

Chemical Analysis Report

SO-DIST-2017-09-21-03

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

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 06-OCT-2017 13:40



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: IMKFHCK

Collection Date/Time: 09/20/2017 11:48

Field ID: AF42312

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1930656	EPA 8321B	Sucralose**	0.010	U	ug/L	P332050	
	USGS O-2060-01	2,4-D	0.022		ug/L	P332073	
		Diuron	0.42		ug/L	P332073	
		Fenuron	0.0080	U	ug/L	P332073	
		Imidacloprid	0.44		ug/L	P332073	MS
		Bentazon	0.0031	I	ug/L	P332073	MS
		Linuron	0.0040	U	ug/L	P332073	
		Acetaminophen**	0.0080	UJ	ug/L	P332073	LCS
		MCP	0.0020	U	ug/L	P332073	
		Carbamazepine**	4.0E-04	U	ug/L	P332073	
		Triclopyr**	0.0040	U	ug/L	P332073	
		Primidone**	0.0040	U	ug/L	P332073	
		Fluridone**	5.4E-04	I	ug/L	P332073	

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

Sample Location: IMKSLGH

Collection Date/Time: 09/20/2017 13:18

Field ID: AF42313

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1930657	EPA 8321B	Sucralose**	0.014	I	ug/L	P332050	
	USGS O-2060-01	2,4-D	0.035		ug/L	P332073	
		Diuron	0.0041		ug/L	P332073	
		Fenuron	0.0080	U	ug/L	P332073	
		Imidacloprid	0.034		ug/L	P332073	MS
		Bentazon	8.0E-04	U	ug/L	P332073	MS
		Linuron	0.0040	U	ug/L	P332073	
		Acetaminophen**	0.015	IJ	ug/L	P332073	LCS
		MCP	0.0020	U	ug/L	P332073	
		Carbamazepine**	4.0E-04	U	ug/L	P332073	
		Triclopyr**	0.0040	U	ug/L	P332073	
		Primidone**	0.0040	U	ug/L	P332073	
		Fluridone**	4.0E-04	U	ug/L	P332073	

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P332050

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P332073

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: P332050

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	70.7		P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P332073

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	86.3		P	40 - 150
Acetaminophen	152		F	30 - 150
Bentazon	65.7		P	40 - 150
Carbamazepine	148		P	40 - 150
Diuron	125		P	40 - 150
Fenuron	122		P	40 - 150
Fluridone	135		P	40 - 150
Imidacloprid	112		P	40 - 160
Linuron	125		P	40 - 150
MCP	82.6		P	40 - 150
Primidone	117		P	40 - 150
Triclopyr	78.8		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P332050

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1930507	Sucralose	61.0	66.5	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P332073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1930506	2,4-D	49.8	60.0	P/P	40 - 150
1930506	Acetaminophen	104	125	P/P	30 - 150
1930506	Bentazon	41.9	39.5	P/F	40 - 150
1930506	Carbamazepine	136	144	P/P	40 - 150
1930506	Diuron	94.5	106	P/P	40 - 150
1930506	Fenuron	104	111	P/P	40 - 150
1930506	Fluridone	110	130	P/P	40 - 150
1930506	Imidacloprid	252	268	F/F	40 - 160
1930506	Linuron	101	123	P/P	40 - 150
1930506	MCP	65.4	73.5	P/P	40 - 150
1930506	Primidone	134	148	P/P	40 - 150
1930506	Triclopyr	60.8	63.1	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P332050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1930507	Sucralose	8.66	Spike	P	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P332073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1930506	2,4-D	4.29	Spike	P	0 - 30
1930506	Acetaminophen	18.2	Spike	P	0 - 30
1930506	Bentazon	3.23	Spike	P	0 - 30
1930506	Carbamazepine	5.64	Spike	P	0 - 30
1930506	Diuron	10.4	Spike	P	0 - 30
1930506	Fenuron	7.13	Spike	P	0 - 30
1930506	Fluridone	16.5	Spike	P	0 - 30
1930506	Imidacloprid	5.18	Spike	P	0 - 30
1930506	Linuron	19.2	Spike	P	0 - 30
1930506	MCP	11.6	Spike	P	0 - 30
1930506	Primidone	9.88	Spike	P	0 - 30
1930506	Triclopyr	3.62	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: 1930656
Field Sample ID: AF42312

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

Lab Sample ID: 1930656
Field Sample ID: AF42312

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	104	P	30 - 160
EPA 8321B	Carbamazepine-d10	87.9	P	30 - 160
EPA 8321B	Diuron-d6	65.1	P	30 - 160
EPA 8321B	Primidone-d5	110	P	30 - 160
EPA 8321B	Sucralose-d6	64.9	P	40 - 160
USGS O-2060-01	2,4-D-d3	80.0	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	104	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	87.9	P	30 - 160
USGS O-2060-01	Diuron-d6	65.1	P	30 - 160
USGS O-2060-01	Primidone-d5	110	P	30 - 160
USGS O-2060-01	Sucralose-d6	64.9	P	40 - 160

Lab Sample ID: 1930657
Field Sample ID: AF42313

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	89.1	P	30 - 160
EPA 8321B	Carbamazepine-d10	74.8	P	30 - 160
EPA 8321B	Diuron-d6	44.3	P	30 - 160
EPA 8321B	Primidone-d5	81.5	P	30 - 160
EPA 8321B	Sucralose-d6	69.6	P	40 - 160
USGS O-2060-01	2,4-D-d3	59.9	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	89.1	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	74.8	P	30 - 160
USGS O-2060-01	Diuron-d6	44.3	P	30 - 160
USGS O-2060-01	Primidone-d5	81.5	P	30 - 160
USGS O-2060-01	Sucralose-d6	69.6	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A79179
Included Lab Sample IDs: 1930656, 1930657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	92.7	110	P/P	50 - 150
Acetaminophen	98.1	104	P/P	60 - 150
Bentazon	143	146	P/P	50 - 150
Carbamazepine	111	113	P/P	60 - 150
Diuron	101	103	P/P	60 - 150
Fenuron	98.4	101	P/P	60 - 150
Fluridone	113	111	P/P	60 - 160
Imidacloprid	101	94.3	P/P	60 - 150
Linuron	107	105	P/P	60 - 150
MCP	102	95.4	P/P	50 - 150
Primidone	105	97.9	P/P	60 - 150
Triclopyr	106	98.4	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A79230

Included Lab Sample IDs: 1930656, 1930657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	98.6	108	P/P	60 - 150
Sucralose	99.9	98.6	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	70.7	61.0 66.5			8.66
USGS O-2060-01	2,4-D	86.3	49.8 60.0			4.29
	Acetaminophen	152	104 125			18.2
	Bentazon	65.7	41.9 39.5			3.23
	Carbamazepine	148	136 144			5.64
	Diuron	125	94.5 106			10.4
	Fenuron	122	104 111			7.13
	Fluridone	135	110 130			16.5
	Imidacloprid	112	252 268			5.18
	Linuron	125	101 123			19.2
	MCPD	82.6	65.4 73.5			11.6
	Primidone	117	134 148			9.88
	Triclopyr	78.8	60.8 63.1			3.62

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1930656, 1930657
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1930656, 1930657
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1930656, 1930657

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	09/21/2017	09/25/2017	Fe-Val Siddell	09/29/2017	Juyoung Kim	1930656, 1930657
USGS O-2060-01	09/21/2017	09/25/2017	Hoor Shaik	09/29/2017	Julie Michelle Frank	1930656, 1930657