

Chemical Analysis Report

WAS-SECT-2017-12-20-01

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

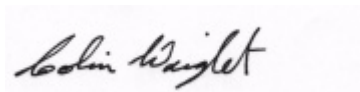
Event Description: **Swamp Creek SCI**
Request ID: **RQ-2017-12-18-34**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Curtis Musson

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Certified by: Colin Wright, Program Administrator

Date Certified: 12-JAN-2018 09:44

A handwritten signature in black ink, appearing to read "Colin Wright", is positioned on a light gray rectangular 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 groups are included in this report: Metals, 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: Swamp Creek Upstream of Railroad

Collection Date/Time: 12/20/2017 09:50

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955338	EPA 180.1 Rev. 2.0	Turbidity	7.3	A	NTU	P337304	
	EPA 300.0 Rev. 2.1	Chloride	8.4		mg Cl/L	P337392	
		Sulfate	0.81		mg SO4/L	P337396	
	SM 2120 B	Color (true)	84		PCU	P337292	
	SM 2320 B-97	Total Alkalinity	20		mg CaCO3/L	P337489	
	SM 2540 C-97	TDS	54		mg/L	P337670	
	SM 2540 D-97	TSS	3	I	mg/L	P337674	
	SM 4500 F-C-97	Fluoride	0.099	I	mg F/L	P337492	
1955339	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P337700	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P337403	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.066		mg N/L	P337407	
	EPA 365.1 Rev. 2.0	Total-P	0.080		mg P/L	P337415	
	SM 5310 B-00	Organic Carbon	6.9		mg C/L	P337547	
1955340	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.050		mg P/L	P337299	

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: Swamp Creek Upstream of Railroad

Collection Date/Time: 12/20/2017 09:50

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955391	EPA 200.7 Rev. 4.4	Calcium	6.71		mg/L	P337307	
		Iron	1.27E+03		ug/L	P337307	
		Magnesium	2.67		mg/L	P337307	
		Potassium	1.6		mg/L	P337307	
		Sodium	4.0		mg/L	P337307	
		Zinc	5.0	U	ug/L	P337307	
	EPA 200.8 Rev. 5.4	Arsenic	0.68		ug/L	P337307	
		Cadmium	0.020	U	ug/L	P337307	
		Chromium	0.70	I	ug/L	P337307	
		Copper	0.39	I	ug/L	P337307	
		Lead	0.28		ug/L	P337307	
		Nickel	0.24	I	ug/L	P337307	
		Silver	0.010	U	ug/L	P337307	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and sodium are unavailable because of high analyte concentration in the QC sample.

Sample Location: Swamp Creek Upstream of Railroad

Collection Date/Time: 12/20/2017 09:50

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955390	EPA 8321B	Sucralose**	0.010	U	ug/L	P337235	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P337256	
		Diuron	0.014		ug/L	P337256	
		Fenuron	0.011	I	ug/L	P337256	

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955390	USGS O-2060-01	Imidacloprid	0.0025	I	ug/L	P337256	MS
		Bentazon	8.0E-04	U	ug/L	P337256	
		Linuron	0.0040	U	ug/L	P337256	
		Acetaminophen**	0.0080	U	ug/L	P337256	
		MCPD	0.0020	U	ug/L	P337256	
		Carbamazepine**	4.0E-04	U	ug/L	P337256	
		Triclopyr**	0.0040	U	ug/L	P337256	
		Primidone**	0.0040	U	ug/L	P337256	
		Fluridone**	4.0E-04	U	ug/L	P337256	

Ref. Method and Comment:
 USGS O-2060-01: MS accuracy and precision for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P337304

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P337307

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P337307

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P337392

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P337396

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P337396

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P337700

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P337403

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P337407

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P337415

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P337299

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

Reference Method: EPA 8321B
Batch ID: P337235

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P337292

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P337489

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
 Batch ID: P337670

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P337674

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P337492

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P337547

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

Reference Method: USGS O-2060-01
 Batch ID: P337256

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	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCPPP	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 200.7 Rev. 4.4
 Batch ID: P337307

