

Chemical Analysis Report

CEN-DIST-2017-06-29-01

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

Event Description: **Howell Creek / Smith Canal**
Request ID: **RQ-2017-06-26-63**
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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-JUL-2017 12:53

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: Howell Creek @ 150m Upstream of Lake Howell Collection Date/Time: 06/28/2017 10:43

Field ID: G2CE0072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1910231	EPA 8321B	Sucralose**	0.38		ug/L	P327721	
	USGS O-2060-01	2,4-D	0.36		ug/L	P327782	
		Diuron	0.012		ug/L	P327782	
		Fenuron	0.0080	U	ug/L	P327782	
		Imidacloprid	0.014		ug/L	P327782	
		Bentazon	0.016		ug/L	P327782	
		Linuron	0.0040	U	ug/L	P327782	
		Acetaminophen**	0.31	I	ug/L	P327782	
		MCP	0.0020	U	ug/L	P327782	
		Carbamazepine**	8.0E-04	I	ug/L	P327782	
		Triclopyr**	0.0040	U	ug/L	P327782	
		Primidone**	0.0040	U	ug/L	P327782	
		Fluridone**	0.014		ug/L	P327782	

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for 2,4-D could not be assessed due to high concentration of parameter in the spiked sample.

USGS O-2060-01: MS accuracy for acetaminophen could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Smith Canal Upstream of Nebraska Ave.

Collection Date/Time: 06/28/2017 10:02

Field ID: G2CE0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1910232	EPA 8321B	Sucralose**	1.2		ug/L	P327721	
	USGS O-2060-01	2,4-D	0.11		ug/L	P327782	
		Diuron	0.033		ug/L	P327782	
		Fenuron	0.0080	U	ug/L	P327782	
		Imidacloprid	0.19		ug/L	P327782	
		Bentazon	0.073		ug/L	P327782	
		Linuron	0.0040	U	ug/L	P327782	
		Acetaminophen**	0.057		ug/L	P327782	
		MCP	0.0078	I	ug/L	P327782	
		Carbamazepine**	0.0019		ug/L	P327782	
		Triclopyr**	0.0040	U	ug/L	P327782	
		Primidone**	0.0040	U	ug/L	P327782	
		Fluridone**	0.15		ug/L	P327782	

Ref. Method and Comment:

USGS O-2060-01: Results confirmed in re-extraction. MS accuracy for 2,4-D could not be assessed due to high concentration of parameter in the spiked sample.

USGS O-2060-01: Results confirmed in re-extraction. MS accuracy for acetaminophen could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P327721

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P327782

Component	Result	Code	Units
2,4-D	8.0E-04	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	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	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: P327721

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	92.8		P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P327782

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	77.8		P	40 - 150
Acetaminophen	103		P	30 - 150
Bentazon	60.8		P	40 - 150
Carbamazepine	77.3		P	40 - 150
Diuron	65.3		P	40 - 150
Fenuron	87.6		P	40 - 150
Fluridone	78.3		P	40 - 150
Imidacloprid	78.7		P	40 - 160
Linuron	77.0		P	40 - 150
MCP	69.4		P	40 - 150
Primidone	76.0		P	40 - 150
Triclopyr	72.7		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P327721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1910178	Sucralose	144	136	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P327782

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1910586	Bentazon	58.8	51.2	P/P	40 - 150
1910586	Carbamazepine	113	99.1	P/P	40 - 150
1910586	Diuron	71.3	58.5	P/P	40 - 150
1910586	Fenuron	91.1	90.6	P/P	40 - 150
1910586	Fluridone	48.1	40.3	P/P	40 - 150
1910586	Imidacloprid	156	151	P/P	40 - 160
1910586	Linuron	85.2	74.0	P/P	40 - 150
1910586	MCP	108	99.4	P/P	40 - 150
1910586	Primidone	85.1	87.0	P/P	40 - 150
1910586	Triclopyr	94.5	86.4	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P327721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910178	Sucralose	6.01	Spike	P	0 - 30

