

Chemical Analysis Report

SO-DIST-2018-03-30-03

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

Event Description: **Gators & Ditches**
Request ID: **RQ-2018-03-26-12**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Maryann Dugan

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: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 02-MAY-2018 14:28



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals, Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Woodmere Creek@Heron Rd

Collection Date/Time: 03/29/2018 10:05

Field ID: G2SD0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979481	EPA 8321B	2,4-D	0.019		ug/L	P342539	
		Sucralose**	2.4		ug/L	P342469	
		Bentazon	0.016		ug/L	P342539	
		MCP	0.0087		ug/L	P342539	
		Triclopyr**	0.0040	U	ug/L	P342539	
		Imidacloprid	0.030		ug/L	P342539	MS
		Diuron	0.0020	U	ug/L	P342539	
		Pyraclostrobin**	0.0020	U	ug/L	P342539	
		Primidone**	0.0074	I	ug/L	P342539	
		Linuron	0.0040	U	ug/L	P342539	
		Acetaminophen**	0.0080	U	ug/L	P342539	
		Fenuron	0.016	U	ug/L	P342539	
		Imazapyr**	0.40		ug/L	P342539	
		Carbamazepine**	0.023		ug/L	P342539	
		Fluridone**	8.0E-04	U	ug/L	P342539	

Ref. Method and Comment:

EPA 8321B: MS accuracy for 2,4-D and imazapyr could not be assessed due to high concentration of parameter in the spiked sample. Fenuron was detected in the method blank slightly above the MDL.

Sample Location: TrailerParkCanal@Mouth

Collection Date/Time: 03/29/2018 11:45

Field ID: G3SD0072

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979439	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P342516	
	SM 2320 B-97	Total Alkalinity	116	J	mg CaCO3/L	P343187	LCS
	SM 2540 D-97	TSS	14		mg/L	P342965	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P343506	
1979440	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P343070	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P342701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342751	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P342649	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P343001	
1979441	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.092		mg P/L	P342542	
1979482	EPA 200.7 Rev. 4.4	Iron	310	I	ug/L	P342663	
		Zinc	20	U	ug/L	P342663	
	EPA 200.8 Rev. 5.4	Arsenic	2.55		ug/L	P342663	
		Cadmium	0.080	U	ug/L	P342663	
		Chromium	1.6	U	ug/L	P342663	
		Copper	1.0	I	ug/L	P342663	
		Lead	0.50	U	ug/L	P342663	
		Nickel	1.5	I	ug/L	P342663	
		Silver	0.040	U	ug/L	P342663	

Ref. Method and Comment:

SM 2320 B-97: Refer to the narrative for an explanation of QC Codes.

Sample Location: ClevelandCemeteryDitch

Collection Date/Time: 03/29/2018 12:50

Field ID: G3SD0076

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979442	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P342516	
	SM 2320 B-97	Total Alkalinity	112		mg CaCO3/L	P343367	RPD
	SM 2540 D-97	TSS	4	I	mg/L	P342965	
	SM 4500 F-C-97	Fluoride	0.79		mg F/L	P343182	
1979443	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P343146	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P342701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P342751	
	EPA 365.1 Rev. 2.0	Total-P	0.30		mg P/L	P342649	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P343001	
1979444	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.26		mg P/L	P342542	
1979483	EPA 200.7 Rev. 4.4	Iron	160	I	ug/L	P342663	
		Zinc	15	U	ug/L	P342663	
	EPA 200.8 Rev. 5.4	Arsenic	2.21		ug/L	P342663	
		Cadmium	0.060	U	ug/L	P342663	
		Chromium	1.2	U	ug/L	P343536	
		Copper	0.60	U	ug/L	P342663	
		Lead	0.50	U	ug/L	P342663	
		Nickel	0.69	I	ug/L	P343536	
		Silver	0.030	U	ug/L	P342663	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P342516

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P342663

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P342663

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Nickel	0.20	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343070

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343146

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342701

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342751

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342649

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342542

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

Reference Method: EPA 8321B
Batch ID: P342469

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P342539

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P342539

Component	Result	Code	Units
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.017	I	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
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: SM 2320 B-97
Batch ID: P343187

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

Reference Method: SM 2320 B-97
Batch ID: P343367

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

Reference Method: SM 2540 D-97
Batch ID: P342965

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P343182

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P343506

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343001

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	100		P	85 - 115
Zinc	96.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.3		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	104		P	85 - 115
Copper	97.6		P	85 - 115
Lead	101		P	85 - 115
Nickel	97.5		P	85 - 115
Silver	97.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	94.3		P	80 - 120
Nickel	100		P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343070

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343146

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342701

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342751

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342649

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P342542

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P342469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	83.8		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P342539

