

Chemical Analysis Report

SW-DIST-2018-03-08-02

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

Event Description: **Horsehole Creek**
Request ID: **RQ-2018-03-05-10**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Judy Ashton

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 16-MAR-2018 15:33

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: Horsehole Creek

Collection Date/Time: 03/07/2018 11:35

Field ID: G5SW0141

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1973039	EPA 8321B	2,4-D	0.0020	U	ug/L	P341079	
		Sucralose**	0.23		ug/L	P341049	
		Bentazon	8.0E-04	U	ug/L	P341079	
		MCP	0.0020	U	ug/L	P341079	
		Triclopyr**	0.0040	U	ug/L	P341079	
		Imidacloprid	0.0020	U	ug/L	P341079	MS
		Diuron	0.0020	U	ug/L	P341079	
		Primidone**	0.0040	U	ug/L	P341079	
		Linuron	0.0040	U	ug/L	P341079	
		Acetaminophen**	0.0080	U	ug/L	P341079	
		Fenuron	0.0080	U	ug/L	P341079	
		Imazapyr**	0.0056	I	ug/L	P341079	
		Carbamazepine**	4.0E-04	U	ug/L	P341079	
		Fluridone**	8.0E-04	U	ug/L	P341079	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P341049

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B

Batch ID: P341079

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	0.0080	U	ug/L
Fluridone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	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: P341049

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	92.2		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P341079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	67.5		P	40 - 150
Acetaminophen	95.6		P	30 - 150
Bentazon	99.3		P	30 - 150
Carbamazepine	84.7		P	40 - 150
Diuron	66.5		P	40 - 150
Fenuron	103		P	40 - 150
Fluridone	66.9		P	40 - 150
Imazapyr	81.0		P	40 - 150
Imidacloprid	98.3		P	40 - 160
Linuron	76.4		P	40 - 150
MCP	75.6		P	40 - 150
Primidone	98.6		P	40 - 150
Triclopyr	71.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P341049

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972405	Sucralose	107	101	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P341079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972737	2,4-D	49.6	48.1	P/P	40 - 150
1972737	Acetaminophen	124	131	P/P	30 - 150
1972737	Bentazon	76.5	81.5	P/P	30 - 150
1972737	Carbamazepine	76.6	77.1	P/P	40 - 150
1972737	Diuron	65.9	63.4	P/P	40 - 150
1972737	Fenuron	81.0	80.5	P/P	40 - 150
1972737	Fluridone	56.3	63.6	P/P	40 - 150
1972737	Imazapyr	57.3	51.2	P/P	40 - 150
1972737	Imidacloprid	179	173	F/F	40 - 160
1972737	Linuron	84.5	77.7	P/P	40 - 150
1972737	MCP	52.0	51.9	P/P	40 - 150
1972737	Primidone	106	116	P/P	40 - 150
1972737	Triclopyr	50.9	56.0	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P341049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972405	Sucralose	4.52	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P341079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972737	2,4-D	2.99	Spike	P	0 - 30
1972737	Acetaminophen	5.48	Spike	P	0 - 30
1972737	Bentazon	4.95	Spike	P	0 - 30
1972737	Carbamazepine	0.749	Spike	P	0 - 30
1972737	Diuron	3.39	Spike	P	0 - 30
1972737	Fenuron	0.669	Spike	P	0 - 30
1972737	Fluridone	8.57	Spike	P	0 - 30
1972737	Imazapyr	4.30	Spike	P	0 - 30
1972737	Imidacloprid	3.36	Spike	P	0 - 30
1972737	Linuron	8.45	Spike	P	0 - 30
1972737	MCPD	0.250	Spike	P	0 - 30
1972737	Primidone	7.83	Spike	P	0 - 30
1972737	Triclopyr	9.43	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: 1973039
Field Sample ID: G5SW0141

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	60.8	P	30 - 160
EPA 8321B	Acetaminophen-d4	113	P	30 - 160
EPA 8321B	Carbamazepine-d10	65.9	P	30 - 160
EPA 8321B	Diuron-d6	53.9	P	30 - 160
EPA 8321B	Primidone-d5	85.7	P	30 - 160
EPA 8321B	Sucralose-d6	103	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A82544
Included Lab Sample IDs: 1973039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	109	89.8	P/P	60 - 150

Reference Method: EPA 8321B
Run ID: A82580
Included Lab Sample IDs: 1973039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	88.2	101	P/P	50 - 150
Acetaminophen	99.9	100	P/P	60 - 150
Bentazon	136	136	P/P	50 - 150
Carbamazepine	95.2	101	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A82580
Included Lab Sample IDs: 1973039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Diuron	95.8	98.4	P/P	60 - 150
Fenuron	91.3	88.5	P/P	60 - 150
Fluridone	99.2	95.1	P/P	60 - 160
Imazapyr	76.0	70.4	P/P	50 - 150
Imidacloprid	93.7	86.7	P/P	60 - 150
Linuron	110	98.6	P/P	60 - 150
MCPP	95.1	105	P/P	50 - 150
Primidone	92.7	105	P/P	60 - 150
Triclopyr	93.3	98.2	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	2,4-D	67.5	49.6 48.1			2.99
	Acetaminophen	95.6	124 131			5.48
	Bentazon	99.3	76.5 81.5			4.95
	Carbamazepine	84.7	76.6 77.1			0.749
	Diuron	66.5	65.9 63.4			3.39
	Fenuron	103	81.0 80.5			0.669
	Fluridone	66.9	56.3 63.6			8.57
	Imazapyr	81.0	57.3 51.2			4.30
	Imidacloprid	98.3	179 173			3.36
	Linuron	76.4	84.5 77.7			8.45
	MCPP	75.6	52.0 51.9			0.250
	Primidone	98.6	106 116			7.83
	Sucralose	92.2	107 101			4.52
	Triclopyr	71.5	50.9 56.0			9.43

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1973039
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1973039

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	03/08/2018	03/09/2018	Hoor Shaik	03/10/2018	Julie Michelle Frank	1973039
	03/08/2018	03/09/2018	Julie Michelle Frank	03/09/2018	Juyoung Kim	1973039