

Chemical Analysis Report

NE-DIST-2018-03-15-01

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

Event Description: **Suwannee North 2**
Request ID: **RQ-2018-03-12-16**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 06-APR-2018 12:08



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: Jerry Branch @ SE CR 25A

Collection Date/Time: 03/14/2018 09:25

Field ID: 21020136

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974963	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P341637	
	EPA 300.0 Rev. 2.1	Chloride	8.5		mg Cl/L	P342127	
		Sulfate	1.8		mg SO4/L	P342131	
	SM 2120 B	Color (true)	380		PCU	P341641	
	SM 2320 B-97	Total Alkalinity	2.5	I	mg CaCO3/L	P341930	RPD
	SM 2540 C-97	TDS	101		mg/L	P342232	
	SM 2540 D-97	TSS	2	U	mg/L	P341766	
	SM 4500 F-C-97	Fluoride	0.26		mg F/L	P342154	
1974966	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P342105	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P341806	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P341735	
	EPA 365.1 Rev. 2.0	Total-P	0.40		mg P/L	P341743	
	SM 5310 B-00	Organic Carbon	34		mg C/L	P342186	
1974969	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.36		mg P/L	P341648	

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: Rocky Creek @ Woodpecker Road

Collection Date/Time: 03/14/2018 10:25

Field ID: 21010032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974964	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P341637	
	EPA 300.0 Rev. 2.1	Chloride	8.6		mg Cl/L	P342127	
		Sulfate	0.69		mg SO4/L	P342131	
	SM 2120 B	Color (true)	630		PCU	P341641	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341930	RPD
	SM 2540 C-97	TDS	111		mg/L	P342232	
	SM 2540 D-97	TSS	2	U	mg/L	P341766	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P342154	
1974967	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P342199	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P341978	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341735	
	EPA 365.1 Rev. 2.0	Total-P	0.096		mg P/L	P341743	
	SM 5310 B-00	Organic Carbon	81		mg C/L	P342186	
1974970	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.068		mg P/L	P341648	

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: Little Creek at US 441

Collection Date/Time: 03/14/2018 13:15

Field ID: 21010033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974960	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P341637	
	EPA 300.0 Rev. 2.1	Chloride	8.9		mg Cl/L	P342127	
		Sulfate	0.33	I	mg SO4/L	P342131	

Field ID: 21010033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974960	SM 2120 B	Color (true)	450		PCU	P341641	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341930	RPD
	SM 2540 C-97	TDS	130		mg/L	P342232	
	SM 2540 D-97	TSS	2	U	mg/L	P341766	
	SM 4500 F-C-97	Fluoride	0.089	I	mg F/L	P342154	
1974961	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P342105	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P341978	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P341734	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P341743	
	SM 5310 B-00	Organic Carbon	53		mg C/L	P342186	
1974962	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P341648	
1974997	EPA 8321B	2,4-D	0.0020	U	ug/L	P341599	
		Sucralose**	0.010	U	ug/L	P341600	
		Bentazon	8.0E-04	U	ug/L	P341599	
		MCPP	0.0020	U	ug/L	P341599	
		Triclopyr**	0.0040	U	ug/L	P341599	
		Imidacloprid	0.0020	U	ug/L	P341599	
		Diuron	0.0020	U	ug/L	P341599	
		Pyraclostrobin**	0.0020	U	ug/L	P341599	
		Primidone**	0.0040	U	ug/L	P341599	
		Linuron	0.0040	U	ug/L	P341599	
		Acetaminophen**	0.0080	U	ug/L	P341599	
		Fenuron	0.016	U	ug/L	P341599	MS
		Imazapyr**	0.021		ug/L	P341599	
		Carbamazepine**	4.0E-04	U	ug/L	P341599	
		Fluridone**	8.0E-04	U	ug/L	P341599	

Ref. Method and Comment:

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

EPA 8321B: Insufficient sample to perform duplicate matrix spikes.

