Chemical Analysis Report

CEN-DIST-2017-08-01-01

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

Event Description: **Crane Strand / CS Drain**
Request ID: **RQ-2017-07-24-28**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 23-AUG-2017 11:07

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: Crane Strand @ 100m DS of Econ Tr Bridge **Collection Date/Time: 07/31/2017 10:26**

Field ID: G2CE0076 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917833	EPA 8321B	Sucralose**	0.32		ug/L	P329343	
	USGS O-2060-01	2,4-D	0.31		ug/L	P329539	
		Diuron	0.0056		ug/L	P329539	
		Fenuron	0.0080	U	ug/L	P329539	RPD
		Imidacloprid	0.038		ug/L	P329539	
		Bentazon	0.048		ug/L	P329539	
		Linuron	0.0040	U	ug/L	P329539	RPD
		Acetaminophen**	0.0080	U	ug/L	P329539	
		MCPP	0.0050	I	ug/L	P329539	
		Carbamazepine**	9.2E-04	I	ug/L	P329539	
		Triclopyr**	0.0040	U	ug/L	P329539	
		Primidone**	0.0040	U	ug/L	P329539	
		Fluridone**	0.014		ug/L	P329539	

Ref. Method and Comment:
USGS O-2060-01: Result for imidacloprid was confirmed in re-extraction beyond routine holding time due to method blank positive; imidacloprid = 0.047 ug/L in the reanalysis.

Sample Location: Crane Strand Drain @ 100m US of University Blvd **Collection Date/Time: 07/31/2017 11:05**

Field ID: G2CE0077 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917836	EPA 8321B	Sucralose**	0.22		ug/L	P329540	
	USGS O-2060-01	2,4-D	0.099		ug/L	P329539	
		Diuron	0.0082		ug/L	P329539	
		Fenuron	0.0080	U	ug/L	P329539	RPD
		Imidacloprid	0.079		ug/L	P329539	
		Bentazon	0.030		ug/L	P329539	
		Linuron	0.0040	U	ug/L	P329539	RPD
		Acetaminophen**	0.0080	U	ug/L	P329539	
		MCPP	0.015		ug/L	P329539	
		Carbamazepine**	4.0E-04	U	ug/L	P329539	
		Triclopyr**	0.0040	U	ug/L	P329539	
		Primidone**	0.0040	U	ug/L	P329539	
		Fluridone**	0.027		ug/L	P329539	

Ref. Method and Comment:
USGS O-2060-01: Result for imidacloprid was confirmed in re-extraction beyond routine holding time due to method blank positive; imidacloprid = 0.089 ug/L in the reanalysis.

Sample Location: Crane Strand Drain @ 100m US of University Blvd **Collection Date/Time: 07/31/2017 11:06**

Field ID: G2CE0077_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917834	EPA 8321B	Sucralose**	0.24		ug/L	P329343	
	USGS O-2060-01	2,4-D	0.12		ug/L	P329539	
		Diuron	0.0090		ug/L	P329539	

Field ID: G2CE0077_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917834	USGS O-2060-01	Fenuron	0.0080	U	ug/L	P329539	RPD
		Imidacloprid	0.069		ug/L	P329539	
		Bentazon	0.032		ug/L	P329539	
		Linuron	0.0040	U	ug/L	P329539	RPD
		Acetaminophen**	0.0080	U	ug/L	P329539	
		MCPP	0.013		ug/L	P329539	
		Carbamazepine**	4.0E-04	U	ug/L	P329539	
		Triclopyr**	0.0040	U	ug/L	P329539	
		Primidone**	0.0040	U	ug/L	P329539	
		Fluridone**	0.031		ug/L	P329539	

Ref. Method and Comment:
USGS O-2060-01: Result for imidacloprid was confirmed in re-extraction beyond routine holding time due to method blank positive; imidacloprid = 0.087 ug/L in the reanalysis.