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	64.8		P	40 - 150
Acetaminophen	99.8		P	30 - 150
Bentazon	68.3		P	30 - 150
Carbamazepine	83.6		P	40 - 150
Diuron	66.7		P	40 - 150
Fenuron	114		P	40 - 150
Fluridone	62.2		P	40 - 150
Imazapyr	73.4		P	40 - 150
Imidacloprid	106		P	40 - 160
Linuron	79.8		P	40 - 150
MCPP	61.0		P	40 - 150
Primidone	110		P	40 - 150
Pyraclostrobin	66.6		P	40 - 150
Triclopyr	56.8		P	40 - 150

Reference Method: SM 2320 B-97
 Batch ID: P343187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.0		F	98 - 107

Reference Method: SM 2320 B-97
 Batch ID: P343367

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

Reference Method: SM 4500 F-C-97
 Batch ID: P343182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.0		P	91 - 105

Reference Method: SM 4500 F-C-97
 Batch ID: P343506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.1		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P343001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979815	Iron	95.9	97.3	P/P	80 - 120
1979815	Zinc	98.0	94.4	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979815	Arsenic	108	110	P/P	80 - 120
1979815	Cadmium	101	99.2	P/P	80 - 120
1979815	Chromium	94.9	96.3	P/P	80 - 120
1979815	Copper	96.4	97.3	P/P	80 - 120
1979815	Lead	110	111	P/P	80 - 120
1979815	Nickel	95.8	97.6	P/P	80 - 120
1979815	Silver	90.3	91.6	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983873	Chromium	82.5	85.8	P/P	70 - 130
1983873	Nickel	106	113	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978868	Ammonia-N	96.7	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979443	Ammonia-N	97.5	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978935	Kjeldahl Nitrogen	99.5	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979078	NO2NO3-N	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979440	Total-P	95.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979583	O-Phosphate-P	96.6	97.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P342469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979267	Sucralose	93.4	91.1	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P342539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979892	Acetaminophen	127	125	P/P	30 - 150
1979892	Bentazon	37.7	33.9	P/P	30 - 150
1979892	Carbamazepine	94.2	92.9	P/P	40 - 150
1979892	Diuron	72.4	79.4	P/P	40 - 150
1979892	Fenuron	101	106	P/P	40 - 150
1979892	Fluridone	65.1	62.8	P/P	40 - 150
1979892	Imidacloprid	185	197	F/F	40 - 160
1979892	Linuron	82.6	91.5	P/P	40 - 150
1979892	MCP	55.2	56.7	P/P	40 - 150
1979892	Primidone	132	132	P/P	40 - 150
1979892	Pyraclostrobin	75.7	73.6	P/P	40 - 150
1979892	Triclopyr	59.3	54.8	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P343182

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979442	Fluoride	93.4	94.6	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P343506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979698	Fluoride	93.2	94.0	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P343001

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979078	Organic Carbon	92.1	92.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P342516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979418	Turbidity	7.97	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P342663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979815	Iron	1.24	Spike	P	0 - 20
1979815	Zinc	3.74	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P342663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979815	Arsenic	1.92	Spike	P	0 - 20
1979815	Cadmium	1.39	Spike	P	0 - 20
1979815	Chromium	1.46	Spike	P	0 - 20
1979815	Copper	0.926	Spike	P	0 - 20
1979815	Lead	0.908	Spike	P	0 - 20
1979815	Nickel	1.78	Spike	P	0 - 20
1979815	Silver	1.48	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P343536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983873	Chromium	4.02	Spike	P	0 - 20
1983873	Nickel	5.94	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P343070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978868	Ammonia-N	2.40	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979443	Ammonia-N	0.769	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978935	Kjeldahl Nitrogen	3.34	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979078	NO2NO3-N	0.844	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979440	Total-P	0.540	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979583	O-Phosphate-P	0.766	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P342469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979267	Sucralose	2.50	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P342539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979892	2,4-D	3.02	Spike	P	0 - 30
1979892	Acetaminophen	1.33	Spike	P	0 - 30
1979892	Bentazon	9.31	Spike	P	0 - 30
1979892	Carbamazepine	1.36	Spike	P	0 - 30
1979892	Diuron	9.25	Spike	P	0 - 30
1979892	Fenuron	5.30	Spike	P	0 - 30
1979892	Fluridone	3.64	Spike	P	0 - 30
1979892	Imazapyr	7.98	Spike	P	0 - 30
1979892	Imidacloprid	5.04	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P342539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979892	Linuron	10.2	Spike	P	0 - 30
1979892	MCP	2.68	Spike	P	0 - 30
1979892	Primidone	0.439	Spike	P	0 - 30
1979892	Pyraclostrobin	2.75	Spike	P	0 - 30
1979892	Triclopyr	7.82	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P343187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979442	Total Alkalinity	1.22	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P343367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979759	Total Alkalinity	1.86	Sample	F	0 - 1.6

