

Chemical Analysis Report

NW-DIST-2017-08-01-01

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

Event Description: **Choctawhatchee River north WBID 49C,E,A 679**
Request ID: **RQ-2017-07-31-13**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 21-AUG-2017 11:47

A handwritten signature in black ink, appearing to read "Colin Wright", is placed on a light-colored 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: 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: Choctawhatchee River

Collection Date/Time: 07/31/2017 11:40

Field ID: G3NW0130

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917734	EPA 180.1 Rev. 2.0	Turbidity	20		NTU	P329513	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P329622	
		Sulfate	2.2		mg SO4/L	P329620	
	SM 2120 B	Color (true)	18	A	PCU	P329500	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P329656	
	SM 2540 C-97	TDS	72		mg/L	P329916	
	SM 2540 D-97	TSS	19		mg/L	P330145	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P329658	
1917737	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P329572	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P329624	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.46		mg N/L	P329517	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P329556	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P329793	
1917740	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P329487	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Choctawhatchee River above Holmes Creek

Collection Date/Time: 07/31/2017 13:00

Field ID: G3NW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917735	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P329513	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P329622	
		Sulfate	2.0		mg SO4/L	P329620	
	SM 2120 B	Color (true)	78		PCU	P329497	
	SM 2320 B-97	Total Alkalinity	32		mg CaCO3/L	P329656	
	SM 2540 C-97	TDS	70		mg/L	P329916	
	SM 2540 D-97	TSS	7	I	mg/L	P330145	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P329658	
1917738	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P329574	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P329624	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.39		mg N/L	P329517	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P329557	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P329793	
1917741	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P329487	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Choctawhatchee River above Smokehouse Lake

Collection Date/Time: 07/31/2017 14:15

Field ID: G3NW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917736	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P329513	

Field ID: G3NW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917736	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P329622	
		Sulfate	1.8		mg SO4/L	P329620	
	SM 2120 B	Color (true)	88		PCU	P329497	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P329656	
	SM 2540 C-97	TDS	92		mg/L	P329916	
	SM 2540 D-97	TSS	10	I	mg/L	P330145	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P329658	
1917739	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P329679	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P329552	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P329518	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P329557	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P329793	
1917742	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P329487	

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: Black Creek

Collection Date/Time: 07/31/2017 15:00

Field ID: G3NW0131

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917770	EPA 8321B	Sucralose**	0.036	I	ug/L	P329343	
	USGS O-2060-01	2,4-D	0.0039	I	ug/L	P329234	
		Diuron	8.0E-04	U	ug/L	P329234	
		Fenuron	0.0080	U	ug/L	P329234	
		Imidacloprid	0.029		ug/L	P329234	MS
		Bentazon	8.0E-04	U	ug/L	P329234	
		Linuron	0.0040	U	ug/L	P329234	
		Acetaminophen**	0.0080	U	ug/L	P329234	
		MCP	0.0020	U	ug/L	P329234	
		Carbamazepine**	4.0E-04	U	ug/L	P329234	
		Triclopyr**	0.0040	U	ug/L	P329234	
		Primidone**	0.0040	U	ug/L	P329234	
		Fluridone**	4.0E-04	U	ug/L	P329234	

Ref. Method and Comment:

USGS O-2060-01: MS accuracy 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: P329513

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329620

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329622

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329572

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329574

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329679

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329552

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329624

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329517

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329518

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329556

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329557

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329487

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

Reference Method: EPA 8321B
Batch ID: P329343

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P329497

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P329500

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329656

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

Reference Method: SM 2540 C-97
Batch ID: P329916

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330145

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
 Batch ID: P329658

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P329793

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

Reference Method: USGS O-2060-01
 Batch ID: P329234

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
MCPP	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 300.0 Rev. 2.1
 Batch ID: P329620

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P329622

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P329572

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P329574

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329679

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	92.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329624

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329517

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329518

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: P329556

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329487

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

Reference Method: EPA 8321B
Batch ID: P329343

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	85.0		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P329656

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

Reference Method: SM 4500 F-C-97
Batch ID: P329658

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P329793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P329234

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	69.0		P	40 - 150
Acetaminophen	58.6		P	30 - 150
Bentazon	88.1		P	40 - 150
Carbamazepine	130		P	40 - 150
Diuron	99.8		P	40 - 150
Fenuron	113		P	40 - 150
Fluridone	89.3		P	40 - 150
Imidacloprid	112		P	40 - 160
Linuron	92.3		P	40 - 150
MCP	72.8		P	40 - 150
Primidone	80.7		P	40 - 150
Triclopyr	64.7		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917729	Sulfate	94.6		P	90 - 110
1917735	Sulfate	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329622

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917729	Chloride	93.3		P	90 - 110
1917735	Chloride	98.6		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917683	Ammonia-N	99.5	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917738	Ammonia-N	100	97.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917480	Ammonia-N	97.9	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917730	Kjeldahl Nitrogen	103	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329517

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917682	NO2NO3-N	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917739	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329556

