

Chemical Analysis Report

WQAP-2017-08-17-03

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

Event Description: **RUNS 13/14**
Request ID: **RQ-2017-08-14-28**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Tampa, FL 33637
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 13-SEP-2017 10:14

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: New River

Collection Date/Time: 08/16/2017 09:30

Field ID: G2SW0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922330	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P330440	
	EPA 300.0 Rev. 2.1	Chloride	15	A	mg Cl/L	P330714	
		Sulfate	1.7	A	mg SO4/L	P330716	
	SM 2120 B	Color (true)	350		PCU	P330434	
	SM 2320 B-97	Total Alkalinity	32		mg CaCO3/L	P330701	
	SM 2540 C-97	TDS	122		mg/L	P330978	
	SM 2540 D-97	TSS	2	U	mg/L	P330682	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P330705	
1922333	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P330557	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P330777	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330567	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P330505	
	SM 5310 B-00	Organic Carbon	30		mg C/L	P330769	
1922336	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.070		mg P/L	P330429	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Trout Crk

Collection Date/Time: 08/16/2017 10:20

Field ID: G2SW0021

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922351	EPA 8321B	Sucralose**	1.0		ug/L	P330491	
	USGS O-2060-01	2,4-D	0.0093		ug/L	P330455	
		Diuron	0.0065		ug/L	P330455	
		Fenuron	0.0080	U	ug/L	P330455	
		Imidacloprid	0.081		ug/L	P330455	
		Bentazon	0.020		ug/L	P330455	
		Linuron	0.0040	U	ug/L	P330455	
		Acetaminophen**	0.0080	U	ug/L	P330455	
		MCP	0.0020	U	ug/L	P330455	
		Carbamazepine**	0.0011	I	ug/L	P330455	
		Triclopyr**	0.0040	U	ug/L	P330455	
		Primidone**	0.0040	U	ug/L	P330455	
		Fluridone**	0.0055		ug/L	P330455	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for imidacloprid could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Delany Crk 2

Collection Date/Time: 08/16/2017 13:35

Field ID: G1SW0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922331	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P330440	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P330714	
		Sulfate	7.9		mg SO4/L	P330716	

Field ID: G1SW0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922331	SM 2120 B	Color (true)	110	A	PCU	P330435	
	SM 2320 B-97	Total Alkalinity	71	A	mg CaCO3/L	P330701	
	SM 2540 C-97	TDS	143		mg/L	P330979	
	SM 2540 D-97	TSS	10		mg/L	P330683	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P330705	
1922334	EPA 350.1 Rev. 2.0	Ammonia-N	0.091		mg N/L	P330558	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P330546	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P330567	
	EPA 365.1 Rev. 2.0	Total-P	0.37		mg P/L	P330505	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P330769	
1922337	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P330429	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Delany Crk 2

Collection Date/Time: 08/16/2017 13:35

Field ID: G1SW0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922352	EPA 8321B	Sucralose**	0.16		ug/L	P330491	
	USGS O-2060-01	2,4-D	0.019		ug/L	P330455	
		Diuron	0.014		ug/L	P330455	
		Fenuron	0.017	I	ug/L	P330455	
		Imidacloprid	0.14		ug/L	P330455	
		Bentazon	0.0095		ug/L	P330455	
		Linuron	0.0040	U	ug/L	P330455	
		Acetaminophen**	0.0080	U	ug/L	P330455	
		MCP	0.0055	I	ug/L	P330455	
		Carbamazepine**	8.5E-04	I	ug/L	P330455	
		Triclopyr**	0.0040	U	ug/L	P330455	
		Primidone**	0.0040	U	ug/L	P330455	
		Fluridone**	0.023		ug/L	P330455	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for imidacloprid could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Delany Crk

Collection Date/Time: 08/16/2017 13:50

Field ID: G1SW0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922332	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P330440	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P330714	
		Sulfate	8.9		mg SO4/L	P330716	
	SM 2120 B	Color (true)	110		PCU	P330435	
	SM 2320 B-97	Total Alkalinity	74		mg CaCO3/L	P330701	
	SM 2540 C-97	TDS	156		mg/L	P330979	
	SM 2540 D-97	TSS	12		mg/L	P330683	

Field ID: G1SW0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922332	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P330705	
1922335	EPA 350.1 Rev. 2.0	Ammonia-N	0.070		mg N/L	P330558	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P330546	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P330567	
	EPA 365.1 Rev. 2.0	Total-P	0.36		mg P/L	P330505	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P330769	
1922338	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P330429	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Delany Crk