Reference Method: SM 2540 D-97
Batch ID: P342965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979744	TSS	5.71	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P343182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979442	Fluoride	0.940	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P343506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979698	Fluoride	0.480	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979078	Organic Carbon	0.0906	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: 1979481
 Field Sample ID: G2SD0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	145	P	30 - 160
EPA 8321B	Acetaminophen-d4	138	P	30 - 160
EPA 8321B	Carbamazepine-d10	106	P	30 - 160
EPA 8321B	Diuron-d6	84.6	P	30 - 160
EPA 8321B	Primidone-d5	124	P	30 - 160
EPA 8321B	Sucralose-d6	84.3	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
 Run ID: A82962
 Included Lab Sample IDs: 1979439, 1979442

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A82970
 Included Lab Sample IDs: 1979441, 1979444

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	101	P/P	90 - 110
O-Phosphate-P	99.5	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Run ID: A83020
 Included Lab Sample IDs: 1979440, 1979443

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

Reference Method: EPA 8321B
 Run ID: A83031
 Included Lab Sample IDs: 1979481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	94.4	93.9	P/P	60 - 150

Reference Method: EPA 353.2 Rev. 2.0
 Run ID: A83035
 Included Lab Sample IDs: 1979440, 1979443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A83044

Included Lab Sample IDs: 1979482, 1979483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	96.4	94.5	P/P	90 - 110
Zinc	97.5	95.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83048

Included Lab Sample IDs: 1979440, 1979443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	99.5	P/P	90 - 110
Kjeldahl Nitrogen	99.5	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A83104

Included Lab Sample IDs: 1979440, 1979443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.0	93.6	P/P	90 - 110
Organic Carbon	93.6	93.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A83110

Included Lab Sample IDs: 1979481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	94.8	99.1	P/P	50 - 150
Acetaminophen	111	114	P/P	60 - 150
Bentazon	106	104	P/P	50 - 150
Carbamazepine	109	108	P/P	60 - 150
Diuron	114	121	P/P	60 - 150
Fenuron	106	108	P/P	60 - 150
Fluridone	121	120	P/P	60 - 160
Imazapyr	79.5	90.5	P/P	50 - 150
Imidacloprid	102	107	P/P	60 - 150
Linuron	111	118	P/P	60 - 150
MCPP	102	100	P/P	50 - 150
Primidone	117	118	P/P	60 - 150
Pyraclostrobin	112	117	P/P	60 - 150
Triclopyr	94.9	95.1	P/P	50 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83131

Included Lab Sample IDs: 1979440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83153

Included Lab Sample IDs: 1979443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
-----------	---------	---------	------------	----------------

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83153

Included Lab Sample IDs: 1979443

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

Reference Method: SM 4500 F-C-97

Run ID: A83159

Included Lab Sample IDs: 1979442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.3	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83161

Included Lab Sample IDs: 1979439

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.4	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83200

Included Lab Sample IDs: 1979482, 1979483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.3	99.8	P/P	90 - 110
Cadmium	99.4	99.3	P/P	90 - 110
Chromium	97.3	96.9	P/P	90 - 110
Copper	96.2	95.9	P/P	90 - 110
Lead	98.0	97.6	P/P	90 - 110
Nickel	96.2	95.8	P/P	90 - 110
Silver	100	99.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83225

Included Lab Sample IDs: 1979442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.4	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83264

Included Lab Sample IDs: 1979439

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83389

Included Lab Sample IDs: 1979483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.2	97.5	P/P	90 - 110
Nickel	104	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

* 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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					7.97	
EPA 200.7 Rev. 4.4	Iron	100	95.9	97.3			1.24
	Zinc	96.6	98.0	94.4			3.74
EPA 200.8 Rev. 5.4	Arsenic	99.3	108	110			1.92
	Cadmium	105	101	99.2			1.39
	Chromium	104	94.9	96.3			1.46
	Chromium	94.3	82.5	85.8			4.02
	Copper	97.6	96.4	97.3			0.926
	Lead	101	110	111			0.908
	Nickel	97.5	97.6	95.8			1.78
	Nickel	100	106	113			5.94
	Silver	97.6	90.3	91.6			1.48
EPA 350.1 Rev. 2.0	Ammonia-N	97.7	96.7	99.4			2.40
	Ammonia-N	97.8	97.5	98.8			0.769
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	99.5	103			3.34
EPA 353.2 Rev. 2.0	NO2NO3-N	103	107	108			0.844
EPA 365.1 Rev. 2.0	Total-P	100	95.6	96.2			0.540
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	96.6	97.6			0.766
EPA 8321B	2,4-D	64.8					3.02
	Acetaminophen	99.8	127	125			1.33
	Bentazon	68.3	37.7	33.9			9.31
	Carbamazepine	83.6	94.2	92.9			1.36
	Diuron	66.7	72.4	79.4			9.25
	Fenuron	114	101	106			5.30
	Fluridone	62.2	65.1	62.8			3.64
	Imazapyr	73.4					7.98
	Imidacloprid	106	185	197			5.04
	Linuron	79.8	82.6	91.5			10.2
	MCP	61.0	55.2	56.7			2.68
	Primidone	110	132	132			0.439
	Pyraclostrobin	66.6	75.7	73.6			2.75
	Sucralose	83.8	93.4	91.1			2.50
	Triclopyr	56.8	59.3	54.8			7.82
SM 2320 B-97	Total Alkalinity	98.0				1.22	
	Total Alkalinity	100				1.86	
SM 2540 D-97	TSS					5.71	
SM 4500 F-C-97	Fluoride	94.0	93.4	94.6			0.940
	Fluoride	94.1	93.2	94.0			0.480
SM 5310 B-00	Organic Carbon	96.0	92.1	92.0			0.0906