Sample Location: Falling Creek @ US 441

Collection Date/Time: 03/14/2018 13:45

Field ID: 21010064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974965	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P341637	
	EPA 300.0 Rev. 2.1	Chloride	10	A	mg Cl/L	P342128	
		Sulfate	0.47	IA	mg SO4/L	P342132	
	SM 2120 B	Color (true)	340		PCU	P341641	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P341930	RPD
	SM 2540 C-97	TDS	62		mg/L	P342232	
	SM 2540 D-97	TSS	2	U	mg/L	P341766	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P342154	
1974968	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P342199	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P341813	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341735	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P341743	

Field ID: 21010064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974968	SM 5310 B-00	Organic Carbon	38		mg C/L	P342186	
1974971	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P341648	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341637

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342127

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342128

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342131

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342132

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342105

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342199

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341806

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341806

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341813

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341978

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341734

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341735

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341743

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341648

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

Reference Method: EPA 8321B
Batch ID: P341599

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	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P341599

Component	Result	Code	Units
MCPP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P341600

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P341641

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P341930

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

Reference Method: SM 2540 C-97
Batch ID: P342232

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P341766

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342154

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342186

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

Quality Assurance Report Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342127

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342128

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342131

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342105

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342199

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341806

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341813

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341978

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P341734

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: P341735

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: P341743

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P341648

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.2		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P341599

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	64.3	52.8	P/P	40 - 150
Acetaminophen	91.2	85.6	P/P	30 - 150
Bentazon	63.8	58.2	P/P	30 - 150
Carbamazepine	82.0	76.4	P/P	40 - 150
Diuron	70.8	68.3	P/P	40 - 150
Fenuron	104	99.0	P/P	40 - 150
Fluridone	66.3	61.7	P/P	40 - 150
Imazapyr	71.8	70.5	P/P	40 - 150
Imidacloprid	86.0	84.7	P/P	40 - 160
Linuron	71.9	69.6	P/P	40 - 150
MCPP	72.1	66.4	P/P	40 - 150
Primidone	98.5	90.9	P/P	40 - 150
Pyraclostrobin	66.8	66.3	P/P	40 - 150
Triclopyr	72.0	67.6	P/P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P341600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	99.4		P	40 - 150

Reference Method: SM 2320 B-97
 Batch ID: P341930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P342154

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342186

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974679	Chloride	103		P	90 - 110
1974863	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342128

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974965	Chloride	94.0		P	90 - 110
1975281	Chloride	96.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974679	Sulfate	106		P	90 - 110
1974863	Sulfate	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974965	Sulfate	95.9		P	90 - 110
1975281	Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974866	Ammonia-N	97.6	94.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974967	Ammonia-N	100	96.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974901	Kjeldahl Nitrogen	90.4	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975126	Kjeldahl Nitrogen	108	111	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975370	Kjeldahl Nitrogen	103	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341734

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974901	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341735

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974966	NO2NO3-N	94.9	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974932	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974869	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P341599

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975050	Acetaminophen	112		P	30 - 150
1975050	Carbamazepine	84.4		P	40 - 150
1975050	Diuron	67.6		P	40 - 150
1975050	Fenuron	16.6		F	40 - 150
1975050	Fluridone	55.8		P	40 - 150
1975050	Imazapyr	43.9		P	40 - 150
1975050	Imidacloprid	137		P	40 - 160
1975050	Linuron	81.6		P	40 - 150
1975050	Primidone	100		P	40 - 150
1975050	Pyraclostrobin	63.1		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P341599

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975319	2,4-D	70.4		P	40 - 150
1975319	Bentazon	51.2		P	30 - 150
1975319	MCP	63.8		P	40 - 150
1975319	Triclopyr	62.3		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P341600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974898	Sucralose	118	112	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P342154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974865	Fluoride	95.0	96.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975005	Organic Carbon	91.9	92.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974930	Turbidity	2.67	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974679	Chloride	0.267	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974965	Chloride	0.129	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974679	Sulfate	0.0839	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974866	Ammonia-N	1.59	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974967	Ammonia-N	1.90	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974901	Kjeldahl Nitrogen	4.98	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975126	Kjeldahl Nitrogen	1.72	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975370	Kjeldahl Nitrogen	2.99	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974901	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974966	NO2NO3-N	1.03	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P341743

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974932	Total-P	1.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P341648

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974869	O-Phosphate-P	1.09	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P341599

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
LFB	2,4-D	19.7	LCS	P	0 - 30
LFB	Acetaminophen	6.38	LCS	P	0 - 30
LFB	Bentazon	9.17	LCS	P	0 - 30
LFB	Carbamazepine	6.96	LCS	P	0 - 30
LFB	Diuron	3.54	LCS	P	0 - 30
LFB	Fenuron	5.33	LCS	P	0 - 30
LFB	Fluridone	7.19	LCS	P	0 - 30
LFB	Imazapyr	1.80	LCS	P	0 - 30
LFB	Imidacloprid	1.43	LCS	P	0 - 30
LFB	Linuron	3.28	LCS	P	0 - 30
LFB	MCPP	8.15	LCS	P	0 - 30
LFB	Primidone	8.02	LCS	P	0 - 30
LFB	Pyraclostrobin	0.796	LCS	P	0 - 30
LFB	Triclopyr	6.30	LCS	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P341600