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	104		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	102		P	85 - 115
Sodium	99.9		P	85 - 115
Zinc	101		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P337307

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	98.8		P	85 - 115
Copper	101		P	85 - 115
Lead	98.5		P	85 - 115
Nickel	101		P	85 - 115
Silver	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P337392

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P337396

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P337700

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P337403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P337407

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: P337415

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P337299

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.4		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P337235

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	89.5		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P337489

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P337492

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P337547

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P337256

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	97.3		P	40 - 150
Acetaminophen	100		P	30 - 150
Bentazon	89.3		P	30 - 150
Carbamazepine	101		P	40 - 150
Diuron	90.8		P	40 - 150
Fenuron	113		P	40 - 150
Fluridone	109		P	40 - 150
Imidacloprid	105		P	40 - 160
Linuron	99.6		P	40 - 150
MCPP	89.3		P	40 - 150
Primidone	103		P	40 - 150
Triclopyr	88.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P337307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955163	Iron	107	109	P/P	80 - 120
1955163	Magnesium	109	110	P/P	80 - 120
1955163	Potassium	101	103	P/P	80 - 120
1955163	Zinc	102	102	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P337307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955163	Arsenic	100	102	P/P	80 - 120
1955163	Cadmium	99.1	100	P/P	80 - 120
1955163	Chromium	95.2	97.2	P/P	80 - 120
1955163	Copper	95.9	97.0	P/P	80 - 120
1955163	Lead	96.4	98.3	P/P	80 - 120
1955163	Nickel	96.6	97.6	P/P	80 - 120
1955163	Silver	99.6	99.9	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P337392

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955267	Chloride	105		P	90 - 110
1955302	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P337396

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955267	Sulfate	101		P	90 - 110
1955302	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P337700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955339	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P337403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955339	Kjeldahl Nitrogen	104	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P337407

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955317	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P337415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955317	Total-P	97.1	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P337299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955306	O-Phosphate-P	99.0	98.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P337235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955251	Sucralose	105	108	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P337492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955487	Fluoride	94.9	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P337547

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955183	Organic Carbon	95.3	96.9	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P337256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955250	2,4-D	113	116	P/P	40 - 150
1955250	Acetaminophen	115	109	P/P	30 - 150
1955250	Carbamazepine	112	104	P/P	40 - 150
1955250	Diuron	94.9	89.2	P/P	40 - 150
1955250	Fenuron	124	93.5	P/P	40 - 150
1955250	Fluridone	96.2	88.2	P/P	40 - 150
1955250	Imidacloprid	172	150	F/P	40 - 160
1955250	Linuron	101	89.3	P/P	40 - 150
1955250	MCP	86.6	86.8	P/P	40 - 150
1955250	Primidone	114	106	P/P	40 - 150
1955250	Triclopyr	91.5	88.4	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P337304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955338	Turbidity	1.09	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P337307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955163	Calcium	0.919	Spike	P	0 - 20
1955163	Iron	2.19	Spike	P	0 - 20
1955163	Magnesium	0.895	Spike	P	0 - 20
1955163	Potassium	0.998	Spike	P	0 - 20
1955163	Sodium	0.362	Spike	P	0 - 20
1955163	Zinc	0.0903	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P337307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955163	Arsenic	1.27	Spike	P	0 - 20
1955163	Cadmium	1.37	Spike	P	0 - 20
1955163	Chromium	1.98	Spike	P	0 - 20
1955163	Copper	1.08	Spike	P	0 - 20
1955163	Lead	1.97	Spike	P	0 - 20
1955163	Nickel	1.03	Spike	P	0 - 20
1955163	Silver	0.274	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P337392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955302	Chloride	1.99	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P337396

