

Chemical Analysis Report

WQ-ASSESS-2017-04-26-01

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

Event Description: **Big Branch (1), Big Branch (2), Coon Creek**

Request ID: **RQ-2017-04-03-29**

Customer: **WQ-ASSESS**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
Division Of Water Facilities, FL DEP
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
Attn: curtis musson

For additional information please contact

Colin Wright, Ph.D.

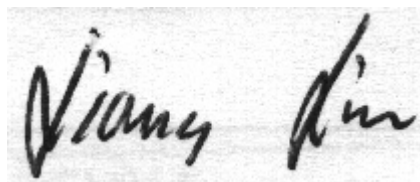
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Thekkekalathil Chandrasekhar, Ph.D, QA Officer

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 23-MAY-2017 11:41

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 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: BIG BRANCH DOWN STREAM OF ROAD 5

Collection Date/Time: 04/26/2017 10:52

Field ID: G2WA0001_04262017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892922	EPA 180.1 Rev. 2.0	Turbidity	2.2	A	NTU	P324096	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P324663	
		Sulfate	0.72		mg SO4/L	P324668	
	SM 2120 B	Color (true)	51	A	PCU	P324071	
	SM 2320 B-97	Total Alkalinity	2.0	I	mg CaCO3/L	P324823	
	SM 2540 C-97	TDS	15	U	mg/L	P324740	
	SM 2540 D-97	TSS	2	I	mg/L	P324784	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325523	
1892924	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P324243	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P324155	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324386	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P324275	
	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P324234	
1892926	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324106	

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: BIG BRANCH 50 METERS UPSTREAM OF CR 67

Collection Date/Time: 04/26/2017 12:30

Field ID: G1WA0001_04262017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892923	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P324096	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P324663	
		Sulfate	0.83		mg SO4/L	P324668	
	SM 2120 B	Color (true)	150		PCU	P324071	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P324823	
	SM 2540 C-97	TDS	42		mg/L	P324740	
	SM 2540 D-97	TSS	2	I	mg/L	P324784	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325596	
1892925	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P324243	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P324279	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324386	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P324275	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P324234	
1892927	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324105	

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: BIG BRANCH 50 METERS UPSTREAM OF CR 67

Collection Date/Time: 04/26/2017 12:30

Field ID: G1WA0001_04262017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892933	EPA 8321B	Sucralose**	0.010	U	ug/L	P324034	

Field ID: G1WA0001_04262017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892933	USGS O-2060-01	2,4-D	8.0E-04	U	ug/L	P324040	
		Diuron	8.0E-04	U	ug/L	P324040	
		Fenuron	0.0040	U	ug/L	P324040	
		Imidacloprid	8.0E-04	U	ug/L	P324040	MS
		Bentazon	8.0E-04	U	ug/L	P324040	
		Linuron	0.0040	U	ug/L	P324040	
		Acetaminophen**	0.0080	U	ug/L	P324040	
		MCP	8.0E-04	U	ug/L	P324040	
		Carbamazepine**	4.0E-04	U	ug/L	P324040	
		Triclopyr**	0.0040	U	ug/L	P324040	
		Primidone**	0.0040	U	ug/L	P324040	
		Fluridone**	4.0E-04	U	ug/L	P324040	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P324096

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P324663

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P324668

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P324243

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P324155

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P324279

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324386

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324275

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324105

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324106

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

Reference Method: EPA 8321B
Batch ID: P324034

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P324071

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P324823

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

Reference Method: SM 2540 C-97
Batch ID: P324740

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324784

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
 Batch ID: P325523

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P325596

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P324234

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

Reference Method: USGS O-2060-01
 Batch ID: P324040

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	0.0040	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	8.0E-04	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 300.0 Rev. 2.1
 Batch ID: P324663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P324668

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P324243

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324155

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324279

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324386

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324275

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324105

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324106

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.5		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P324034

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	113		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P324823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P325523

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97

Batch ID: P325596

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	92 - 103

Reference Method: SM 5310 B-00

Batch ID: P324234

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Reference Method: USGS O-2060-01