Sample Location: Field Blank **Collection Date/Time: 07/31/2017 11:07**

Field ID: Field Blank Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917835	EPA 8321B	Sucralose**	0.010	U	ug/L	P329343	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P329539	
		Diuron	8.0E-04	U	ug/L	P329539	
		Fenuron	0.0080	U	ug/L	P329539	RPD
		Imidacloprid	8.0E-04	U	ug/L	P329539	
		Bentazon	8.0E-04	U	ug/L	P329539	
		Linuron	0.0040	U	ug/L	P329539	RPD
		Acetaminophen**	0.0080	U	ug/L	P329539	
		MCPP	0.0020	U	ug/L	P329539	
		Carbamazepine**	4.0E-04	U	ug/L	P329539	
		Triclopyr**	0.0040	U	ug/L	P329539	
		Primidone**	0.0040	U	ug/L	P329539	
		Fluridone**	4.0E-04	U	ug/L	P329539	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P329343

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P329540

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: USGS O-2060-01
Batch ID: P329539

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	0.0016	I	ug/L
Linuron	0.0040	U	ug/L
MCPP	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: P329343

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	85.0		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P329540

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	63.4		P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P329539

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	102		P	40 - 150
Acetaminophen	98.2		P	30 - 150
Bentazon	93.8		P	40 - 150
Carbamazepine	102		P	40 - 150
Diuron	111		P	40 - 150
Fenuron	97.6		P	40 - 150
Fluridone	97.5		P	40 - 150
Imidacloprid	100		P	40 - 160
Linuron	112		P	40 - 150
MCPP	99.3		P	40 - 150
Primidone	113		P	40 - 150
Triclopyr	107		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P329343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917030	Sucralose	103	92.6	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P329540

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918022	Sucralose	107	106	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P329539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918088	2,4-D	96.8	84.4	P/P	40 - 150
1918088	Acetaminophen	68.1	76.9	P/P	30 - 150
1918088	Bentazon	102	87.2	P/P	40 - 150
1918088	Carbamazepine	110	107	P/P	40 - 150
1918088	Diuron	87.2	93.7	P/P	40 - 150
1918088	Fenuron	54.9	78.6	P/P	40 - 150
1918088	Fluridone	100	102	P/P	40 - 150
1918088	Imidacloprid	49.4	72.2	P/P	40 - 160
1918088	Linuron	118	71.4	P/P	40 - 150
1918088	MCPP	82.9	81.3	P/P	40 - 150
1918088	Primidone	80.2	85.4	P/P	40 - 150
1918088	Triclopyr	98.0	97.6	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P329343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917030	Sucralose	5.37	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P329540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918022	Sucralose	0.895	Spike	P	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P329539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918088	2,4-D	13.7	Spike	P	0 - 30
1918088	Acetaminophen	12.1	Spike	P	0 - 30
1918088	Bentazon	15.8	Spike	P	0 - 30
1918088	Carbamazepine	2.49	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: USGS O-2060-01
Batch ID: P329539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918088	Diuron	7.25	Spike	P	0 - 30
1918088	Fenuron	35.5	Spike	F	0 - 30
1918088	Fluridone	1.92	Spike	P	0 - 30
1918088	Imidacloprid	22.8	Spike	P	0 - 30
1918088	Linuron	49.0	Spike	F	0 - 30
1918088	MCPP	1.96	Spike	P	0 - 30
1918088	Primidone	6.22	Spike	P	0 - 30
1918088	Triclopyr	0.339	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: 1917833
Field Sample ID: G2CE0076

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	41.7	P	40 - 160
USGS O-2060-01	2,4-D-d3	148	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	100	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	85.3	P	30 - 160
USGS O-2060-01	Diuron-d6	79.0	P	30 - 160
USGS O-2060-01	Primidone-d5	75.8	P	30 - 160

Lab Sample ID: 1917834
Field Sample ID: G2CE0077_DUP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	69.4	P	40 - 160
USGS O-2060-01	2,4-D-d3	125	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	105	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	82.1	P	30 - 160
USGS O-2060-01	Diuron-d6	81.9	P	30 - 160
USGS O-2060-01	Primidone-d5	84.5	P	30 - 160

Lab Sample ID: 1917835
Field Sample ID: Field Blank

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	56.2	P	40 - 160
USGS O-2060-01	2,4-D-d3	96.9	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	108	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	119	P	30 - 160
USGS O-2060-01	Diuron-d6	125	P	30 - 160
USGS O-2060-01	Primidone-d5	104	P	30 - 160