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955302	Sulfate	2.91	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P337700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955339	Ammonia-N	1.22	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P337403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955339	Kjeldahl Nitrogen	4.00	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P337407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955317	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P337415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955317	Total-P	1.53	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P337299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955306	O-Phosphate-P	0.0969	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P337235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955251	Sucralose	1.64	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P337292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955341	Color (true)	3.93	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P337489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955487	Total Alkalinity	0.353	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P337670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955404	TDS	0.727	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P337492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955487	Fluoride	0.953	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P337547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955183	Organic Carbon	1.56	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P337256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955250	2,4-D	1.97	Spike	P	0 - 30
1955250	Acetaminophen	5.36	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
 Batch ID: P337256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955250	Carbamazepine	6.52	Spike	P	0 - 30
1955250	Diuron	5.88	Spike	P	0 - 30
1955250	Fenuron	27.9	Spike	P	0 - 30
1955250	Fluridone	6.18	Spike	P	0 - 30
1955250	Imidacloprid	12.5	Spike	P	0 - 30
1955250	Linuron	12.4	Spike	P	0 - 30
1955250	MCPP	0.138	Spike	P	0 - 30
1955250	Primidone	7.44	Spike	P	0 - 30
1955250	Triclopyr	3.39	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: 1955390
 Field Sample ID: G1WA0052

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	116	P	30 - 160
EPA 8321B	Carbamazepine-d10	113	P	30 - 160
EPA 8321B	Diuron-d6	93.0	P	30 - 160
EPA 8321B	Primidone-d5	122	P	30 - 160
EPA 8321B	Sucralose-d6	122	P	40 - 160
USGS O-2060-01	2,4-D-d3	97.2	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	116	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	113	P	30 - 160
USGS O-2060-01	Diuron-d6	93.0	P	30 - 160
USGS O-2060-01	Primidone-d5	122	P	30 - 160
USGS O-2060-01	Sucralose-d6	122	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
 Run ID: A81043
 Included Lab Sample IDs: 1955338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	99.5	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A81046
 Included Lab Sample IDs: 1955340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	98.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A81048

Included Lab Sample IDs: 1955338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A81087

Included Lab Sample IDs: 1955338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	107	105	P/P	90 - 110
Sulfate	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A81092

Included Lab Sample IDs: 1955339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO ₂ NO ₃ -N	100	101	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A81093

Included Lab Sample IDs: 1955390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	96.9	99.8	P/P	50 - 150
Acetaminophen	105	100	P/P	60 - 150
Bentazon	99.3	97.6	P/P	50 - 150
Carbamazepine	103	103	P/P	60 - 150
Diuron	102	99.7	P/P	60 - 150
Fenuron	104	102	P/P	60 - 150
Fluridone	105	105	P/P	60 - 160
Imidacloprid	96.0	96.8	P/P	60 - 150
Linuron	102	101	P/P	60 - 150
MCP	95.8	91.0	P/P	50 - 150
Primidone	103	103	P/P	60 - 150
Triclopyr	97.2	85.8	P/P	50 - 150

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81114

Included Lab Sample IDs: 1955339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	99.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A81124

Included Lab Sample IDs: 1955339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A81127

Included Lab Sample IDs: 1955339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	107	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A81134

Included Lab Sample IDs: 1955338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A81134

Included Lab Sample IDs: 1955338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A81137

Included Lab Sample IDs: 1955390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	88.6	74.6	P/P	60 - 150

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A81152

Included Lab Sample IDs: 1955391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.7	99.3	P/P	90 - 110
Cadmium	95.5	96.4	P/P	90 - 110
Chromium	93.6	95.1	P/P	90 - 110
Copper	97.4	99.9	P/P	90 - 110
Lead	97.1	98.3	P/P	90 - 110
Nickel	97.2	99.4	P/P	90 - 110
Silver	104	105	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A81173

Included Lab Sample IDs: 1955391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	105	109	P/P	90 - 110
Iron	105	107	P/P	90 - 110
Magnesium	106	108	P/P	90 - 110
Potassium	105	106	P/P	90 - 110
Sodium	101	105	P/P	90 - 110
Zinc	101	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81225