Batch ID: P324040

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	73.9		P	40 - 140
Acetaminophen	83.4		P	40 - 140
Bentazon	48.0		P	40 - 140
Carbamazepine	109		P	40 - 140
Diuron	106		P	40 - 140
Fenuron	105		P	40 - 140
Fluridone	102		P	40 - 140
Imidacloprid	106		P	40 - 160
Linuron	98.6		P	40 - 140
MCPP	79.2		P	40 - 140
Primidone	105		P	40 - 140
Triclopyr	77.4		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P324663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892835	Chloride	98.4		P	90 - 110
1892886	Chloride	95.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P324668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892835	Sulfate	99.1		P	90 - 110
1892886	Sulfate	96.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P324243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892924	Ammonia-N	102	98.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892846	Kjeldahl Nitrogen	96.8	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1893812	Kjeldahl Nitrogen	88.6	89.9	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892890	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892995	Total-P	102	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892764	O-Phosphate-P	93.5	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892767	O-Phosphate-P	95.0	97.9	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P324034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892902	Sucralose	110	110	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P325523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892759	Fluoride	101	102	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P325596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1893434	Fluoride	96.5	95.8	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P324234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892924	Organic Carbon	103	103	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P324040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892542	2,4-D	62.4	66.3	P/P	40 - 140
1892542	Acetaminophen	81.8	101	P/P	40 - 140
1892542	Bentazon	47.2	49.4	P/P	40 - 140
1892542	Carbamazepine	89.2	90.7	P/P	40 - 140
1892542	Diuron	76.3	80.6	P/P	40 - 140
1892542	Fenuron	49.5	49.3	P/P	40 - 140
1892542	Fluridone	71.1	74.9	P/P	40 - 140
1892542	Imidacloprid	154	163	P/F	40 - 160
1892542	Linuron	91.2	94.6	P/P	40 - 140
1892542	MCCP	56.8	61.2	P/P	40 - 140
1892542	Primidone	81.5	84.5	P/P	40 - 140
1892542	Triclopyr	60.1	63.0	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892922	Turbidity	0.897	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892835	Chloride	0.250	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892835	Sulfate	0.258	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892924	Ammonia-N	4.10	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892846	Kjeldahl Nitrogen	1.21	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1893812	Kjeldahl Nitrogen	1.29	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892890	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892995	Total-P	4.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892764	O-Phosphate-P	1.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892767	O-Phosphate-P	2.35	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P324034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892902	Sucralose	0.0	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P324071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892922	Color (true)	2.06	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P324823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1893287	Total Alkalinity	0.653	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
 Batch ID: P324740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892758	TDS	3.97	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P325523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892759	Fluoride	0.947	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P325596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1893434	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P324234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892924	Organic Carbon	0.150	Spike	P	0 - 20

Reference Method: USGS O-2060-01
 Batch ID: P324040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892542	2,4-D	5.43	Spike	P	0 - 30
1892542	Acetaminophen	20.6	Spike	P	0 - 30
1892542	Bentazon	4.29	Spike	P	0 - 30
1892542	Carbamazepine	1.73	Spike	P	0 - 30
1892542	Diuron	4.34	Spike	P	0 - 30
1892542	Fenuron	0.324	Spike	P	0 - 30
1892542	Fluridone	4.39	Spike	P	0 - 30
1892542	Imidacloprid	5.87	Spike	P	0 - 30
1892542	Linuron	3.66	Spike	P	0 - 30
1892542	MCCP	7.46	Spike	P	0 - 30
1892542	Primidone	3.61	Spike	P	0 - 30
1892542	Triclopyr	4.68	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: 1892933

Field Sample ID: G1WA0001_04262017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	94.0	P	40 - 150
USGS O-2060-01	2,4-D-d3	71.4	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	77.9	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	96.0	P	30 - 160
USGS O-2060-01	Diuron-d6	92.6	P	30 - 150
USGS O-2060-01	Primidone-d5	105	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A76016

Included Lab Sample IDs: 1892922, 1892923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.6	100	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A76023

Included Lab Sample IDs: 1892922, 1892923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A76027

Included Lab Sample IDs: 1892926, 1892927

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	96.2	P/P	90 - 110
O-Phosphate-P	98.1	97.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A76043

Included Lab Sample IDs: 1892933

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

Reference Method: SM 5310 B-00

Run ID: A76068

Included Lab Sample IDs: 1892924, 1892925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A76070

Included Lab Sample IDs: 1892924, 1892925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A76070

Included Lab Sample IDs: 1892924, 1892925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	92.2	92.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76108

Included Lab Sample IDs: 1892924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76115

Included Lab Sample IDs: 1892925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	96.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76117

Included Lab Sample IDs: 1892924, 1892925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A76148

Included Lab Sample IDs: 1892922, 1892923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	105	104	P/P	90 - 110
Sulfate	99.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76173

Included Lab Sample IDs: 1892924, 1892925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.2	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76242

Included Lab Sample IDs: 1892922, 1892923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A76477

Included Lab Sample IDs: 1892933

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A76477

Included Lab Sample IDs: 1892933

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	89.2	85.2	P/P	50 - 150
Acetaminophen	96.4	122	P/P	60 - 150
Bentazon	81.2	84.0	P/P	50 - 150
Carbamazepine	99.2	104	P/P	60 - 150
Diuron	121	114	P/P	60 - 150
Fenuron	102	111	P/P	60 - 150
Fluridone	112	118	P/P	60 - 150
Imidacloprid	105	118	P/P	60 - 150
Linuron	96.8	107	P/P	60 - 150
MCP	90.0	88.8	P/P	50 - 150
Primidone	94.0	110	P/P	60 - 150
Triclopyr	90.0	90.4	P/P	50 - 150

