

Chemical Analysis Report

SO-DIST-2018-06-13-01

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-2018-02-19-43**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
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Fort Myers, FL 33901-3381
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 27-JUN-2018 14:41

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: Gordon RIV

Collection Date/Time: 06/12/2018 09:39

Field ID: AF48900

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000226	EPA 8321B	2,4-D	0.0049	I	ug/L	P346705	RPD
		Bentazon	0.23		ug/L	P346705	RPD
		MCP	0.0021	I	ug/L	P346705	RPD
		Triclopyr**	0.0040	U	ug/L	P346705	RPD
		Imidacloprid	0.030		ug/L	P346705	
		Diuron	0.0026	I	ug/L	P346705	
		Pyraclostrobin**	0.0020	U	ug/L	P346705	MS, RPD
		Primidone**	0.011	I	ug/L	P346705	
		Linuron	0.0040	U	ug/L	P346705	
		Acetaminophen**	0.0080	U	ug/L	P346705	
		Fenuron	0.016	U	ug/L	P346705	
		Imazapyr**	0.14		ug/L	P346705	
		Carbamazepine**	0.0013	I	ug/L	P346705	
		Fluridone**	0.043		ug/L	P346705	
		Hydrocodone**	8.0E-04	U	ug/L	P346705	
		Sucralose**	0.62		ug/L	P346868	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P346705

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

Reference Method: EPA 8321B
Batch ID: P346868

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P346705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	64.3		P	40 - 150
Acetaminophen	82.6		P	30 - 150
Bentazon	76.8		P	30 - 150
Carbamazepine	92.1		P	40 - 150
Diuron	85.2		P	40 - 150
Fenuron	101		P	40 - 150
Fluridone	73.6		P	40 - 150
Hydrocodone	92.9		P	40 - 150
Imazapyr	90.5		P	40 - 150
Imidacloprid	110		P	40 - 160
Linuron	67.8		P	40 - 150
MCPP	82.1		P	40 - 150
Primidone	99.0		P	40 - 150
Pyraclostrobin	42.3		P	40 - 150
Triclopyr	87.7		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P346868

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	77.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P346705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000080	2,4-D	51.7	76.8	P/P	40 - 150
2000080	Acetaminophen	80.8	76.7	P/P	30 - 150
2000080	Bentazon	57.1	40.4	P/P	30 - 150
2000080	Carbamazepine	71.8	64.3	P/P	40 - 150
2000080	Diuron	62.5	48.6	P/P	40 - 150
2000080	Fenuron	51.3	50.5	P/P	40 - 150
2000080	Fluridone	44.9	46.9	P/P	40 - 150
2000080	Hydrocodone	65.4	59.6	P/P	40 - 150
2000080	Imazapyr	89.1	66.6	P/P	40 - 150
2000080	Imidacloprid	118	112	P/P	40 - 160
2000080	Linuron	60.1	53.6	P/P	40 - 150
2000080	MCPP	77.2	108	P/P	40 - 150
2000080	Primidone	60.8	53.4	P/P	40 - 150
2000080	Pyraclostrobin	3.91	9.89	F/F	40 - 150
2000080	Triclopyr	58.9	103	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P346868

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000693	Sucralose	72.9	86.4	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P346705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000080	2,4-D	39.0	Spike	F	0 - 30
2000080	Acetaminophen	5.14	Spike	P	0 - 30
2000080	Bentazon	34.3	Spike	F	0 - 30
2000080	Carbamazepine	11.1	Spike	P	0 - 30
2000080	Diuron	24.9	Spike	P	0 - 30
2000080	Fenuron	1.63	Spike	P	0 - 30
2000080	Fluridone	4.36	Spike	P	0 - 30
2000080	Hydrocodone	9.24	Spike	P	0 - 30
2000080	Imazapyr	10.3	Spike	P	0 - 30
2000080	Imidacloprid	4.81	Spike	P	0 - 30
2000080	Linuron	11.5	Spike	P	0 - 30
2000080	MCP	33.1	Spike	F	0 - 30
2000080	Primidone	13.0	Spike	P	0 - 30
2000080	Pyraclostrobin	86.8	Spike	F	0 - 30
2000080	Triclopyr	54.0	Spike	F	0 - 30

Reference Method: EPA 8321B
 Batch ID: P346868

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000693	Sucralose	17.0	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: 2000226
Field Sample ID: AF48900

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	56.5	P	30 - 160
EPA 8321B	Acetaminophen-d4	86.9	P	30 - 160
EPA 8321B	Carbamazepine-d10	84.0	P	30 - 160
EPA 8321B	Diuron-d6	74.8	P	30 - 160
EPA 8321B	Diuron-d6	73.9	P	30 - 160
EPA 8321B	Primidone-d5	98.5	P	30 - 160
EPA 8321B	Sucralose-d6	68.9	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A84665
 Included Lab Sample IDs: 2000226

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	76.0	77.8	P/P	60 - 160

Reference Method: EPA 8321B
 Run ID: A84728
 Included Lab Sample IDs: 2000226

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	97.9	104	P/P	50 - 150
Bentazon	112	110	P/P	50 - 150
MCPP	97.2	93.0	P/P	50 - 150
Pyraclostrobin	146	130	P/P	60 - 150
Triclopyr	98.8	113	P/P	50 - 160

Reference Method: EPA 8321B
 Run ID: A84751
 Included Lab Sample IDs: 2000226

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	107	106	P/P	60 - 160
Carbamazepine	119	147	P/P	60 - 160
Diuron	123	134	P/P	60 - 150
Fenuron	106	108	P/P	60 - 150
Fluridone	109	109	P/P	60 - 160
Hydrocodone	103	103	P/P	60 - 150
Imazapyr	103	95.5	P/P	50 - 150
Imidacloprid	113	108	P/P	60 - 150
Linuron	115	108	P/P	60 - 150
Primidone	105	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		Precision SMP	MS
			LCS			
EPA 8321B	2,4-D	64.3	51.7	76.8		39.0
	Acetaminophen	82.6	80.8	76.7		5.14
	Bentazon	76.8	57.1	40.4		34.3
	Carbamazepine	92.1	71.8	64.3		11.1
	Diuron	85.2	62.5	48.6		24.9
	Fenuron	101	51.3	50.5		1.63
	Fluridone	73.6	44.9	46.9		4.36
	Hydrocodone	92.9	65.4	59.6		9.24
	Imazapyr	90.5	89.1	66.6		10.3
	Imidacloprid	110	118	112		4.81
	Linuron	67.8	60.1	53.6		11.5
	MCP	82.1	77.2	108		33.1
	Primidone	99.0	60.8	53.4		13.0
	Pyraclostrobin	42.3	3.91	9.89		86.8
	Sucralose	77.2	72.9	86.4		17.0
	Triclopyr	87.7	58.9	103		54.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2000226

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	06/13/2018	06/13/2018 16:30	Hoor Shaik	06/15/2018 01:18	Juyoung Kim	2000226
	06/13/2018	06/13/2018 16:30	Hoor Shaik	06/18/2018 17:07	Juyoung Kim	2000226
	06/13/2018	06/13/2018 16:30	Hoor Shaik	06/19/2018 06:57	Juyoung Kim	2000226
	06/13/2018	06/18/2018 11:00	Juyoung Kim	06/18/2018 17:50	Mohammad Ghaffari	2000226