

Chemical Analysis Report

CEN-DIST-2017-03-22-02

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

Event Description: **Lorraine/ Silver/ Apopka-Beau**

Request ID: **RQ-2017-03-20-52**

Customer: **CEN-DIST**

Project ID: **SMP**

Send Reports to:

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Date Certified: 17-APR-2017 15:06



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 groups are included in this report: Nutrients and 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 Lorraine @ 50m NE of Center

Collection Date/Time: 03/21/2017 11:10

Field ID: G1CE0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1881996	EPA 8321B	Sucralose**	0.058		ug/L	P321878	
	USGS O-2060-01	2,4-D	0.0045	I	ug/L	P321946	
		Diuron	0.0080	U	ug/L	P321946	MS
		Fenuron	0.016	U	ug/L	P321946	MS
		Imidacloprid	0.0080	U	ug/L	P321946	
		Bentazon	0.0040	U	ug/L	P321946	MS
		Linuron	0.0080	U	ug/L	P321946	
		Acetaminophen**	0.010	U	ug/L	P321946	
		MCP	0.0040	U	ug/L	P321946	
		Carbamazepine**	8.0E-04	U	ug/L	P321946	
		Triclopyr**	0.010	U	ug/L	P321946	MS
		Primidone**	0.0080	U	ug/L	P321946	
		Fluridone**	0.080		ug/L	P321946	MS

Ref. Method and Comment:

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

USGS O-2060-01: MDL's for some parameters elevated due to matrix interference.

Sample Location: Lake Lorraine @ 50m NE of Center

Collection Date/Time: 03/21/2017 11:10

Field ID: G1CE0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1881984	EPA 180.1 Rev. 2.0	Turbidity	1.0	A	NTU	P322008	
	EPA 300.0 Rev. 2.1	Chloride	24	A	mg Cl/L	P322487	
		Sulfate	1.3	A	mg SO4/L	P322662	
	SM 2120 B	Color (true)	53		PCU	P321976	
	SM 2320 B-97	Total Alkalinity	40		mg CaCO3/L	P322415	RPD
	SM 2540 C-97	TDS	126		mg/L	P322643	
	SM 2540 D-97	TSS	3	I	mg/L	P322622	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P322418	
1881985	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P321984	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P322016	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322118	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P322027	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P322059	
1881986	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P322001	
	dissolved						

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Lorraine @

Collection Date/Time: 03/21/2017 11:22

Field ID: G1CE0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1881997	EPA 8321B	Sucralose**	0.079		ug/L	P321878	
	USGS O-2060-01	2,4-D	0.0040	U	ug/L	P321946	
		Diuron	0.0080	U	ug/L	P321946	MS

Field ID: G1CE0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1881997	USGS O-2060-01	Fenuron	0.016	U	ug/L	P321946	MS
		Imidacloprid	0.0080	U	ug/L	P321946	
		Bentazon	0.032		ug/L	P321946	MS
		Linuron	0.0080	U	ug/L	P321946	
		Acetaminophen**	0.010	U	ug/L	P321946	
		MCP	0.0040	U	ug/L	P321946	
		Carbamazepine**	4.0E-04	U	ug/L	P321946	
		Triclopyr**	0.010	U	ug/L	P321946	MS
		Primidone**	0.0080	U	ug/L	P321946	
		Fluridone**	0.14		ug/L	P321946	MS

Ref. Method and Comment:

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

USGS O-2060-01: MDL's for some parameters elevated due to matrix interference.