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1979439, 1979442

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1979482, 1979483
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1979482, 1979483
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1979440, 1979443
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1979440, 1979443
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1979440, 1979443
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1979440, 1979443
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1979441, 1979444
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1979481
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1979481
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1979439, 1979442
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1979439, 1979442
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1979439, 1979442
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1979440, 1979443

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	03/30/2018			03/30/2018 15:46	Tanya Welborn	1979439, 1979442
EPA 200.7 Rev. 4.4	03/30/2018	04/03/2018 16:50	Elliott D. Healy	04/04/2018 17:16	Betina Topolski	1979482
	03/30/2018	04/03/2018 16:50	Elliott D. Healy	04/04/2018 17:28	Betina Topolski	1979483
EPA 200.8 Rev. 5.4	03/30/2018	04/03/2018 16:50	Elliott D. Healy	04/12/2018 20:49	Nadine Brooks	1979483
	03/30/2018	04/03/2018 16:50	Elliott D. Healy	04/12/2018 20:59	Nadine Brooks	1979482
	03/30/2018	04/03/2018 16:50	Elliott D. Healy	04/12/2018 21:55	Nadine Brooks	1979483
	03/30/2018	04/03/2018 16:50	Elliott D. Healy	04/12/2018 22:13	Nadine Brooks	1979482
	03/30/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 04:09	Nadine Brooks	1979483
EPA 350.1 Rev. 2.0	03/30/2018			04/09/2018 13:17	Ping Hua	1979440
	03/30/2018			04/10/2018 10:51	Ping Hua	1979443
EPA 351.2 Rev. 2.0	03/30/2018	04/04/2018 10:15	Adrian Shelby	04/05/2018 10:27	Joseph Suarez	1979440
	03/30/2018	04/04/2018 10:15	Adrian Shelby	04/05/2018 10:32	Joseph Suarez	1979443
EPA 353.2 Rev. 2.0	03/30/2018			04/04/2018 12:38	Lauren Bottorf	1979440
	03/30/2018			04/04/2018 12:39	Lauren Bottorf	1979443
EPA 365.1 Rev. 2.0	03/30/2018	04/03/2018 13:07	Sima Feizi	04/04/2018 08:42	Beverly Y. Sanders	1979440
	03/30/2018	04/03/2018 13:07	Sima Feizi	04/04/2018 08:53	Beverly Y. Sanders	1979443
EPA 365.1 Rev. 2.0 dissolved	03/30/2018			03/30/2018 16:37	Megan Treadwell	1979441
	03/30/2018			03/30/2018 16:56	Megan Treadwell	1979444
EPA 8321B	03/30/2018	04/03/2018 09:00	Julie Michelle Frank	04/03/2018 17:47	Mohammad Ghaffari	1979481
	03/30/2018	04/04/2018 12:00	Hoor Shaik	04/05/2018 03:14	Julie Michelle Frank	1979481
	03/30/2018	04/04/2018 12:00	Hoor Shaik	04/05/2018 18:49	Julie Michelle Frank	1979481
SM 2320 B-97	03/30/2018			04/11/2018 11:25	Dale L. Simmons	1979439
	03/30/2018			04/12/2018 12:21	Dale L. Simmons	1979442
SM 2540 D-97	03/30/2018			04/04/2018 15:34	Yijie Li	1979439, 1979442
SM 4500 F-C-97	03/30/2018			04/11/2018 04:06	Dale L. Simmons	1979442
	03/30/2018			04/15/2018 18:09	Dale L. Simmons	1979439
SM 5310 B-00	03/30/2018			04/07/2018 13:14	Megan Treadwell	1979440
	03/30/2018			04/07/2018 14:00	Megan Treadwell	1979443