

Chemical Analysis Report

CEN-DIST-2017-03-30-01

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

Event Description: **Kasey / Dot / Lil Econ / Wekiva Canal**
Request ID: **RQ-2017-03-27-47**
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, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 13-APR-2017 16:50

A handwritten signature in black ink, appearing to read "Liang Lin", is shown 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: Lake Dot @ Center

Collection Date/Time: 03/29/2017 13:00

Field ID: G2CE0067

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884563	EPA 8321B	Sucralose**	0.078		ug/L	P322530	
	USGS O-2060-01	2,4-D	0.0086	I	ug/L	P322600	
		Diuron	0.0047	I	ug/L	P322600	
		Fenuron	0.0080	U	ug/L	P322600	
		2,4,5-T	0.0040	U	ug/L	P322600	
		Acifluorfen	0.010	U	ug/L	P322600	
		Imidacloprid	0.0061	I	ug/L	P322600	
		Bentazon	0.088		ug/L	P322600	MS
		Linuron	0.0040	U	ug/L	P322600	
		Acetaminophen**	0.010	U	ug/L	P322600	
		MCP	0.0040	U	ug/L	P322600	
		Carbamazepine**	4.0E-04	U	ug/L	P322600	
		Silvex	0.0040	U	ug/L	P322600	
		Triclopyr**	0.010	U	ug/L	P322600	
		Primidone**	0.0080	U	ug/L	P322600	RPD
		Fluridone**	0.0096		ug/L	P322600	

Sample Location: Kasey Lake @ Center

Collection Date/Time: 03/29/2017 13:39

Field ID: G2CE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884564	EPA 8321B	Sucralose**	0.010	U	ug/L	P322530	
	USGS O-2060-01	2,4-D	0.042		ug/L	P322600	
		Diuron	0.0040	U	ug/L	P322600	
		Fenuron	0.0080	U	ug/L	P322600	
		2,4,5-T	0.0040	U	ug/L	P322600	
		Acifluorfen	0.010	U	ug/L	P322600	
		Imidacloprid	0.0040	U	ug/L	P322600	
		Bentazon	0.13		ug/L	P322600	MS
		Linuron	0.0040	U	ug/L	P322600	
		Acetaminophen**	0.010	U	ug/L	P322600	
		MCP	0.012	I	ug/L	P322600	
		Carbamazepine**	4.0E-04	U	ug/L	P322600	
		Silvex	0.0040	U	ug/L	P322600	
		Triclopyr**	0.010	U	ug/L	P322600	
		Primidone**	0.0080	U	ug/L	P322600	RPD
		Fluridone**	4.0E-04	U	ug/L	P322600	

Sample Location: Little Wekiva River near Edgewater Dr.

Collection Date/Time: 03/29/2017 14:22

Field ID: G2CE0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884565	EPA 8321B	Sucralose**	0.12		ug/L	P322530	
	USGS O-2060-01	2,4-D	0.57		ug/L	P322600	

Field ID: G2CE0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884565	USGS O-2060-01	Diuron	0.0040	U	ug/L	P322600	
		Fenuron	0.0080	U	ug/L	P322600	
		2,4,5-T	0.0040	U	ug/L	P322600	
		Acifluorfen	0.010	U	ug/L	P322600	
		Imidacloprid	0.0040	U	ug/L	P322600	
		Bentazon	0.30		ug/L	P322600	MS
		Linuron	0.0040	U	ug/L	P322600	
		Acetaminophen**	0.010	U	ug/L	P322600	
		MCP	0.0040	U	ug/L	P322600	
		Carbamazepine**	4.0E-04	U	ug/L	P322600	
		Silvex	0.0040	U	ug/L	P322600	
		Triclopyr**	1.1		ug/L	P322600	
		Primidone**	0.0080	U	ug/L	P322600	RPD
		Fluridone**	0.020		ug/L	P322600	

Sample Location: Little Econ River South of SR 419 Bridge

Collection Date/Time: 03/29/2017 13:05

Field ID: G2CE0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884566	EPA 8321B	Sucralose**	5.4		ug/L	P322530	
	USGS O-2060-01	2,4-D	0.026		ug/L	P322600	
		Diuron	0.0054	I	ug/L	P322600	
		Fenuron	0.0080	U	ug/L	P322600	
		2,4,5-T	0.0040	U	ug/L	P322600	
		Acifluorfen	0.010	U	ug/L	P322600	
		Imidacloprid	0.019		ug/L	P322600	
		Bentazon	0.23		ug/L	P322600	MS
		Linuron	0.0040	U	ug/L	P322600	
		Acetaminophen**	0.010	U	ug/L	P322600	
		MCP	0.0040	U	ug/L	P322600	
		Carbamazepine**	0.012		ug/L	P322600	
		Silvex	0.0040	U	ug/L	P322600	
		Triclopyr**	0.33		ug/L	P322600	
		Primidone**	0.011	I	ug/L	P322600	RPD
		Fluridone**	0.012		ug/L	P322600	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
 Batch ID: P322530