Quality Assurance Report
Surrogates

Lab Sample ID: 1917836
Field Sample ID: G2CE0077

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	47.7	P	40 - 160
USGS O-2060-01	2,4-D-d3	155	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	89.6	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	87.5	P	30 - 160
USGS O-2060-01	Diuron-d6	64.7	P	30 - 160
USGS O-2060-01	Primidone-d5	78.2	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A78247
Included Lab Sample IDs: 1917833, 1917834, 1917835, 1917836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	115	76.8	P/P	60 - 160
Sucralose	76.8	112	P/P	60 - 160

Reference Method: USGS O-2060-01
Run ID: A78269
Included Lab Sample IDs: 1917833, 1917835

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	109	108	P/P	50 - 150
2,4-D	92.8	99.2	P/P	50 - 150
Acetaminophen	110	99.6	P/P	60 - 150
Acetaminophen	99.6	104	P/P	60 - 150
Bentazon	106	95.9	P/P	50 - 150
Bentazon	113	106	P/P	50 - 150
Carbamazepine	110	110	P/P	60 - 150
Carbamazepine	110	108	P/P	60 - 150
Diuron	95.0	103	P/P	60 - 150
Diuron	99.5	95.0	P/P	60 - 150
Fenuron	107	108	P/P	60 - 150
Fenuron	108	104	P/P	60 - 150
Fluridone	109	111	P/P	60 - 160
Fluridone	111	116	P/P	60 - 160
Imidacloprid	112	93.5	P/P	60 - 150
Imidacloprid	93.5	94.5	P/P	60 - 150
Linuron	121	106	P/P	60 - 150
Linuron	99.8	121	P/P	60 - 150
MCPP	110	105	P/P	50 - 150
MCPP	111	110	P/P	50 - 150
Primidone	111	97.5	P/P	60 - 150
Primidone	97.5	122	P/P	60 - 150
Triclopyr	117	102	P/P	50 - 150
Triclopyr	132	117	P/P	50 - 150

Quality Assurance Report
Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A78403
Included Lab Sample IDs: 1917834, 1917836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	113	104	P/P	50 - 150
Acetaminophen	70.4	76.7	P/P	60 - 150
Bentazon	107	113	P/P	50 - 150
Carbamazepine	76.3	84.1	P/P	60 - 150
Diuron	77.4	68.3	P/P	60 - 150
Fenuron	79.0	80.1	P/P	60 - 150
Fluridone	109	109	P/P	60 - 160
Linuron	96.6	78.2	P/P	60 - 150
MCPP	96.8	93.5	P/P	50 - 150
Primidone	84.6	71.7	P/P	60 - 150
Triclopyr	108	110	P/P	50 - 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		
					LCS	SMP	MS
EPA 8321B	Sucralose	85.0	103	92.6			5.37
	Sucralose	63.4	107	106			0.895
USGS O-2060-01	2,4-D	102	96.8	84.4			13.7
	Acetaminophen	98.2	68.1	76.9			12.1
	Bentazon	93.8	102	87.2			15.8
	Carbamazepine	102	110	107			2.49
	Diuron	111	87.2	93.7			7.25
	Fenuron	97.6	54.9	78.6			35.5
	Fluridone	97.5	100	102			1.92
	Imidacloprid	100	49.4	72.2			22.8
	Linuron	112	118	71.4			49.0
	MCPP	99.3	82.9	81.3			1.96
	Primidone	113	80.2	85.4			6.22
	Triclopyr	107	98.0	97.6			0.339

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1917833, 1917834, 1917835, 1917836
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1917833, 1917834, 1917835, 1917836
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1917833, 1917834, 1917835, 1917836

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	08/01/2017	08/04/2017	Julie Michelle Frank	08/04/2017	Mohammad Ghaffari	1917833, 1917834, 1917835, 1917836
USGS O-2060-01	08/01/2017	08/04/2017	Fe-Val Siddell	08/07/2017	Juyoung Kim	1917833
	08/01/2017	08/04/2017	Fe-Val Siddell	08/08/2017	Juyoung Kim	1917833, 1917834, 1917835, 1917836
	08/01/2017	08/04/2017	Fe-Val Siddell	08/10/2017	Juyoung Kim	1917834, 1917836