Collection Date/Time: 08/16/2017 13:50

Field ID: G1SW0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922353	EPA 8321B	Sucralose**	0.18		ug/L	P330491	
	USGS O-2060-01	2,4-D	0.019		ug/L	P330455	
		Diuron	0.013		ug/L	P330455	
		Fenuron	0.015	I	ug/L	P330455	
		Imidacloprid	0.12		ug/L	P330455	
		Bentazon	0.010		ug/L	P330455	
		Linuron	0.0040	U	ug/L	P330455	
		Acetaminophen**	0.0080	U	ug/L	P330455	
		MCPP	0.0061	I	ug/L	P330455	
		Carbamazepine**	10E-04	I	ug/L	P330455	
		Triclopyr**	0.0040	U	ug/L	P330455	
		Primidone**	0.0040	U	ug/L	P330455	
		Fluridone**	0.017		ug/L	P330455	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for imidacloprid 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: P330440

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P330714

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330716

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330557

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330558

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330546

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330777

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330567

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330505

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330429

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

Reference Method: EPA 8321B
Batch ID: P330491

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P330434

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P330435

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P330701

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

Reference Method: SM 2540 C-97
Batch ID: P330978

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P330979

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330682

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330683

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P330705

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P330769

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

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P330455

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
MCPD	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: P330714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P330716

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P330557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P330558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	104		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P330546

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P330777

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P330567

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P330505

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: P330429

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

Reference Method: EPA 8321B
 Batch ID: P330491

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

Reference Method: SM 2320 B-97
 Batch ID: P330701

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

Reference Method: SM 4500 F-C-97
 Batch ID: P330705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P330769

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.3		P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P330455

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	79.6		P	40 - 150
Acetaminophen	69.6		P	30 - 150
Bentazon	88.7		P	40 - 150
Carbamazepine	109		P	40 - 150
Diuron	121		P	40 - 150
Fenuron	105		P	40 - 150
Fluridone	110		P	40 - 150
Imidacloprid	114		P	40 - 160
Linuron	108		P	40 - 150
MCP	80.3		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P330455

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Primidone	104		P	40 - 150
Triclopyr	75.0		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922330	Chloride	97.7		P	90 - 110
1922481	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922330	Sulfate	98.6		P	90 - 110
1922481	Sulfate	98.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922454	Kjeldahl Nitrogen	99.4	96.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330777

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1923253	Kjeldahl Nitrogen	98.0	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922219	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922218	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922220	O-Phosphate-P	91.8	94.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P330491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922313	Sucralose	41.9	40.8	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P330705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922331	Fluoride	101	98.2	P/P	91 - 105

Reference Method: USGS O-2060-01
Batch ID: P330455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922320	2,4-D	128	129	P/P	40 - 150
1922320	Acetaminophen	111	123	P/P	30 - 150
1922320	Bentazon	46.2	44.4	P/P	40 - 150
1922320	Carbamazepine	94.3	97.8	P/P	40 - 150
1922320	Diuron	65.8	74.5	P/P	40 - 150
1922320	Fenuron	58.9	57.3	P/P	40 - 150
1922320	Fluridone	37.2	35.9	F/F	40 - 150
1922320	Linuron	80.8	81.4	P/P	40 - 150
1922320	MCP	97.2	123	P/P	40 - 150
1922320	Primidone	98.2	91.4	P/P	40 - 150
1922320	Triclopyr	89.2	103	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P330440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922208	Turbidity	1.50	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922330	Chloride	1.18	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922330	Sulfate	1.31	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922162	Ammonia-N	1.57	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922334	Ammonia-N	0.512	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922454	Kjeldahl Nitrogen	1.88	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923253	Kjeldahl Nitrogen	1.94	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922219	NO2NO3-N	0.406	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922218	Total-P	1.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922220	O-Phosphate-P	2.90	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P330491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922313	Sucralose	1.44	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P330434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922161	Color (true)	1.37	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P330435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922331	Color (true)	0.793	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P330701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922331	Total Alkalinity	0.675	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P330978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922216	TDS	2.05	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P330979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922439	TDS	4.61	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P330705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922331	Fluoride	1.93	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P330769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922193	Organic Carbon	0.0126	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P330455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922320	2,4-D	1.00	Spike	P	0 - 30
1922320	Acetaminophen	10.1	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P330455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922320	Bentazon	2.59	Spike	P	0 - 30
1922320	Carbamazepine	3.71	Spike	P	0 - 30
1922320	Diuron	11.9	Spike	P	0 - 30
1922320	Fenuron	2.79	Spike	P	0 - 30
1922320	Fluridone	3.50	Spike	P	0 - 30
1922320	Imidacloprid	10.4	Spike	P	0 - 30
1922320	Linuron	0.691	Spike	P	0 - 30
1922320	MCPP	23.1	Spike	P	0 - 30
1922320	Primidone	7.18	Spike	P	0 - 30
1922320	Triclopyr	13.9	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1922351
Field Sample ID: G2SW0021

