

Chemical Analysis Report

SO-DIST-2018-07-10-01

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

Event Description: **Collier County Markers & Tracers (GORDONRIV)**
Request ID: **RQ-2018-02-19-46**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 20-JUL-2018 11:27

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: GORDONRIV

Collection Date/Time: 07/09/2018 10:45

Field ID: AF49418

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2005621	EPA 8321B	2,4-D	0.10		ug/L	P348199	MS
		Sucralose**	1.5		ug/L	P348129	
		Bentazon	0.26		ug/L	P348199	
		MCPP	0.0031	I	ug/L	P348199	MS
		Triclopyr**	0.0040	U	ug/L	P348199	
		Imidacloprid	0.11		ug/L	P348199	
		Diuron	0.0025	I	ug/L	P348199	
		Pyraclostrobin**	0.0020	U	ug/L	P348199	
		Primidone**	0.0087	I	ug/L	P348199	
		Linuron	0.0040	U	ug/L	P348199	
		Acetaminophen**	0.0080	U	ug/L	P348199	
		Fenuron	0.016	U	ug/L	P348199	
		Imazapyr**	0.079		ug/L	P348199	
		Carbamazepine**	0.0012	I	ug/L	P348199	
		Fluridone**	0.057		ug/L	P348199	
		Hydrocodone**	8.0E-04	U	ug/L	P348199	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P348129

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P348199

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	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P348129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	102		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P348199

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	111		P	40 - 150
Acetaminophen	96.2		P	30 - 150
Bentazon	102		P	30 - 150
Carbamazepine	88.1		P	40 - 150
Diuron	79.2		P	40 - 150
Fenuron	108		P	40 - 150
Fluridone	96.1		P	40 - 150
Hydrocodone	95.5		P	40 - 150
Imazapyr	106		P	40 - 150
Imidacloprid	107		P	40 - 160
Linuron	91.7		P	40 - 150
MCPP	110		P	40 - 150
Primidone	99.7		P	40 - 150
Pyraclostrobin	83.0		P	40 - 150
Triclopyr	110		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P348129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2005568	Sucralose	92.9	97.1	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P348199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2005378	2,4-D	151	162	F/F	40 - 150
2005378	Acetaminophen	99.2	83.1	P/P	30 - 150
2005378	Bentazon	84.7	87.2	P/P	30 - 150
2005378	Carbamazepine	79.1	69.1	P/P	40 - 150
2005378	Diuron	66.1	55.9	P/P	40 - 150
2005378	Fenuron	96.6	81.8	P/P	40 - 150
2005378	Fluridone	88.4	76.2	P/P	40 - 150
2005378	Hydrocodone	102	84.9	P/P	40 - 150
2005378	Imazapyr	119	95.9	P/P	40 - 150
2005378	Imidacloprid	145	116	P/P	40 - 160
2005378	Linuron	84.6	74.4	P/P	40 - 150
2005378	MCPP	145	152	P/F	40 - 150
2005378	Primidone	100	88.9	P/P	40 - 150
2005378	Pyraclostrobin	86.6	71.0	P/P	40 - 150
2005378	Triclopyr	135	149	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P348129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2005568	Sucralose	4.29	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P348199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2005378	2,4-D	7.28	Spike	P	0 - 30
2005378	Acetaminophen	17.7	Spike	P	0 - 30
2005378	Bentazon	2.92	Spike	P	0 - 30
2005378	Carbamazepine	13.2	Spike	P	0 - 30
2005378	Diuron	13.6	Spike	P	0 - 30
2005378	Fenuron	16.6	Spike	P	0 - 30
2005378	Fluridone	14.9	Spike	P	0 - 30
2005378	Hydrocodone	18.3	Spike	P	0 - 30
2005378	Imazapyr	19.8	Spike	P	0 - 30
2005378	Imidacloprid	16.8	Spike	P	0 - 30
2005378	Linuron	12.8	Spike	P	0 - 30
2005378	MCP	4.38	Spike	P	0 - 30
2005378	Primidone	11.9	Spike	P	0 - 30
2005378	Pyraclostrobin	19.8	Spike	P	0 - 30
2005378	Triclopyr	9.99	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: 2005621
Field Sample ID: AF49418

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	153	P	30 - 160
EPA 8321B	Acetaminophen-d4	83.5	P	30 - 160
EPA 8321B	Carbamazepine-d10	61.1	P	30 - 160
EPA 8321B	Diuron-d6	57.5	P	30 - 160
EPA 8321B	Primidone-d5	86.0	P	30 - 160
EPA 8321B	Sucralose-d6	117	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A85199
Included Lab Sample IDs: 2005621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	113	112	P/P	60 - 150
Carbamazepine	115	115	P/P	60 - 150
Diuron	103	100	P/P	60 - 150
Fenuron	107	106	P/P	60 - 150
Fluridone	114	114	P/P	60 - 160
Hydrocodone	109	109	P/P	60 - 150
Imazapyr	98.8	118	P/P	50 - 150
Imidacloprid	103	104	P/P	60 - 150
Linuron	115	110	P/P	60 - 150
Primidone	99.9	98.5	P/P	60 - 150
Pyraclostrobin	104	104	P/P	60 - 150

Reference Method: EPA 8321B
Run ID: A85232
Included Lab Sample IDs: 2005621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	99.3	98.6	P/P	50 - 150
Bentazon	136	132	P/P	50 - 150
MCPP	95.7	97.4	P/P	50 - 150
Triclopyr	94.1	102	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A85319
Included Lab Sample IDs: 2005621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	140	139	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 SMP	MS
			LCS			
EPA 8321B	2,4-D	111	151	162		7.28
	Acetaminophen	96.2	99.2	83.1		17.7
	Bentazon	102	84.7	87.2		2.92
	Carbamazepine	88.1	79.1	69.1		13.2
	Diuron	79.2	66.1	55.9		13.6
	Fenuron	108	96.6	81.8		16.6
	Fluridone	96.1	88.4	76.2		14.9
	Hydrocodone	95.5	102	84.9		18.3
	Imazapyr	106	119	95.9		19.8
	Imidacloprid	107	145	116		16.8
	Linuron	91.7	84.6	74.4		12.8
	MCP	110	145	152		4.38
	Primidone	99.7	100	88.9		11.9
	Pyraclostrobin	83.0	86.6	71.0		19.8
	Sucralose	102	92.9	97.1		4.29
	Triclopyr	110	135	149		9.99

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2005621
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2005621

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/10/2018	07/11/2018 14:00	Hoor Shaik	07/12/2018 20:58	Juyoung Kim	2005621
	07/10/2018	07/11/2018 14:00	Hoor Shaik	07/14/2018 01:47	Juyoung Kim	2005621
	07/10/2018	07/11/2018 14:00	Hoor Shaik	07/14/2018 10:26	Juyoung Kim	2005621
	07/10/2018	07/16/2018 10:00	Mohammad Ghaffari	07/16/2018 17:28	Mohammad Ghaffari	2005621