Sample Location: Silver Lake @ Center

Collection Date/Time: 03/21/2017 12:07

Field ID: G1CE0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1881998	EPA 8321B	Sucralose**	0.15		ug/L	P322018	
	USGS O-2060-01	2,4-D	0.035		ug/L	P321946	
		Diuron	0.0040	UJ	ug/L	P321946	MS
		Fenuron	0.0080	UJ	ug/L	P321946	MS
		Imidacloprid	0.0040	U	ug/L	P321946	
		Bentazon	0.031	J	ug/L	P321946	MS
		Linuron	0.0040	U	ug/L	P321946	
		Acetaminophen**	0.010	U	ug/L	P321946	
		MCP	0.0040	U	ug/L	P321946	
		Carbamazepine**	4.0E-04	U	ug/L	P321946	
		Triclopyr**	0.010	UJ	ug/L	P321946	MS
		Primidone**	0.0080	U	ug/L	P321946	
		Fluridone**	4.0E-04	UJ	ug/L	P321946	MS

Ref. Method and Comment:

USGS O-2060-01: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P322008

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P322487

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322662

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321984

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322016

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322118

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322027

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322001

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 8321B
Batch ID: P321878

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P322018

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P321976

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
 Batch ID: P322415

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
 Batch ID: P322643

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P322622

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P322418

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P322059

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: USGS O-2060-01
 Batch ID: P321946

Component	Result	Code	Units
2,4-D	0.0040	U	ug/L
Acetaminophen	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
Triclopyr	0.010	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	101		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322662

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321984

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322118

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322027

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.0		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P321878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	109		P	40 - 140

Reference Method: EPA 8321B
Batch ID: P322018

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	71.4		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P322415

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
 Batch ID: P322418

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P322059

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P321946

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	80.4		P	40 - 140
Acetaminophen	52.8		P	40 - 140
Bentazon	101		P	40 - 140
Carbamazepine	122		P	40 - 140
Diuron	111		P	40 - 140
Fenuron	114		P	40 - 140
Fluridone	99.2		P	40 - 140
Imidacloprid	88.4		P	40 - 160
Linuron	102		P	40 - 140
MCPP	85.2		P	40 - 140
Primidone	86.8		P	40 - 140
Triclopyr	122		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881984	Chloride	98.1		P	90 - 110
1882053	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322662

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881984	Sulfate	94.7		P	90 - 110
1882053	Sulfate	93.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P321984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881941	Ammonia-N	102	99.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322016

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881949	Kjeldahl Nitrogen	106	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881985	NO2NO3-N	100	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882061	Total-P	104	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322001

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881942	O-Phosphate-P	96.0	97.7	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P322018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882187	Sucralose	76.0	77.3	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P322418

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881834	Fluoride	98.3	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P322059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881931	Organic Carbon	98.2	98.8	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P321946

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881998	2,4-D	101	109	P/P	40 - 140
1881998	Acetaminophen	42.8	46.8	P/P	40 - 140
1881998	Bentazon	143	146	F/F	40 - 140
1881998	Carbamazepine	43.6	44.8	P/P	40 - 140
1881998	Diuron	36.5	35.8	F/F	40 - 140
1881998	Fenuron	28.7	31.6	F/F	40 - 140
1881998	Fluridone	28.4	34.2	F/F	40 - 140
1881998	Imidacloprid	62.0	69.6	P/P	40 - 160
1881998	Linuron	56.8	61.6	P/P	40 - 140
1881998	MCP	109	110	P/P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P321946

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881998	Primidone	53.6	47.2	P/P	40 - 140
1881998	Triclopyr	120	141	P/F	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P322008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881984	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881984	Chloride	0.0129	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881984	Sulfate	3.02	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P321984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881941	Ammonia-N	2.67	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P322016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881949	Kjeldahl Nitrogen	4.06	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P322118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881985	NO2NO3-N	2.94	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882061	Total-P	3.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881942	O-Phosphate-P	0.872	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P321878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881474	Sucralose	13.9	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P322018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882187	Sucralose	1.41	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P321976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881953	Color (true)	0.0834	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P322415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881834	Total Alkalinity	5.51	Sample	F	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P322643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881834	TDS	3.54	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P322418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881834	Fluoride	0.548	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P322059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881931	Organic Carbon	0.334	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P321946

