

Chemical Analysis Report

SO-DIST-2017-06-21-02

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

Event Description: **Collier County Tracers & Markers**

Request ID: **RQ-2017-05-01-13**

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: Corey Anderson

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 12-JUL-2017 10:43



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: 06/20/2017 13:21

Field ID: AT37175

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1907911	EPA 8321B	Sucralose**	0.40		ug/L	P327308	RPD
	USGS O-2060-01	2,4-D	2.7		ug/L	P327266	
		Diuron	0.0062		ug/L	P327266	
		Fenuron	0.0080	U	ug/L	P327266	MS, RPD
		Imidacloprid	0.15		ug/L	P327266	
		Bentazon	0.090		ug/L	P327266	
		Linuron	0.0040	U	ug/L	P327266	
		Acetaminophen**	0.0080	U	ug/L	P327266	RPD
		MCP	0.0020	U	ug/L	P327266	
		Carbamazepine**	0.0011	I	ug/L	P327266	
		Triclopyr**	0.0040	U	ug/L	P327266	
		Primidone**	0.0040	U	ug/L	P327266	
		Fluridone**	0.36		ug/L	P327266	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P327308

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01
Batch ID: P327266

Component	Result	Code	Units
2,4-D	8.0E-04	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: P327308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	87.5		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P327266

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	67.2		P	40 - 150
Acetaminophen	70.8		P	40 - 150
Bentazon	61.0		P	40 - 150
Carbamazepine	120		P	40 - 150
Diuron	117		P	40 - 150
Fenuron	114		P	40 - 150
Fluridone	98.0		P	40 - 150
Imidacloprid	96.0		P	40 - 160
Linuron	113		P	40 - 150
MCP	75.4		P	40 - 150
Primidone	109		P	40 - 150
Triclopyr	78.4		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P327308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1907962	Sucralose	44.5	77.5	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P327266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1907845	2,4-D	72.2	79.0	P/P	40 - 150
1907845	Acetaminophen	97.2	61.4	P/P	40 - 150
1907845	Bentazon	50.8	49.6	P/P	40 - 150
1907845	Carbamazepine	122	120	P/P	40 - 150
1907845	Diuron	106	101	P/P	40 - 150
1907845	Fenuron	188	101	F/P	40 - 150
1907845	Fluridone	68.0	80.2	P/P	40 - 150
1907845	Imidacloprid	134	128	P/P	40 - 160
1907845	Linuron	99.0	100	P/P	40 - 150
1907845	MCP	64.8	62.0	P/P	40 - 150
1907845	Primidone	109	103	P/P	40 - 150
1907845	Triclopyr	65.4	63.8	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P327308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1907962	Sucralose	46.5	Spike	F	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P327266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1907845	2,4-D	3.94	Spike	P	0 - 30
1907845	Acetaminophen	45.1	Spike	F	0 - 30
1907845	Bentazon	2.39	Spike	P	0 - 30
1907845	Carbamazepine	1.82	Spike	P	0 - 30
1907845	Diuron	4.44	Spike	P	0 - 30
1907845	Fenuron	60.2	Spike	F	0 - 30
1907845	Fluridone	13.5	Spike	P	0 - 30
1907845	Imidacloprid	4.13	Spike	P	0 - 30
1907845	Linuron	1.20	Spike	P	0 - 30
1907845	MCP	4.42	Spike	P	0 - 30
1907845	Primidone	5.67	Spike	P	0 - 30
1907845	Triclopyr	2.48	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: 1907911
Field Sample ID: AT37175

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	68.5	P	40 - 160
USGS O-2060-01	2,4-D-d3	119	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	123	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	109	P	30 - 160
USGS O-2060-01	Diuron-d6	80.8	P	30 - 160
USGS O-2060-01	Primidone-d5	97.0	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A77371
Included Lab Sample IDs: 1907911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	85.6	90.0	P/P	50 - 150
Acetaminophen	116	113	P/P	60 - 150
Bentazon	91.6	88.4	P/P	50 - 150
Carbamazepine	113	117	P/P	60 - 150
Diuron	110	114	P/P	60 - 150
Fenuron	114	114	P/P	60 - 150
Fluridone	104	98.4	P/P	60 - 160
Imidacloprid	95.6	92.0	P/P	60 - 150
Linuron	113	118	P/P	60 - 150
MCP	84.8	82.0	P/P	50 - 150
Primidone	96.4	108	P/P	60 - 150
Triclopyr	86.0	87.6	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A77393
 Included Lab Sample IDs: 1907911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	144	86.2	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	LCS	Precision SMP	MS
EPA 8321B	Sucralose	87.5	44.5 77.5			46.5
USGS O-2060-01	2,4-D	67.2	72.2 79.0			3.94
	Acetaminophen	70.8	97.2 61.4			45.1
	Bentazon	61.0	50.8 49.6			2.39
	Carbamazepine	120	122 120			1.82
	Diuron	117	106 101			4.44
	Fenuron	114	188 101			60.2
	Fluridone	98.0	68.0 80.2			13.5
	Imidacloprid	96.0	134 128			4.13
	Linuron	113	99.0 100			1.20
	MCP	75.4	64.8 62.0			4.42
	Primidone	109	109 103			5.67
	Triclopyr	78.4	65.4 63.8			2.48

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1907911
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1907911
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1907911

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	06/21/2017	06/27/2017	Mohammad Ghaffari	06/27/2017	Mohammad Ghaffari	1907911
USGS O-2060-01	06/21/2017	06/22/2017	Hoor Shaik	06/26/2017	Juyoung Kim	1907911