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917682	Total-P	94.8	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917739	Total-P	101	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917719	O-Phosphate-P	99.3	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P329343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917030	Sucralose	103	92.6	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P329658

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917818	Fluoride	94.2	95.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P329793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917684	Organic Carbon	96.4	96.5	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P329234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917511	2,4-D	105	90.3	P/P	40 - 150
1917511	Acetaminophen	126	108	P/P	30 - 150
1917511	Carbamazepine	107	80.9	P/P	40 - 150
1917511	Diuron	64.9	59.2	P/P	40 - 150
1917511	Fenuron	60.9	48.1	P/P	40 - 150
1917511	Fluridone	47.3	41.3	P/P	40 - 150
1917511	Imidacloprid	162	169	F/F	40 - 160
1917511	Linuron	75.2	78.6	P/P	40 - 150
1917511	MCPP	107	102	P/P	40 - 150
1917511	Primidone	56.6	47.4	P/P	40 - 150
1917511	Triclopyr	92.7	95.2	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917712	Turbidity	3.07	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917729	Sulfate	3.64	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917729	Chloride	1.97	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917683	Ammonia-N	0.163	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917738	Ammonia-N	1.78	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917480	Ammonia-N	0.635	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917730	Kjeldahl Nitrogen	1.01	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917477	Kjeldahl Nitrogen	3.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917682	NO2NO3-N	0.617	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917739	NO2NO3-N	0.382	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329556

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917682	Total-P	4.71	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917739	Total-P	2.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917719	O-Phosphate-P	1.00	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P329343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917030	Sucralose	5.37	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P329497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917729	Color (true)	1.13	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917734	Color (true)	2.59	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917818	Total Alkalinity	0.0793	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P329916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917744	TDS	4.21	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
 Batch ID: P329658

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917818	Fluoride	1.00	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P329793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917684	Organic Carbon	0.151	Spike	P	0 - 20

Reference Method: USGS O-2060-01
 Batch ID: P329234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917511	2,4-D	12.9	Spike	P	0 - 30
1917511	Acetaminophen	15.8	Spike	P	0 - 30
1917511	Bentazon	2.20	Spike	P	0 - 30
1917511	Carbamazepine	27.9	Spike	P	0 - 30
1917511	Diuron	8.16	Spike	P	0 - 30
1917511	Fenuron	23.4	Spike	P	0 - 30
1917511	Fluridone	11.6	Spike	P	0 - 30
1917511	Imidacloprid	3.46	Spike	P	0 - 30
1917511	Linuron	4.42	Spike	P	0 - 30
1917511	MCPP	5.06	Spike	P	0 - 30
1917511	Primidone	17.7	Spike	P	0 - 30
1917511	Triclopyr	2.62	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: 1917770
 Field Sample ID: G3NW0131

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	74.4	P	40 - 160
USGS O-2060-01	2,4-D-d3	100	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	136	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	90.3	P	30 - 160
USGS O-2060-01	Diuron-d6	75.6	P	30 - 160
USGS O-2060-01	Primidone-d5	118	P	30 - 160

Quality Assurance Report Calibration Verification

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A78088

Included Lab Sample IDs: 1917740, 1917741, 1917742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	99.3	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A78090

Included Lab Sample IDs: 1917734, 1917735, 1917736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	85 - 115
Color (true)	100	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A78096

Included Lab Sample IDs: 1917734, 1917735, 1917736

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78098

Included Lab Sample IDs: 1917737, 1917738, 1917739

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78129

Included Lab Sample IDs: 1917737, 1917738

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78155

Included Lab Sample IDs: 1917737, 1917738, 1917739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	99.2	P/P	90 - 110
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A78163

Included Lab Sample IDs: 1917734, 1917735, 1917736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.6	98.4	P/P	90 - 110
Chloride	98.4	96.1	P/P	90 - 110
Sulfate	102	96.5	P/P	90 - 110
Sulfate	96.2	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A78171

Included Lab Sample IDs: 1917734, 1917735, 1917736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A78171

Included Lab Sample IDs: 1917734, 1917735, 1917736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	94.8	95.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78174

Included Lab Sample IDs: 1917739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	90.4	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78181

Included Lab Sample IDs: 1917739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78190

Included Lab Sample IDs: 1917737, 1917738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.4	96.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A78233

Included Lab Sample IDs: 1917737, 1917738, 1917739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.4	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A78239

Included Lab Sample IDs: 1917770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	83.9	60.2	P/P	50 - 150
Acetaminophen	140	127	P/P	60 - 150
Bentazon	118	99.3	P/P	50 - 150
Carbamazepine	150	138	P/P	60 - 150
Diuron	145	115	P/P	60 - 150
Fenuron	134	105	P/P	60 - 150
Fluridone	110	110	P/P	60 - 160
Imidacloprid	126	121	P/P	60 - 150
Linuron	133	105	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A78239

Included Lab Sample IDs: 1917770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
MCP	93.2	81.6	P/P	50 - 150
Primidone	73.8	72.8	P/P	60 - 150
Triclopyr	75.1	73.6	P/P	50 - 150