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	107	P	30 - 160
EPA 8321B	Carbamazepine-d10	98.6	P	30 - 160
EPA 8321B	Diuron-d6	66.5	P	30 - 160
EPA 8321B	Primidone-d5	90.7	P	30 - 160
EPA 8321B	Sucralose-d6	71.4	P	40 - 160
USGS O-2060-01	2,4-D-d3	124	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	107	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	98.6	P	30 - 160
USGS O-2060-01	Diuron-d6	66.5	P	30 - 160
USGS O-2060-01	Primidone-d5	90.7	P	30 - 160
USGS O-2060-01	Sucralose-d6	71.4	P	40 - 160

Lab Sample ID: 1922352
Field Sample ID: G1SW0066

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	120	P	30 - 160
EPA 8321B	Carbamazepine-d10	96.6	P	30 - 160
EPA 8321B	Diuron-d6	86.8	P	30 - 160
EPA 8321B	Primidone-d5	113	P	30 - 160
EPA 8321B	Sucralose-d6	98.3	P	40 - 160
USGS O-2060-01	2,4-D-d3	122	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	120	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	96.6	P	30 - 160
USGS O-2060-01	Diuron-d6	86.8	P	30 - 160
USGS O-2060-01	Primidone-d5	113	P	30 - 160
USGS O-2060-01	Sucralose-d6	98.3	P	40 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1922353
Field Sample ID: G1SW0046

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	118	P	30 - 160
EPA 8321B	Carbamazepine-d10	101	P	30 - 160
EPA 8321B	Diuron-d6	67.4	P	30 - 160
EPA 8321B	Primidone-d5	105	P	30 - 160
EPA 8321B	Sucralose-d6	102	P	40 - 160
USGS O-2060-01	2,4-D-d3	121	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	118	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	101	P	30 - 160
USGS O-2060-01	Diuron-d6	67.4	P	30 - 160
USGS O-2060-01	Primidone-d5	105	P	30 - 160
USGS O-2060-01	Sucralose-d6	102	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78481
Included Lab Sample IDs: 1922336, 1922337, 1922338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110
O-Phosphate-P	97.9	98.5	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A78482
Included Lab Sample IDs: 1922330, 1922331, 1922332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	106	107	P/P	85 - 115
Color (true)	107	108	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A78483
Included Lab Sample IDs: 1922330, 1922331, 1922332

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78524
Included Lab Sample IDs: 1922333, 1922334, 1922335

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78528
Included Lab Sample IDs: 1922333, 1922334, 1922335

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78528

Included Lab Sample IDs: 1922333, 1922334, 1922335

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78540

Included Lab Sample IDs: 1922333, 1922334, 1922335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78569

Included Lab Sample IDs: 1922334, 1922335

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

Reference Method: SM 2320 B-97

Run ID: A78580

Included Lab Sample IDs: 1922330, 1922331, 1922332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.8	P/P	90 - 110
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A78580

Included Lab Sample IDs: 1922330, 1922331, 1922332

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A78584

Included Lab Sample IDs: 1922330, 1922331, 1922332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.8	99.9	P/P	90 - 110
Chloride	99.2	98.8	P/P	90 - 110
Sulfate	98.2	98.5	P/P	90 - 110
Sulfate	98.7	98.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A78598

Included Lab Sample IDs: 1922333, 1922334, 1922335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78615

Included Lab Sample IDs: 1922333

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.8	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A78635

Included Lab Sample IDs: 1922351, 1922352, 1922353

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	79.3	91.7	P/P	50 - 150
2,4-D	84.9	79.3	P/P	50 - 150
Acetaminophen	110	109	P/P	60 - 150
Acetaminophen	121	110	P/P	60 - 150
Bentazon	117	126	P/P	50 - 150
Bentazon	126	120	P/P	50 - 150
Carbamazepine	97.4	97.7	P/P	60 - 150
Carbamazepine	97.7	108	P/P	60 - 150
Diuron	115	106	P/P	60 - 150
Diuron	117	115	P/P	60 - 150
Fenuron	104	110	P/P	60 - 150
Fenuron	114	104	P/P	60 - 150
Fluridone	112	116	P/P	60 - 160
Fluridone	116	121	P/P	60 - 160
Imidacloprid	116	123	P/P	60 - 150
Imidacloprid	125	116	P/P	60 - 150
Linuron	117	106	P/P	60 - 150
Linuron	129	117	P/P	60 - 150
MCPP	93.8	99.8	P/P	50 - 150
MCPP	99.8	86.3	P/P	50 - 150
Primidone	122	132	P/P	60 - 150
Primidone	132	115	P/P	60 - 150
Triclopyr	92.3	92.0	P/P	50 - 160
Triclopyr	95.6	92.3	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A78750

