EPA 8321B	Carbamazepine-d10	77.4	P	30 - 160
EPA 8321B	Diuron-d6	50.0	P	30 - 160
EPA 8321B	Primidone-d5	75.8	P	30 - 160
EPA 8321B	Sucralose-d6	122	P	40 - 160
USGS O-2060-01	2,4-D-d3	37.0	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	109	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	77.4	P	30 - 160
USGS O-2060-01	Diuron-d6	50.0	P	30 - 160
USGS O-2060-01	Primidone-d5	75.8	P	30 - 160
USGS O-2060-01	Sucralose-d6	122	P	40 - 160

Lab Sample ID: 1945853
Field Sample ID: AD58456

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	106	P	30 - 160
EPA 8321B	Carbamazepine-d10	70.7	P	30 - 160
EPA 8321B	Diuron-d6	56.6	P	30 - 160
EPA 8321B	Primidone-d5	68.6	P	30 - 160
EPA 8321B	Sucralose-d6	115	P	40 - 160
USGS O-2060-01	2,4-D-d3	38.4	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	106	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	70.7	P	30 - 160
USGS O-2060-01	Diuron-d6	56.6	P	30 - 160
USGS O-2060-01	Primidone-d5	68.6	P	30 - 160
USGS O-2060-01	Sucralose-d6	115	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A80422
Included Lab Sample IDs: 1945852, 1945853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	107	95.7	P/P	50 - 150
Acetaminophen	96.8	94.8	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A80422
 Included Lab Sample IDs: 1945852, 1945853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bentazon	133	136	P/P	50 - 150
Carbamazepine	124	123	P/P	60 - 150
Diuron	103	107	P/P	60 - 150
Fenuron	99.4	92.5	P/P	60 - 150
Fluridone	133	136	P/P	60 - 160
Imidacloprid	91.7	87.9	P/P	60 - 150
Linuron	115	102	P/P	60 - 150
MCP	104	101	P/P	50 - 150
Primidone	90.3	89.0	P/P	60 - 150
Triclopyr	103	95.5	P/P	50 - 160

Reference Method: EPA 8321B
 Run ID: A80568
 Included Lab Sample IDs: 1945852, 1945853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	96.0	100	P/P	60 - 150
Sucralose	100	108	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 SMP	MS
EPA 8321B	Sucralose	73.8		107	115			6.99
USGS O-2060-01	2,4-D	68.9	66.4	30.7	34.0	3.65		10.3
	Acetaminophen	114	125	116	121	9.48		4.53
	Bentazon	63.7	66.4	26.0	29.2	4.15		8.03
	Carbamazepine	132	140	66.3	70.9	5.82		6.41
	Diuron	107	103	44.7	48.4	4.60		7.92
	Fenuron	140	129	55.0	57.5	8.40		4.39
	Fluridone	133	143	65.0	69.3	7.15		6.37
	Imidacloprid	108	116	135	137	7.86		0.766
	Linuron	100	107	83.5	83.7	6.22		0.129
	MCP	76.5	70.8	35.7	39.0	7.70		8.88
	Primidone	99.8	106	73.0	63.4	5.86		14.1
	Triclopyr	74.0	71.2	30.4	31.1	3.92		2.37

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1945852, 1945853
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1945852, 1945853
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1945852, 1945853

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	11/14/2017	11/28/2017	Juyoung Kim	11/28/2017	Juyoung Kim	1945852, 1945853
USGS O-2060-01	11/14/2017	11/17/2017	Hoor Shaik	11/17/2017	Juyoung Kim	1945852, 1945853