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881998	2,4-D	5.73	Spike	P	0 - 30
1881998	Acetaminophen	8.93	Spike	P	0 - 30
1881998	Bentazon	1.83	Spike	P	0 - 30
1881998	Carbamazepine	2.71	Spike	P	0 - 30
1881998	Diuron	1.88	Spike	P	0 - 30
1881998	Fenuron	9.56	Spike	P	0 - 30
1881998	Fluridone	18.5	Spike	P	0 - 30
1881998	Imidacloprid	11.6	Spike	P	0 - 30
1881998	Linuron	8.11	Spike	P	0 - 30
1881998	MCP	1.10	Spike	P	0 - 30
1881998	Primidone	12.7	Spike	P	0 - 30
1881998	Triclopyr	15.9	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: 1881996
Field Sample ID: G1CE0013

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	104	P	40 - 150
USGS O-2060-01	2,4-D-d3	104	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	50.6	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	59.2	P	40 - 160
USGS O-2060-01	Diuron-d6	44.8	P	40 - 150
USGS O-2060-01	Primidone-d5	41.4	P	40 - 150

Lab Sample ID: 1881997
Field Sample ID: G1CE0060

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	112	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	49.8	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	42.0	P	40 - 160
USGS O-2060-01	Diuron-d6	55.6	P	40 - 150
USGS O-2060-01	Primidone-d5	43.4	P	40 - 150

Quality Assurance Report Surrogates

Lab Sample ID: 1881998
Field Sample ID: G1CE0007

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	74.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	114	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	48.0	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	40.6	P	40 - 160
USGS O-2060-01	Diuron-d6	40.2	P	40 - 150
USGS O-2060-01	Primidone-d5	63.2	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A75274
Included Lab Sample IDs: 1881984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	99.8	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75279
Included Lab Sample IDs: 1881985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75284
Included Lab Sample IDs: 1881986

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75286
Included Lab Sample IDs: 1881984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Reference Method: SM 5310 B-00
Run ID: A75305
Included Lab Sample IDs: 1881985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	92.8	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A75318
Included Lab Sample IDs: 1881996, 1881997, 1881998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	102	81.2	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A75318

Included Lab Sample IDs: 1881996, 1881997, 1881998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	99.5	102	P/P	60 - 150

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75324

Included Lab Sample IDs: 1881985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75325

Included Lab Sample IDs: 1881985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75331

Included Lab Sample IDs: 1881985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	100	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A75398

Included Lab Sample IDs: 1881996, 1881997, 1881998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	121	122	P/P	60 - 150
Acetaminophen	133	121	P/P	60 - 150
Carbamazepine	143	148	P/P	60 - 150
Carbamazepine	144	143	P/P	60 - 150
Diuron	130	136	P/P	60 - 150
Fenuron	128	132	P/P	60 - 150
Fluridone	109	124	P/P	60 - 150
Imidacloprid	106	103	P/P	60 - 150
Linuron	123	137	P/P	60 - 150
Primidone	115	115	P/P	60 - 150
Primidone	96.8	115	P/P	60 - 150

Reference Method: USGS O-2060-01

Run ID: A75408

Included Lab Sample IDs: 1881996, 1881997, 1881998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	95.4	95.6	P/P	50 - 150
2,4-D	95.6	100	P/P	50 - 150
Bentazon	84.8	79.4	P/P	50 - 150
Bentazon	88.8	84.8	P/P	50 - 150
MCPP	104	90.2	P/P	50 - 150
MCPP	90.2	100	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A75408

Included Lab Sample IDs: 1881996, 1881997, 1881998

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Triclopyr	104	90.2	P/P	50 - 150
Triclopyr	98.6	104	P/P	50 - 150

Reference Method: SM 2320 B-97

Run ID: A75433

Included Lab Sample IDs: 1881984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A75433

Included Lab Sample IDs: 1881984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75467

Included Lab Sample IDs: 1881984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75488

Included Lab Sample IDs: 1881984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	97.4	101	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A75564