Reference Method: SM 4500 F-C-97

Run ID: A76528

Included Lab Sample IDs: 1892922

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

Reference Method: SM 4500 F-C-97

Run ID: A76561

Included Lab Sample IDs: 1892923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	100	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				0.897	
EPA 300.0 Rev. 2.1	Chloride	99.6	98.4 95.1		0.250	
	Sulfate	99.6	99.1 96.7		0.258	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102 98.2			4.10
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.0	96.8 98.1			1.21
	Kjeldahl Nitrogen	95.1	88.6 89.9			1.29
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102 102			0.489
EPA 365.1 Rev. 2.0	Total-P	102	102 97.8			4.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.2	93.5 95.2			1.53
	O-Phosphate-P	97.5	95.0 97.9			2.35
EPA 8321B	Sucralose	113	110 110			0.0
SM 2120 B	Color (true)				2.06	
SM 2320 B-97	Total Alkalinity	103			0.653	
SM 2540 C-97	TDS				3.97	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision LCS	SMP	MS
SM 4500 F-C-97	Fluoride	102	101	102			0.947
	Fluoride	98.6	96.5	95.8			0.480
SM 5310 B-00	Organic Carbon	104	103	103			0.150
USGS O-2060-01	2,4-D	73.9	62.4	66.3			5.43
	Acetaminophen	83.4	101	81.8			20.6
	Bentazon	48.0	47.2	49.4			4.29
	Carbamazepine	109	89.2	90.7			1.73
	Diuron	106	76.3	80.6			4.34
	Fenuron	105	49.5	49.3			0.324
	Fluridone	102	71.1	74.9			4.39
	Imidacloprid	106	154	163			5.87
	Linuron	98.6	91.2	94.6			3.66
	MCP	79.2	56.8	61.2			7.46
	Primidone	105	81.5	84.5			3.61
	Triclopyr	77.4	60.1	63.0			4.68

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1892922, 1892923
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1892922, 1892923
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1892922, 1892923
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1892924, 1892925
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1892924, 1892925
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1892924, 1892925
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1892924, 1892925
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1892926, 1892927
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1892933
SM 2120 B / E31780	True Color measured at 450 nm	1892922, 1892923
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1892922, 1892923
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1892922, 1892923
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1892922, 1892923
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1892922, 1892923
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1892924, 1892925
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1892933
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1892933

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	04/26/2017			04/26/2017 16:32	Sima Feizi	1892922, 1892923
EPA 300.0 Rev. 2.1	04/26/2017			05/04/2017	Ping Hua	1892922, 1892923
EPA 350.1 Rev. 2.0	04/26/2017			04/27/2017	Julie Michelle Frank	1892924, 1892925
EPA 351.2 Rev. 2.0	04/26/2017	04/28/2017	Adrian Shelby	05/02/2017	Joseph Suarez	1892924
	04/26/2017	05/01/2017	Adrian Shelby	05/02/2017	Joseph Suarez	1892925
EPA 353.2 Rev. 2.0	04/26/2017			05/02/2017	Beverly Y. Sanders	1892924, 1892925
EPA 365.1 Rev. 2.0	04/26/2017	05/01/2017	Vijayalakshmi Reddy	05/02/2017	Lipi Saha	1892924, 1892925
EPA 365.1 Rev. 2.0 dissolved	04/26/2017			04/26/2017 15:57	Anthony C. Onicha	1892926
	04/26/2017			04/26/2017 16:17	Anthony C. Onicha	1892927
EPA 8321B	04/26/2017	04/27/2017	Mohammad Ghaffari	04/27/2017	Mohammad Ghaffari	1892933
SM 2120 B	04/26/2017			04/26/2017 16:34	Julia Storbeck	1892922
	04/26/2017			04/26/2017 16:35	Julia Storbeck	1892923
SM 2320 B-97	04/26/2017			05/06/2017	Dale L. Simmons	1892922, 1892923
SM 2540 C-97	04/26/2017			05/01/2017	Yijie Li	1892922, 1892923
SM 2540 D-97	04/26/2017			05/01/2017	Yijie Li	1892922, 1892923
SM 4500 F-C-97	04/26/2017			05/19/2017	Dale L. Simmons	1892922
	04/26/2017			05/20/2017	Dale L. Simmons	1892923
SM 5310 B-00	04/26/2017			04/28/2017	Julie Michelle Frank	1892924, 1892925
USGS O-2060-01	04/26/2017	04/29/2017	Hoor Shaik	05/14/2017	Juyoung Kim	1892933