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P322600

Component	Result	Code	Units
2,4,5-T	0.0040	U	ug/L
2,4-D	0.0040	U	ug/L
Acetaminophen	0.010	U	ug/L
Acifluorfen	0.010	U	ug/L
Bentazon	0.0040	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0040	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	0.0040	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0040	U	ug/L
Primidone	0.0080	U	ug/L
Silvex	0.0040	U	ug/L
Triclopyr	0.010	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
 Batch ID: P322530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	99.6		P	40 - 140

Reference Method: USGS O-2060-01
 Batch ID: P322600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4,5-T	81.6		P	40 - 140
2,4-D	104		P	40 - 140
Acetaminophen	53.2		P	40 - 140
Acifluorfen	68.8		P	40 - 140
Bentazon	83.6		P	40 - 140
Carbamazepine	121		P	40 - 140
Diuron	87.6		P	40 - 140
Fenuron	98.0		P	40 - 140
Fluridone	75.6		P	40 - 140
Imidacloprid	85.6		P	40 - 160
Linuron	92.4		P	40 - 140
MCP	105		P	40 - 140
Primidone	86.8		P	40 - 140
Silvex	80.8		P	40 - 140
Triclopyr	94.8		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P322530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884563	Sucralose	76.5	76.6	P/P	40 - 140

Reference Method: USGS O-2060-01
 Batch ID: P322600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884497	2,4,5-T	86.8	89.6	P/P	40 - 140
1884497	2,4-D	109	103	P/P	40 - 140
1884497	Acetaminophen	70.8	55.6	P/P	40 - 140
1884497	Acifluorfen	126	116	P/P	40 - 140
1884497	Bentazon	160	160	F/F	40 - 140
1884497	Carbamazepine	83.2	102	P/P	40 - 140
1884497	Diuron	81.6	73.2	P/P	40 - 140
1884497	Fenuron	89.2	82.0	P/P	40 - 140
1884497	Fluridone	85.2	71.6	P/P	40 - 140
1884497	Imidacloprid	102	85.6	P/P	40 - 160
1884497	Linuron	74.0	87.6	P/P	40 - 140
1884497	MCP	122	104	P/P	40 - 140
1884497	Primidone	92.4	65.6	P/P	40 - 140
1884497	Silvex	102	93.6	P/P	40 - 140
1884497	Triclopyr	96.0	87.6	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P322530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884563	Sucralose	0.131	Spike	P	0 - 30

Reference Method: USGS O-2060-01
 Batch ID: P322600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884497	2,4,5-T	3.17	Spike	P	0 - 30
1884497	2,4-D	5.28	Spike	P	0 - 30
1884497	Acetaminophen	24.1	Spike	P	0 - 30
1884497	Acifluorfen	8.24	Spike	P	0 - 30
1884497	Bentazon	0.250	Spike	P	0 - 30
1884497	Carbamazepine	20.3	Spike	P	0 - 30
1884497	Diuron	10.9	Spike	P	0 - 30
1884497	Fenuron	8.41	Spike	P	0 - 30
1884497	Fluridone	17.3	Spike	P	0 - 30
1884497	Imidacloprid	17.9	Spike	P	0 - 30
1884497	Linuron	16.8	Spike	P	0 - 30
1884497	MCP	15.2	Spike	P	0 - 30
1884497	Primidone	33.9	Spike	F	0 - 30
1884497	Silvex	8.20	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P322600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884497	Triclopyr	9.15	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: 1884563
Field Sample ID: G2CE0067

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	96.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	99.4	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	66.2	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	73.8	P	40 - 160
USGS O-2060-01	Diuron-d6	53.4	P	40 - 150
USGS O-2060-01	Primidone-d5	93.2	P	40 - 150

Lab Sample ID: 1884564
Field Sample ID: G2CE0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	102	P	40 - 150
USGS O-2060-01	2,4-D-d3	89.8	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	75.8	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	61.6	P	40 - 160
USGS O-2060-01	Diuron-d6	41.4	P	40 - 150
USGS O-2060-01	Primidone-d5	81.4	P	40 - 150