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974898	Sucralose	3.50	Spike	P	0 - 30

Reference Method: SM 2120 B

Batch ID: P341641

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974900	Color (true)	1.52	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P341930

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974865	Total Alkalinity	2.13	Sample	F	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P342232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975123	TDS	1.12	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P342154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974865	Fluoride	1.42	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975005	Organic Carbon	0.211	Spike	P	0 - 20

* 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: 1974997
Field Sample ID: 21010033

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	66.8	P	30 - 160
EPA 8321B	Acetaminophen-d4	142	P	30 - 160
EPA 8321B	Carbamazepine-d10	71.7	P	30 - 160
EPA 8321B	Diuron-d6	68.2	P	30 - 160
EPA 8321B	Primidone-d5	89.2	P	30 - 160
EPA 8321B	Sucralose-d6	114	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82640
Included Lab Sample IDs: 1974960, 1974963, 1974964, 1974965

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

Reference Method: SM 2120 B
Run ID: A82641
Included Lab Sample IDs: 1974960, 1974963, 1974964, 1974965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.5	P/P	85 - 115
Color (true)	99.3	100	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82644

Included Lab Sample IDs: 1974962, 1974969, 1974970, 1974971

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82687

Included Lab Sample IDs: 1974961, 1974966, 1974967, 1974968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	101	P/P	90 - 110
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A82710

Included Lab Sample IDs: 1974997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	85.5	87.4	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82747

Included Lab Sample IDs: 1974961, 1974966, 1974967

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82750

Included Lab Sample IDs: 1974960, 1974963, 1974964, 1974965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Sulfate	101	104	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82760

Included Lab Sample IDs: 1974960, 1974963, 1974964, 1974965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.4	100	P/P	90 - 110
Total Alkalinity	100	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82769

Included Lab Sample IDs: 1974966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	94.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82773

Included Lab Sample IDs: 1974968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82776

Included Lab Sample IDs: 1974968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82809

Included Lab Sample IDs: 1974961, 1974967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.5	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82811

Included Lab Sample IDs: 1974961, 1974966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82826

Included Lab Sample IDs: 1974960, 1974963, 1974964, 1974965

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

Reference Method: SM 5310 B-00

Run ID: A82844

Included Lab Sample IDs: 1974961, 1974966, 1974967, 1974968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.2	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A82852

Included Lab Sample IDs: 1974997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	93.7	101	P/P	50 - 150
Acetaminophen	108	109	P/P	60 - 150
Bentazon	97.8	110	P/P	50 - 150
Carbamazepine	112	91.4	P/P	60 - 150
Diuron	110	116	P/P	60 - 150
Fenuron	105	107	P/P	60 - 150
Fluridone	116	126	P/P	60 - 160
Imazapyr	95.5	90.8	P/P	50 - 150
Imidacloprid	100	108	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A82852

Included Lab Sample IDs: 1974997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Linuron	118	119	P/P	60 - 150
MCP	102	100	P/P	50 - 150
Primidone	108	111	P/P	60 - 150
Pyraclostrobin	117	121	P/P	60 - 150
Triclopyr	96.1	95.4	P/P	50 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82853

Included Lab Sample IDs: 1974967, 1974968

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

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.67	
EPA 300.0 Rev. 2.1	Chloride	103		103	103		0.267	
	Chloride	97.1		94.0	96.0		0.129	
	Sulfate	105		106	106		0.0839	
	Sulfate	98.7		95.9	98.5			
EPA 350.1 Rev. 2.0	Ammonia-N	93.0		97.6	94.9			1.59
	Ammonia-N	97.4		100	96.9			1.90
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103		90.4	95.8			4.98
	Kjeldahl Nitrogen	104		108	111			1.72
	Kjeldahl Nitrogen	103		103	99.8			2.99
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103		104	104			0.0
	NO ₂ NO ₃ -N	102		94.9	95.9			1.03
EPA 365.1 Rev. 2.0	Total-P	104		103	102			1.08
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2		101	102			1.09
EPA 8321B	2,4-D	64.3	52.8	70.4		19.7		
	Acetaminophen	91.2	85.6	112		6.38		
	Bentazon	63.8	58.2	51.2		9.17		
	Carbamazepine	82.0	76.4	84.4		6.96		
	Diuron	70.8	68.3	67.6		3.54		
	Fenuron	104	99.0	16.6		5.33		
	Fluridone	66.3	61.7	55.8		7.19		
	Imazapyr	71.8	70.5	43.9		1.80		
	Imidacloprid	86.0	84.7	137		1.43		
	Linuron	71.9	69.6	81.6		3.28		
	MCP	72.1	66.4	63.8		8.15		
	Primidone	98.5	90.9	100		8.02		
	Pyraclostrobin	66.8	66.3	63.1		0.796		