Reference Method: EPA 8321B

Run ID: A78247

Included Lab Sample IDs: 1917770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	66.5	70.8	P/P	60 - 160

* 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				3.07	
EPA 300.0 Rev. 2.1	Chloride	99.8	93.3 98.6		1.97	
	Sulfate	102	94.6 99.8		3.64	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	99.5 99.7			0.163
	Ammonia-N	102	100 97.7			1.78
	Ammonia-N	101	97.9 96.0			0.635
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	92.7	103 104			1.01
	Kjeldahl Nitrogen	103				3.11
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	105 104			0.617
	NO ₂ NO ₃ -N	102	100			0.382
EPA 365.1 Rev. 2.0	Total-P	95.8	94.8 99.5			4.71
	Total-P	95.4	101 98.6			2.00
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.3 100			1.00
EPA 8321B	Sucralose	85.0	103 92.6			5.37
SM 2120 B	Color (true)				1.13	
	Color (true)				2.59	
SM 2320 B-97	Total Alkalinity	102			0.0793	
SM 2540 C-97	TDS				4.21	
SM 4500 F-C-97	Fluoride	94.0	94.2 95.4			1.00
SM 5310 B-00	Organic Carbon	96.4	96.4 96.5			0.151
USGS O-2060-01	2,4-D	69.0	105 90.3			12.9
	Acetaminophen	58.6	126 108			15.8
	Bentazon	88.1				2.20
	Carbamazepine	130	107 80.9			27.9
	Diuron	99.8	64.9 59.2			8.16
	Fenuron	113	60.9 48.1			23.4
	Fluridone	89.3	47.3 41.3			11.6
	Imidacloprid	112	162 169			3.46
	Linuron	92.3	75.2 78.6			4.42
	MCP	72.8	107 102			5.06

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
USGS O-2060-01	Primidone	80.7	56.6	47.4		17.7
	Triclopyr	64.7	92.7	95.2		2.62

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1917734, 1917735, 1917736
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1917734, 1917735, 1917736
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1917734, 1917735, 1917736
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1917737, 1917738, 1917739
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1917737, 1917738, 1917739
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1917737, 1917738, 1917739
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1917737, 1917738, 1917739
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1917740, 1917741, 1917742
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1917770
SM 2120 B / E31780	True Color measured at 450 nm	1917734, 1917735, 1917736
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1917734, 1917735, 1917736
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1917734, 1917735, 1917736
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1917734, 1917735, 1917736
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1917734, 1917735, 1917736
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1917737, 1917738, 1917739
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1917770
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1917770

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	08/01/2017			08/01/2017 15:13	Tanya Welborn	1917734, 1917735, 1917736
EPA 300.0 Rev. 2.1	08/01/2017			08/02/2017	Julia Storbeck	1917734, 1917735, 1917736
EPA 350.1 Rev. 2.0	08/01/2017			08/02/2017	Sofia Elnemr	1917737, 1917738
	08/01/2017			08/03/2017	Sofia Elnemr	1917739
EPA 351.2 Rev. 2.0	08/01/2017	08/02/2017	Adrian Shelby	08/03/2017	Joseph Suarez	1917739
	08/01/2017	08/03/2017	Adrian Shelby	08/04/2017	Joseph Suarez	1917737, 1917738
EPA 353.2 Rev. 2.0	08/01/2017			08/02/2017	Beverly Y. Sanders	1917737, 1917738, 1917739
EPA 365.1 Rev. 2.0	08/01/2017	08/02/2017	Sima Feizi	08/03/2017	Lipi Saha	1917737, 1917738, 1917739
EPA 365.1 Rev. 2.0 dissolved	08/01/2017			08/01/2017 14:57	Anthony C. Onicha	1917740
	08/01/2017			08/01/2017 14:58	Anthony C. Onicha	1917741
	08/01/2017			08/01/2017 14:59	Anthony C. Onicha	1917742
EPA 8321B	08/01/2017	08/04/2017	Julie Michelle Frank	08/05/2017	Mohammad Ghaffari	1917770
SM 2120 B	08/01/2017			08/01/2017 15:53	Tanya Welborn	1917735
	08/01/2017			08/01/2017 15:54	Tanya Welborn	1917736
	08/01/2017			08/01/2017 16:21	Tanya Welborn	1917734
SM 2320 B-97	08/01/2017			08/03/2017	Dale L. Simmons	1917734, 1917735, 1917736
SM 2540 C-97	08/01/2017			08/04/2017	Yijie Li	1917734, 1917735, 1917736
SM 2540 D-97	08/01/2017			08/04/2017	Yijie Li	1917734, 1917735, 1917736
SM 4500 F-C-97	08/01/2017			08/03/2017	Dale L. Simmons	1917734, 1917735, 1917736
SM 5310 B-00	08/01/2017			08/05/2017	Sofia Elnemr	1917737, 1917738, 1917739
USGS O-2060-01	08/01/2017	08/02/2017	Fe-Val Siddell	08/05/2017	Juyoung Kim	1917770