Included Lab Sample IDs: 1881996, 1881997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Carbamazepine	132	138	P/P	60 - 150
Diuron	101	111	P/P	60 - 150
Fenuron	122	124	P/P	60 - 150
Fluridone	104	103	P/P	60 - 150
Imidacloprid	107	104	P/P	60 - 150
Linuron	106	143	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.0	
EPA 300.0 Rev. 2.1	Chloride	101	98.1	97.2		0.0129	
	Sulfate	103	94.7	93.1		3.02	
EPA 350.1 Rev. 2.0	Ammonia-N	97.9	102	99.0			2.67
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	106	100			4.06
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	100	104			2.94
EPA 365.1 Rev. 2.0	Total-P	99.8	104	100			3.50
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	96.0	97.7			0.872
EPA 8321B	Sucralose	109					13.9
	Sucralose	71.4	76.0	77.3			1.41
SM 2120 B	Color (true)					0.0834	
SM 2320 B-97	Total Alkalinity	105				5.51	
SM 2540 C-97	TDS					3.54	
SM 4500 F-C-97	Fluoride	97.1	98.3	97.6			0.548
SM 5310 B-00	Organic Carbon	98.6	98.2	98.8			0.334
USGS O-2060-01	2,4-D	80.4	101	109			5.73
	Acetaminophen	52.8	42.8	46.8			8.93
	Bentazon	101	143	146			1.83
	Carbamazepine	122	43.6	44.8			2.71
	Diuron	111	36.5	35.8			1.88
	Fenuron	114	28.7	31.6			9.56
	Fluridone	99.2	28.4	34.2			18.5
	Imidacloprid	88.4	62.0	69.6			11.6
	Linuron	102	56.8	61.6			8.11
	MCP	85.2	109	110			1.10
	Primidone	86.8	53.6	47.2			12.7
	Tricopyr	122	120	141			15.9

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1881984
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1881984
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1881984
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1881985
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1881985
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1881985
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1881985
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1881986
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1881996, 1881997, 1881998
SM 2120 B / E31780	True Color measured at 450 nm	1881984
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1881984
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1881984
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1881984
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1881984
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1881985
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1881996, 1881997, 1881998

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1881996, 1881997, 1881998

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/22/2017			03/22/2017 16:01	Blanca Fach	1881984
EPA 300.0 Rev. 2.1	03/22/2017			03/30/2017	Ping Hua	1881984
	03/22/2017			04/01/2017	Ping Hua	1881984
EPA 350.1 Rev. 2.0	03/22/2017			03/22/2017	Julie Michelle Frank	1881985
EPA 351.2 Rev. 2.0	03/22/2017	03/23/2017	Adrian Shelby	03/24/2017	Joseph Suarez	1881985
EPA 353.2 Rev. 2.0	03/22/2017			03/24/2017	Beverly Y. Sanders	1881985
EPA 365.1 Rev. 2.0	03/22/2017	03/23/2017	Adrian Shelby	03/24/2017	Lipi Saha	1881985
EPA 365.1 Rev. 2.0 dissolved	03/22/2017			03/22/2017 14:53	Anthony C. Onicha	1881986
EPA 8321B	03/22/2017	03/23/2017	Mohammad Ghaffari	03/23/2017	Mohammad Ghaffari	1881996, 1881997, 1881998
SM 2120 B	03/22/2017			03/22/2017 14:21	Julia Storbeck	1881984
SM 2320 B-97	03/22/2017			03/29/2017	Dale L. Simmons	1881984
SM 2540 C-97	03/22/2017			03/24/2017	Yijie Li	1881984
SM 2540 D-97	03/22/2017			03/24/2017	Yijie Li	1881984
SM 4500 F-C-97	03/22/2017			03/29/2017	Dale L. Simmons	1881984
SM 5310 B-00	03/22/2017			03/23/2017	Julie Michelle Frank	1881985
USGS O-2060-01	03/22/2017	03/24/2017	Hoor Shaik	03/25/2017	Juyoung Kim	1881996, 1881997, 1881998
	03/22/2017	03/24/2017	Hoor Shaik	03/26/2017	Juyoung Kim	1881996, 1881997, 1881998
	03/22/2017	03/24/2017	Hoor Shaik	03/28/2017	Juyoung Kim	1881996, 1881997