Included Lab Sample IDs: 1955339

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

* 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 180.1 Rev. 2.0	Turbidity				1.09	
EPA 200.7 Rev. 4.4	Calcium	105				0.919
	Iron	104	107 109			2.19
	Magnesium	109	109 110			0.895
	Potassium	102	101 103			0.998
	Sodium	99.9				0.362
	Zinc	101	102 102			0.0903
EPA 200.8 Rev. 5.4	Arsenic	104	100 102			1.27
	Cadmium	103	99.1 100			1.37
	Chromium	98.8	95.2 97.2			1.98
	Copper	101	95.9 97.0			1.08
	Lead	98.5	96.4 98.3			1.97
	Nickel	101	96.6 97.6			1.03
	Silver	103	99.6 99.9			0.274
EPA 300.0 Rev. 2.1	Chloride	105	103 105		1.99	
	Sulfate	100	101 101		2.91	
EPA 350.1 Rev. 2.0	Ammonia-N	103	101 102			1.22
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.9	104 98.4			4.00
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104 104			0.0
EPA 365.1 Rev. 2.0	Total-P	100	97.1 98.7			1.53
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	99.0 98.9			0.0969
EPA 8321B	Sucralose	89.5	105 108			1.64
SM 2120 B	Color (true)				3.93	
SM 2320 B-97	Total Alkalinity	102			0.353	
SM 2540 C-97	TDS				0.727	
SM 4500 F-C-97	Fluoride	94.2	94.9 96.1			0.953
SM 5310 B-00	Organic Carbon	96.2	95.3 96.9			1.56
USGS O-2060-01	2,4-D	97.3	113 116			1.97
	Acetaminophen	100	115 109			5.36
	Bentazon	89.3				
	Carbamazepine	101	112 104			6.52
	Diuron	90.8	94.9 89.2			5.88
	Fenuron	113	124 93.5			27.9
	Fluridone	109	96.2 88.2			6.18
	Imidacloprid	105	172 150			12.5
	Linuron	99.6	101 89.3			12.4
	MCPP	89.3	86.6 86.8			0.138
	Primidone	103	114 106			7.44
	Triclopyr	88.2	91.5 88.4			3.39

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1955338
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1955391
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1955391
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1955338
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1955338
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1955339
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1955339
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1955339
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1955339
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1955340
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1955390
SM 2120 B / E31780	True Color measured at 450 nm	1955338
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1955338
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1955338
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1955338
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1955338
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1955339
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1955390
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1955390

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	12/20/2017			12/20/2017 16:23	DeAsia Armster	1955338
EPA 200.7 Rev. 4.4	12/20/2017	12/20/2017	Elliott D. Healy	12/28/2017	Betina Topolski	1955391
EPA 200.8 Rev. 5.4	12/20/2017	12/20/2017	Elliott D. Healy	12/26/2017	Nadine Brooks	1955391
EPA 300.0 Rev. 2.1	12/20/2017			12/21/2017	Julia Storbeck	1955338
EPA 350.1 Rev. 2.0	12/20/2017			12/29/2017	Sofia Elnemr	1955339
EPA 351.2 Rev. 2.0	12/20/2017	12/22/2017	Adrian Shelby	12/26/2017	Joseph Suarez	1955339
EPA 353.2 Rev. 2.0	12/20/2017			12/22/2017	Lipi Saha	1955339
EPA 365.1 Rev. 2.0	12/20/2017	12/22/2017	Sima Feizi	12/26/2017	Lipi Saha	1955339
EPA 365.1 Rev. 2.0 dissolved	12/20/2017			12/20/2017 15:45	Megan Treadwell	1955340
EPA 8321B	12/20/2017	12/20/2017	Juyoung Kim	12/26/2017	Juyoung Kim	1955390
SM 2120 B	12/20/2017			12/20/2017 14:53	Tanya Welborn	1955338
SM 2320 B-97	12/20/2017			12/27/2017	Dale L. Simmons	1955338
SM 2540 C-97	12/20/2017			12/25/2017	Yijie Li	1955338
SM 2540 D-97	12/20/2017			12/25/2017	Yijie Li	1955338
SM 4500 F-C-97	12/20/2017			12/27/2017	Dale L. Simmons	1955338
SM 5310 B-00	12/20/2017			12/23/2017	Megan Treadwell	1955339
USGS O-2060-01	12/20/2017	12/21/2017	Hoor Shaik	12/22/2017	Julie Michelle Frank	1955390