

Chemical Analysis Report

SO-DIST-2021-10-22-01

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

Event Description: **2021 SMP : Collier County Cow Slough**
Request ID: **RQ-2021-09-06-64**
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: William Mullen

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 09-NOV-2021 09:42

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: IMKFSHCK

Collection Date/Time: 10/21/2021 09:48

Field ID: AF66571

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2285710	EPA 8276	Chlordane	2.6	U	ng/L	P405580	
		Toxaphene	15	U	ng/L	P405580	
2285715	EPA 8321B	2,4-D	0.031		ug/L	P405462	
		Acesulfame K	0.10	U	ug/L	P405460	
		2,4,5-T	0.0040	U	ug/L	P405462	
		AMPA	0.99		ug/L	P405460	
		Acetaminophen	0.0080	U	ug/L	P405462	
		Acetamiprid	0.0020	U	ug/L	P405462	
		Endothall	0.25	U	ug/L	P405460	
		Glufosinate	0.10	U	ug/L	P405460	
		Glyphosate	1.6		ug/L	P405460	
		Afidopyropen	0.0020	U	ug/L	P405462	
		Bentazon	0.0036		ug/L	P405462	
		Sucralose	0.013	I	ug/L	P405460	
		Benzovindiflupyr	0.0020	U	ug/L	P405462	
		Carbamazepine	8.0E-04	U	ug/L	P405462	
		Clothianidin	0.0036	I	ug/L	P405462	
		Dinotefuran	0.0020	I	ug/L	P405462	
		Diuron	0.0020	U	ug/L	P405462	
		Fenuron	0.016	U	ug/L	P405462	
		Fluridone	0.0025	I	ug/L	P405462	
		Imazapyr	0.11		ug/L	P405462	
		Hydrocodone	0.0020	U	ug/L	P405462	
		Ibuprofen	0.020	U	ug/L	P405462	
		Imidacloprid	0.010		ug/L	P405462	MS
		Linuron	0.0040	U	ug/L	P405462	
		Mandestrobin	0.0020	U	ug/L	P405462	
		MCPP	0.0040	U	ug/L	P405462	
		Naproxen	0.0080	U	ug/L	P405462	
		Primidone	0.0040	U	ug/L	P405462	RPD
		Pyraclostrobin	0.0020	U	ug/L	P405462	
		Thiamethoxam	0.0038	I	ug/L	P405462	MS
		Tolfenpyrad	0.0020	U	ug/L	P405462	
		Triclopyr	0.0040	U	ug/L	P405462	

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 8276

Batch ID: P405580

Component	Result	Code	Units
Chlordane	2.5	U	ng/L
Chlordane	2.5	U	ng/L
Toxaphene	15	U	ng/L
Toxaphene	15	U	ng/L

Reference Method: EPA 8321B

Batch ID: P405460

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B

Batch ID: P405462

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
2,4,5-T	0.0040	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCPP	0.0040	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8276
 Batch ID: P405580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlordane	97.8	102	P/P	56 - 117
Toxaphene	78.2	79.3	P/P	45 - 116

Reference Method: EPA 8321B
 Batch ID: P405460

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	76.6		P	40 - 150
AMPA	100		P	40 - 160
Endothall	66.6		P	40 - 150
Glufosinate	110		P	40 - 160
Glyphosate	89.0		P	40 - 160
Sucralose	91.0		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P405462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	128		P	40 - 150
2,4,5-T	123		P	40 - 150
Acetaminophen	89.6		P	30 - 150
Acetamiprid	100		P	40 - 150
Afidopyropen	81.4		P	40 - 150
Bentazon	98.3		P	30 - 150
Benzovindiflupyr	98.1		P	40 - 150
Carbamazepine	112		P	40 - 150
Clothianidin	94.7		P	40 - 150
Dinotefuran	93.3		P	40 - 150
Diuron	97.1		P	40 - 150
Fenuron	109		P	40 - 150
Fluridone	105		P	40 - 150
Hydrocodone	96.2		P	40 - 150
Ibuprofen	77.9		P	40 - 150
Imazapyr	106		P	40 - 150
Imidacloprid	108		P	40 - 150
Linuron	111		P	40 - 150
Mandestrobin	103		P	40 - 150
MCPP	124		P	40 - 150
Naproxen	70.6		P	40 - 150
Primidone	91.7		P	40 - 150
Pyraclostrobin	90.4		P	40 - 150
Thiamethoxam	108		P	40 - 150
Tolfenpyrad	58.9		P	30 - 150
Triclopyr	105		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8276
 Batch ID: P405580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285818	Chlordane	101	103	P/P	47 - 128
2285818	Toxaphene	86.2	95.2	P/P	11 - 163