Reference Method: USGS O-2060-01
 Batch ID: P327782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910586	2,4-D	15.2	Spike	P	0 - 30
1910586	Acetaminophen	15.6	Spike	P	0 - 30
1910586	Bentazon	8.08	Spike	P	0 - 30
1910586	Carbamazepine	13.1	Spike	P	0 - 30
1910586	Diuron	17.5	Spike	P	0 - 30
1910586	Fenuron	0.572	Spike	P	0 - 30
1910586	Fluridone	10.9	Spike	P	0 - 30
1910586	Imidacloprid	2.56	Spike	P	0 - 30
1910586	Linuron	14.0	Spike	P	0 - 30
1910586	MCP	8.57	Spike	P	0 - 30
1910586	Primidone	2.19	Spike	P	0 - 30
1910586	Triclopyr	8.89	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: 1910231
 Field Sample ID: G2CE0072

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	112	P	40 - 160
USGS O-2060-01	2,4-D-d3	129	P	40 - 150

Quality Assurance Report Surrogates

Lab Sample ID: 1910231
 Field Sample ID: G2CE0072

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	Acetaminophen-d4	134	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	113	P	30 - 165
USGS O-2060-01	Diuron-d6	81.9	P	30 - 160
USGS O-2060-01	Primidone-d5	73.8	P	30 - 150

Lab Sample ID: 1910232
 Field Sample ID: G2CE0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	111	P	40 - 160
USGS O-2060-01	2,4-D-d3	120	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	111	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	100	P	30 - 165
USGS O-2060-01	Diuron-d6	79.9	P	30 - 160
USGS O-2060-01	Primidone-d5	68.4	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A77714
 Included Lab Sample IDs: 1910231, 1910232

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	79.4	82.5	P/P	50 - 150
Bentazon	61.6	65.1	P/P	50 - 150
MCP	83.8	83.7	P/P	50 - 150
Triclopyr	82.4	80.0	P/P	50 - 150

Reference Method: USGS O-2060-01
 Run ID: A77717
 Included Lab Sample IDs: 1910231, 1910232

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	103	93.8	P/P	60 - 150
Carbamazepine	93.3	85.3	P/P	60 - 150
Diuron	82.6	84.2	P/P	60 - 150
Fenuron	85.8	90.6	P/P	60 - 150
Fluridone	78.8	86.1	P/P	60 - 160
Imidacloprid	94.1	81.7	P/P	60 - 150
Linuron	75.9	92.5	P/P	60 - 150
Primidone	90.1	90.0	P/P	60 - 150

Reference Method: EPA 8321B
 Run ID: A77777
 Included Lab Sample IDs: 1910231, 1910232

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	108	127	P/P	60 - 160
Sucralose	135	118	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A77797

Included Lab Sample IDs: 1910231

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	101	89.7	P/P	50 - 150
Acetaminophen	110	102	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	LCS	Precision SMP	MS
EPA 8321B	Sucralose	92.8	144 136			6.01
USGS O-2060-01	2,4-D	77.8				15.2
	Acetaminophen	103				15.6
	Bentazon	60.8	58.8 51.2			8.08
	Carbamazepine	77.3	113 99.1			13.1
	Diuron	65.3	71.3 58.5			17.5
	Fenuron	87.6	91.1 90.6			0.572
	Fluridone	78.3	48.1 40.3			10.9
	Imidacloprid	78.7	156 151			2.56
	Linuron	77.0	85.2 74.0			14.0
	MCPD	69.4	108 99.4			8.57
	Primidone	76.0	85.1 87.0			2.19
	Triclopyr	72.7	94.5 86.4			8.89

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1910231, 1910232
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1910231, 1910232
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1910231, 1910232

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	06/29/2017	07/12/2017	Mohammad Ghaffari	07/14/2017	Mohammad Ghaffari	1910231, 1910232
USGS O-2060-01	06/29/2017	07/03/2017	Hoor Shaik	07/12/2017	Juyoung Kim	1910231, 1910232
	06/29/2017	07/03/2017	Hoor Shaik	07/19/2017	Juyoung Kim	1910231