Lab Sample ID: 1884565
Field Sample ID: G2CE0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	66.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	110	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	65.6	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	59.0	P	40 - 160
USGS O-2060-01	Diuron-d6	50.6	P	40 - 150
USGS O-2060-01	Primidone-d5	68.0	P	40 - 150

Lab Sample ID: 1884566
Field Sample ID: G2CE0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	71.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	132	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	83.6	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	83.6	P	40 - 160
USGS O-2060-01	Diuron-d6	63.6	P	40 - 150

Quality Assurance Report Surrogates

Lab Sample ID: 1884566
 Field Sample ID: G2CE0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	Primidone-d5	84.6	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A75673
 Included Lab Sample IDs: 1884563, 1884564, 1884565, 1884566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	108	109	P/P	60 - 150
Sucralose	125	122	P/P	60 - 150

Reference Method: USGS O-2060-01
 Run ID: A75682
 Included Lab Sample IDs: 1884563, 1884564, 1884565, 1884566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	109	99.6	P/P	60 - 150
Acetaminophen	99.6	130	P/P	60 - 150
Carbamazepine	119	121	P/P	60 - 150
Carbamazepine	121	117	P/P	60 - 150
Diuron	120	114	P/P	60 - 150
Diuron	122	120	P/P	60 - 150
Fenuron	114	110	P/P	60 - 150
Fenuron	119	114	P/P	60 - 150
Fluridone	112	116	P/P	60 - 150
Fluridone	116	106	P/P	60 - 150
Imidacloprid	100	108	P/P	60 - 150
Imidacloprid	108	94.0	P/P	60 - 150
Linuron	132	145	P/P	60 - 150
Linuron	86.8	132	P/P	60 - 150
Primidone	105	122	P/P	60 - 150
Primidone	106	105	P/P	60 - 150

Reference Method: USGS O-2060-01
 Run ID: A75705
 Included Lab Sample IDs: 1884563, 1884564, 1884565, 1884566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4,5-T	94.6	99.8	P/P	50 - 150
2,4,5-T	99.8	100	P/P	50 - 150
2,4-D	110	137	P/P	50 - 150
2,4-D	132	110	P/P	50 - 150
Acifluorfen	114	133	P/P	50 - 150
Acifluorfen	89.0	114	P/P	50 - 150
Bentazon	147	94.2	P/P	50 - 150
Bentazon	81.2	147	P/P	50 - 150
MCP	129	136	P/P	50 - 150
MCP	136	123	P/P	50 - 150
Silvex	87.2	87.2	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A75705

Included Lab Sample IDs: 1884563, 1884564, 1884565, 1884566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silvex	87.2	91.4	P/P	50 - 150
Triclopyr	100	107	P/P	50 - 150
Triclopyr	107	113	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	LCS	Precision SMP	MS
EPA 8321B	Sucralose	99.6	76.5 76.6			0.131
USGS O-2060-01	2,4,5-T	81.6	86.8 89.6			3.17
	2,4-D	104	109 103			5.28
	Acetaminophen	53.2	70.8 55.6			24.1
	Acifluorfen	68.8	126 116			8.24
	Bentazon	83.6	160 160			0.250
	Carbamazepine	121	83.2 102			20.3
	Diuron	87.6	81.6 73.2			10.9
	Fenuron	98.0	89.2 82.0			8.41
	Fluridone	75.6	85.2 71.6			17.3
	Imidacloprid	85.6	102 85.6			17.9
	Linuron	92.4	74.0 87.6			16.8
	MCP	105	122 104			15.2
	Primidone	86.8	92.4 65.6			33.9
	Silvex	80.8	102 93.6			8.20
	Triclopyr	94.8	96.0 87.6			9.15

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1884563, 1884564, 1884565, 1884566
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1884563, 1884564, 1884565, 1884566
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1884563, 1884564, 1884565, 1884566

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	03/30/2017	04/07/2017	Mohammad Ghaffari	04/07/2017	Mohammad Ghaffari	1884563, 1884564, 1884565, 1884566
USGS O-2060-01	03/30/2017	04/03/2017	Hoor Shaik	04/08/2017	Juyoung Kim	1884563, 1884564, 1884565, 1884566
	03/30/2017	04/03/2017	Hoor Shaik	04/10/2017	Juyoung Kim	1884563, 1884564, 1884565, 1884566