Reference Method: EPA 8321B
 Batch ID: P405460

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285715	Acesulfame K	88.2	80.8	P/P	40 - 150
2285715	AMPA	83.8	82.3	P/P	40 - 160
2285715	Endothall	92.7	95.1	P/P	40 - 150
2285715	Glufosinate	111	104	P/P	40 - 160
2285715	Glyphosate	57.8	57.2	P/P	40 - 160
2285715	Sucralose	99.6	98.2	P/P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P405462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285006	2,4-D	129	129	P/P	40 - 150
2285006	2,4,5-T	127	138	P/P	40 - 150
2285006	Acetaminophen	102	114	P/P	30 - 150
2285006	Acetamiprid	104	107	P/P	40 - 150
2285006	Afidopyropen	86.0	96.9	P/P	40 - 150
2285006	Benzovindiflupyr	79.5	79.3	P/P	40 - 150
2285006	Carbamazepine	97.6	110	P/P	40 - 150
2285006	Clothianidin	108	108	P/P	40 - 150
2285006	Dinotefuran	119	125	P/P	40 - 150
2285006	Diuron	66.9	68.6	P/P	40 - 150
2285006	Fenuron	87.0	95.3	P/P	40 - 150
2285006	Fluridone	72.8	89.3	P/P	40 - 150
2285006	Hydrocodone	100	107	P/P	40 - 150
2285006	Ibuprofen	77.3	68.1	P/P	40 - 150
2285006	Imidacloprid	194	211	F/F	40 - 150
2285006	Linuron	87.7	94.4	P/P	40 - 150
2285006	Mandestrobin	82.7	85.3	P/P	40 - 150
2285006	MCPP	128	135	P/P	40 - 150
2285006	Naproxen	84.2	83.7	P/P	40 - 150
2285006	Primidone	66.9	122	P/P	40 - 150
2285006	Pyraclostrobin	74.6	79.8	P/P	40 - 150
2285006	Thiamethoxam	157	170	F/F	40 - 150
2285006	Tolfenpyrad	52.3	56.2	P/P	30 - 150
2285006	Triclopyr	112	126	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8276
Batch ID: P405580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285818	Chlordane	2.18	Spike	P	0 - 30
2285818	Toxaphene	9.91	Spike	P	0 - 30
LFB	Chlordane	3.88	LCS	P	0 - 30
LFB	Toxaphene	1.34	LCS	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P405460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285715	Acesulfame K	8.83	Spike	P	0 - 30
2285715	AMPA	1.22	Spike	P	0 - 30
2285715	Endothall	2.51	Spike	P	0 - 30
2285715	Glufosinate	7.08	Spike	P	0 - 30
2285715	Glyphosate	0.552	Spike	P	0 - 30
2285715	Sucralose	1.43	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P405462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285006	2,4-D	0.0340	Spike	P	0 - 30
2285006	2,4,5-T	8.19	Spike	P	0 - 30
2285006	Acetaminophen	11.0	Spike	P	0 - 30
2285006	Acetamiprid	2.65	Spike	P	0 - 30
2285006	Afidopyropen	11.9	Spike	P	0 - 30
2285006	Bentazon	6.64	Spike	P	0 - 30
2285006	Benzovindiflupyr	0.205	Spike	P	0 - 30
2285006	Carbamazepine	11.1	Spike	P	0 - 30
2285006	Clothianidin	0.776	Spike	P	0 - 30
2285006	Dinotefuran	4.50	Spike	P	0 - 30
2285006	Diuron	2.18	Spike	P	0 - 30
2285006	Fenuron	9.07	Spike	P	0 - 30
2285006	Fluridone	11.1	Spike	P	0 - 30
2285006	Hydrocodone	6.39	Spike	P	0 - 30
2285006	Ibuprofen	12.6	Spike	P	0 - 30
2285006	Imazapyr	7.50	Spike	P	0 - 30
2285006	Imidacloprid	7.58	Spike	P	0 - 30
2285006	Linuron	7.27	Spike	P	0 - 30
2285006	Mandestrobin	3.01	Spike	P	0 - 30
2285006	MCPP	5.13	Spike	P	0 - 30
2285006	Naproxen	0.519	Spike	P	0 - 30
2285006	Primidone	54.0	Spike	F	0 - 30
2285006	Pyraclostrobin	6.78	Spike	P	0 - 30
2285006	Thiamethoxam	7.69	Spike	P	0 - 30
2285006	Tolfenpyrad	7.11	Spike	P	0 - 30
2285006	Triclopyr	12.0	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2285710
Field Sample ID: AF66571

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8276	Decachlorobiphenyl	80.5	P	29 - 92.0
EPA 8276	PCNB	77.2	P	43 - 134

Lab Sample ID: 2285715
Field Sample ID: AF66571

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	126	P	30 - 160
EPA 8321B	Acetaminophen-d4	104	P	30 - 160
EPA 8321B	Carbamazepine-d10	105	P	30 - 160
EPA 8321B	Diuron-d6	72.9	P	30 - 160
EPA 8321B	Endothall-d6	89.8	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	76.2	P	30 - 160
EPA 8321B	Ibuprofen-d3	59.9	P	30 - 160
EPA 8321B	Primidone-d5	102	P	30 - 160
EPA 8321B	Sucralose-d6	92.7	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A108478
 Included Lab Sample IDs: 2285715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	92.7	97.6	P/P	60 - 160
Glufosinate	106	117	P/P	60 - 160
Glyphosate	81.4	91.7	P/P	60 - 160