Included Lab Sample IDs: 1922351, 1922352, 1922353

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	108	118	P/P	60 - 150

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.50	
EPA 300.0 Rev. 2.1	Chloride	99.1	97.7 98.2		1.18	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 300.0 Rev. 2.1	Sulfate	98.2	98.6	98.2	1.31	
EPA 350.1 Rev. 2.0	Ammonia-N	106				1.57
	Ammonia-N	104				0.512
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	99.4	96.5		1.88
	Kjeldahl Nitrogen	100	98.0	95.2		1.94
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	105	104	104		0.406
EPA 365.1 Rev. 2.0	Total-P	100	102	103		1.20
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	91.8	94.5		2.90
EPA 8321B	Sucralose	107	41.9	40.8		1.44
SM 2120 B	Color (true)				1.37	
	Color (true)				0.793	
SM 2320 B-97	Total Alkalinity	102			0.675	
SM 2540 C-97	TDS				2.05	
	TDS				4.61	
SM 4500 F-C-97	Fluoride	97.7	101	98.2		1.93
SM 5310 B-00	Organic Carbon	94.3				0.0126
USGS O-2060-01	2,4-D	79.6	128	129		1.00
	Acetaminophen	69.6	111	123		10.1
	Bentazon	88.7	46.2	44.4		2.59
	Carbamazepine	109	94.3	97.8		3.71
	Diuron	121	65.8	74.5		11.9
	Fenuron	105	58.9	57.3		2.79
	Fluridone	110	37.2	35.9		3.50
	Imidacloprid	114				10.4
	Linuron	108	80.8	81.4		0.691
	MCPP	80.3	97.2	123		23.1
	Primidone	104	98.2	91.4		7.18
	Triclopyr	75.0	89.2	103		13.9

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1922330, 1922331, 1922332
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1922330, 1922331, 1922332
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1922330, 1922331, 1922332
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1922333, 1922334, 1922335
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1922333, 1922334, 1922335
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1922333, 1922334, 1922335
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1922333, 1922334, 1922335
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1922336, 1922337, 1922338
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1922351, 1922352, 1922353
SM 2120 B / E31780	True Color measured at 450 nm	1922330, 1922331, 1922332
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1922330, 1922331, 1922332
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1922330, 1922331, 1922332
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1922330, 1922331, 1922332
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1922330, 1922331, 1922332
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1922333, 1922334, 1922335

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1922351, 1922352, 1922353
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1922351, 1922352, 1922353

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	08/17/2017			08/17/2017 15:18	DeAsia Armster	1922330, 1922331, 1922332
EPA 300.0 Rev. 2.1	08/17/2017			08/22/2017	Julia Storbeck	1922330, 1922331, 1922332
EPA 350.1 Rev. 2.0	08/17/2017			08/18/2017	Sofia Elnemr	1922333, 1922334, 1922335
EPA 351.2 Rev. 2.0	08/17/2017	08/21/2017	Adrian Shelby	08/22/2017	Joseph Suarez	1922334, 1922335
	08/17/2017	08/24/2017	Adrian Shelby	08/25/2017	Joseph Suarez	1922333
EPA 353.2 Rev. 2.0	08/17/2017			08/21/2017	Beverly Y. Sanders	1922333, 1922334, 1922335
EPA 365.1 Rev. 2.0	08/17/2017	08/18/2017	Sima Feizi	08/21/2017	Lipi Saha	1922333, 1922334, 1922335
EPA 365.1 Rev. 2.0 dissolved	08/17/2017			08/17/2017 14:36	Megan Treadwell	1922336
	08/17/2017			08/17/2017 14:38	Megan Treadwell	1922338
	08/17/2017			08/17/2017 15:11	Megan Treadwell	1922337
EPA 8321B	08/17/2017	08/25/2017	Julie Michelle Frank	08/31/2017	Julie Michelle Frank	1922351, 1922352, 1922353
SM 2120 B	08/17/2017			08/17/2017 16:07	Tanya Welborn	1922331
	08/17/2017			08/17/2017 16:08	Tanya Welborn	1922332
	08/17/2017			08/17/2017 16:18	Tanya Welborn	1922330
SM 2320 B-97	08/17/2017			08/23/2017	Dale L. Simmons	1922330, 1922331, 1922332
SM 2540 C-97	08/17/2017			08/21/2017	DeAsia Armster	1922330, 1922331, 1922332
SM 2540 D-97	08/17/2017			08/21/2017	DeAsia Armster	1922330, 1922331, 1922332
SM 4500 F-C-97	08/17/2017			08/22/2017	Dale L. Simmons	1922331
	08/17/2017			08/23/2017	Dale L. Simmons	1922330, 1922332
SM 5310 B-00	08/17/2017			08/23/2017	Ping Hua	1922333, 1922334, 1922335
USGS O-2060-01	08/17/2017	08/22/2017	Hoor Shaik	08/24/2017	Juyoung Kim	1922351, 1922352, 1922353