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		LCS	Precision	MS
							SMP	
EPA 8321B	Sucralose	99.4		118	112			3.50
	Triclopyr	72.0	67.6	62.3		6.30		
SM 2120 B	Color (true)						1.52	
SM 2320 B-97	Total Alkalinity	100					2.13	
SM 2540 C-97	TDS						1.12	
SM 4500 F-C-97	Fluoride	97.3		95.0	96.5			1.42
SM 5310 B-00	Organic Carbon	98.6		91.9	92.3			0.211

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1974960, 1974963, 1974964, 1974965
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1974960, 1974963, 1974964, 1974965
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1974960, 1974963, 1974964, 1974965
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1974961, 1974966, 1974967, 1974968
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1974961, 1974966, 1974967, 1974968
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1974961, 1974966, 1974967, 1974968
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1974961, 1974966, 1974967, 1974968
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1974962, 1974969, 1974970, 1974971
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1974997
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1974997
SM 2120 B / E31780	True Color measured at 450 nm	1974960, 1974963, 1974964, 1974965
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1974960, 1974963, 1974964, 1974965
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1974960, 1974963, 1974964, 1974965
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1974960, 1974963, 1974964, 1974965
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1974960, 1974963, 1974964, 1974965
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1974961, 1974966, 1974967, 1974968

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/15/2018			03/15/2018 15:57	DeAsia Armster	1974960, 1974963, 1974964, 1974965
EPA 300.0 Rev. 2.1	03/15/2018			03/21/2018	Julia Storbeck	1974960, 1974963, 1974964, 1974965
EPA 350.1 Rev. 2.0	03/15/2018			03/23/2018	Ping Hua	1974961, 1974966
	03/15/2018			03/26/2018	Ping Hua	1974967, 1974968
EPA 351.2 Rev. 2.0	03/15/2018	03/20/2018	Adrian Shelby	03/21/2018	Joseph Suarez	1974966
	03/15/2018	03/20/2018	Adrian Shelby	03/22/2018	Joseph Suarez	1974968
	03/15/2018	03/22/2018	Adrian Shelby	03/23/2018	Joseph Suarez	1974961, 1974967
EPA 353.2 Rev. 2.0	03/15/2018			03/19/2018	Beverly Y. Sanders	1974961, 1974966, 1974967, 1974968
EPA 365.1 Rev. 2.0	03/15/2018	03/19/2018	Sima Feizi	03/20/2018	Lipi Saha	1974961, 1974966, 1974967
	03/15/2018	03/19/2018	Sima Feizi	03/21/2018	Lipi Saha	1974968
EPA 365.1 Rev. 2.0 dissolved	03/15/2018			03/15/2018 19:53	Julia Storbeck	1974962
	03/15/2018			03/15/2018 19:54	Julia Storbeck	1974970
	03/15/2018			03/15/2018 19:59	Julia Storbeck	1974971
	03/15/2018			03/15/2018 20:19	Julia Storbeck	1974969
EPA 8321B	03/15/2018	03/15/2018	Julie Michelle Frank	03/17/2018	Juyoung Kim	1974997
	03/15/2018	03/19/2018	Hoor Shaik	03/20/2018	Julie Michelle Frank	1974997
	03/15/2018	03/19/2018	Hoor Shaik	03/21/2018	Julie Michelle Frank	1974997
SM 2120 B	03/15/2018			03/15/2018 15:38	Tanya Welborn	1974960
	03/15/2018			03/15/2018 15:44	Tanya Welborn	1974963
	03/15/2018			03/15/2018 15:45	Tanya Welborn	1974964
	03/15/2018			03/15/2018 15:46	Tanya Welborn	1974965
SM 2320 B-97	03/15/2018			03/21/2018	Dale L. Simmons	1974960, 1974963, 1974964, 1974965
SM 2540 C-97	03/15/2018			03/16/2018	DeAsia Armster	1974960, 1974963, 1974964, 1974965
SM 2540 D-97	03/15/2018			03/16/2018	DeAsia Armster	1974960, 1974963, 1974964, 1974965
SM 4500 F-C-97	03/15/2018			03/24/2018	Dale L. Simmons	1974960, 1974963, 1974964, 1974965
SM 5310 B-00	03/15/2018			03/24/2018	Julia Storbeck	1974961, 1974966, 1974967, 1974968