Reference Method: EPA 8321B
 Run ID: A108503
 Included Lab Sample IDs: 2285715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	106	91.6	P/P	60 - 160
Endothall	74.0	77.1	P/P	60 - 160
Sucralose	90.5	90.4	P/P	60 - 160

Reference Method: EPA 8321B
 Run ID: A108578
 Included Lab Sample IDs: 2285715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	118	108	P/P	50 - 150
2,4,5-T	107	116	P/P	50 - 150
Acetaminophen	82.5	88.5	P/P	60 - 160
Acetamiprid	99.8	107	P/P	50 - 150
Afidopyropen	94.5	88.8	P/P	50 - 150
Bentazon	102	115	P/P	50 - 160
Benzovindiflupyr	107	113	P/P	50 - 150
Carbamazepine	105	106	P/P	60 - 150
Clothianidin	111	110	P/P	60 - 150
Dinotefuran	108	98.5	P/P	50 - 150
Diuron	100	105	P/P	60 - 160
Fenuron	93.7	101	P/P	60 - 150
Fluridone	104	104	P/P	60 - 160
Hydrocodone	90.1	96.3	P/P	60 - 150
Ibuprofen	86.4	71.3	P/P	50 - 160
Imazapyr	86.6	87.3	P/P	50 - 150
Imidacloprid	96.2	100	P/P	60 - 150
Linuron	91.2	112	P/P	60 - 150
Mandestrobin	97.1	101	P/P	50 - 150
MCPP	104	110	P/P	50 - 150
Naproxen	112	70.2	P/P	50 - 160
Primidone	125	123	P/P	60 - 150
Pyraclostrobin	102	105	P/P	60 - 150
Thiamethoxam	96.6	101	P/P	50 - 150
Tolfenpyrad	98.3	108	P/P	60 - 150
Triclopyr	99.3	116	P/P	50 - 150

Reference Method: EPA 8276
 Run ID: A108629
 Included Lab Sample IDs: 2285710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chlordane	97.3		P	80 - 120

Quality Assurance Report Calibration Verification

Reference Method: EPA 8276
Run ID: A108629
Included Lab Sample IDs: 2285710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Toxaphene	102		P	80 - 120

* 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	MS
							SMP	
EPA 8276	Chlordane	97.8	102	103	101	3.88		2.18
	Toxaphene	78.2	79.3	86.2	95.2	1.34		9.91
EPA 8321B	2,4-D	128		129	129			0.0340
	2,4,5-T	123		127	138			8.19
	Acesulfame K	76.6		88.2	80.8			8.83
	Acetaminophen	89.6		102	114			11.0
	Acetamiprid	100		104	107			2.65
	Afidopyropen	81.4		86.0	96.9			11.9
	AMPA	100		83.8	82.3			1.22
	Bentazon	98.3						6.64
	Benzovindiflupyr	98.1		79.5	79.3			0.205
	Carbamazepine	112		97.6	110			11.1
	Clothianidin	94.7		108	108			0.776
	Dinotefuran	93.3		119	125			4.50
	Diuron	97.1		66.9	68.6			2.18
	Endothall	66.6		92.7	95.1			2.51
	Fenuron	109		87.0	95.3			9.07
	Fluridone	105		72.8	89.3			11.1
	Glufosinate	110		111	104			7.08
	Glyphosate	89.0		57.8	57.2			0.552
	Hydrocodone	96.2		100	107			6.39
	Ibuprofen	77.9		77.3	68.1			12.6
	Imazapyr	106						7.50
	Imidacloprid	108		194	211			7.58
	Linuron	111		87.7	94.4			7.27
	Mandestrobin	103		82.7	85.3			3.01
	MCPP	124		128	135			5.13
	Naproxen	70.6		84.2	83.7			0.519
	Primidone	91.7		66.9	122			54.0
	Pyraclostrobin	90.4		74.6	79.8			6.78
	Sucralose	91.0		99.6	98.2			1.43
	Thiamethoxam	108		157	170			7.69
	Tolfenpyrad	58.9		52.3	56.2			7.11
	Triclopyr	105		112	126			12.0

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8276	Organochlorine pesticides in water matrices by GC/MS with Negative Chemical Ionization	2285710
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2285715

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8276	10/22/2021	10/25/2021 08:00	Fe-Val Siddell	10/31/2021 05:46	Michael Poppell	2285710
EPA 8321B	10/22/2021	10/22/2021 11:50	Juyoung Kim	10/22/2021 12:40	Juyoung Kim	2285715
	10/22/2021	10/22/2021 11:50	Juyoung Kim	10/22/2021 21:31	Manjita Shrestha	2285715
	10/22/2021	10/26/2021 11:00	Hoor Shaik	10/28/2021 18:52	Juyoung Kim	2285715