

Chemical Analysis Report

SO-DIST-2018-10-25-01

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

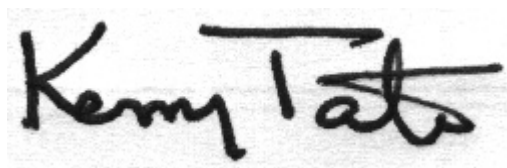
Event Description: **Gators & Ditches**
Request ID: **RQ-2018-09-10-15**
Customer: **SO-DIST**
Project ID: **SMP**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-NOV-2018 11:08

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: 10/24/2018 10:40

Field ID: G2SD0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035946	EPA 8321B	2,4-D	0.013		ug/L	P353651	
		Bentazon	0.014		ug/L	P353651	
		MCP	0.0055	I	ug/L	P353651	
		Triclopyr**	0.0040	U	ug/L	P353651	
		Imidacloprid	0.066		ug/L	P353651	
		Diuron	0.0020	U	ug/L	P353651	
		Pyraclostrobin**	0.0020	U	ug/L	P353651	
		Primidone**	0.0073	I	ug/L	P353651	
		Linuron	0.0040	U	ug/L	P353651	
		Acetaminophen**	0.0080	U	ug/L	P353651	
		Fenuron	0.016	U	ug/L	P353651	
		Imazapyr**	0.15		ug/L	P353651	
		Carbamazepine**	0.015		ug/L	P353651	
		Fluridone**	0.0014	I	ug/L	P353651	
		Hydrocodone**	8.0E-04	U	ug/L	P353651	
		Naproxen**	0.0080	U	ug/L	P353651	
		Ibuprofen**	0.020	U	ug/L	P353651	
		Sucralose**	1.2		ug/L	P353656	
		Acesulfame K**	1.7		ug/L	P353656	

Sample Location: TrailerParkCanal@Mouth

Collection Date/Time: 10/24/2018 11:40

Field ID: G3SD0072

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035929	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P353683	
	SM 2320 B-97	Total Alkalinity	91		mg CaCO3/L	P354097	
	SM 2540 D-97	TSS	5	IA	mg/L	P354035	
	SM 4500 F-C-97	Fluoride	0.65		mg F/L	P354100	
2035930	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P353912	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P353829	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P353755	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P353996	
2035931	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.21		mg P/L	P353715	
2035947	EPA 200.7 Rev. 4.4	Iron	210	I	ug/L	P353933	
		Zinc	15	U	ug/L	P353933	
	EPA 200.8 Rev. 5.4	Arsenic	1.90		ug/L	P353933	
		Cadmium	0.060	U	ug/L	P353933	
		Chromium	4.0	U	ug/L	P353933	
		Copper	0.92	I	ug/L	P353933	
		Lead	0.15	U	ug/L	P353933	
		Nickel	0.60	U	ug/L	P353933	
		Silver	0.030	U	ug/L	P353933	

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: ClevelandCemeteryDitch

Collection Date/Time: 10/24/2018 13:00

Field ID: G3SD0076

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035932	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P353683	
	SM 2320 B-97	Total Alkalinity	158	A	mg CaCO3/L	P354097	
	SM 2540 D-97	TSS	2	I	mg/L	P354033	
	SM 4500 F-C-97	Fluoride	0.43		mg F/L	P354100	
2035933	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.96		mg N/L	P353912	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P353829	
	EPA 365.1 Rev. 2.0	Total-P	0.30		mg P/L	P353755	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P354153	
2035934	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.24		mg P/L	P353715	
2035948	EPA 200.7 Rev. 4.4	Iron	300	I	ug/L	P353933	
		Zinc	15	U	ug/L	P353933	
	EPA 200.8 Rev. 5.4	Arsenic	2.16		ug/L	P353933	
		Cadmium	0.060	U	ug/L	P353933	
		Chromium	4.1	I	ug/L	P353933	
		Copper	0.60	U	ug/L	P353933	
		Lead	0.15	U	ug/L	P353933	
		Nickel	2.3	I	ug/L	P353933	
		Silver	0.030	U	ug/L	P353933	

Ref. Method and Comment:

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

EPA 200.8 Rev. 5.4: The nickel result was confirmed in the undigested sample on 11/14/2018.

Sample Location: ClevelandCemeteryDitch

Collection Date/Time: 10/24/2018 13:05

Field ID: G3SD0076_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035935	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P353683	
	SM 2320 B-97	Total Alkalinity	168		mg CaCO3/L	P354097	
	SM 2540 D-97	TSS	3	I	mg/L	P354033	
	SM 4500 F-C-97	Fluoride	0.37		mg F/L	P354361	
2035936	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P353912	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P353829	
	EPA 365.1 Rev. 2.0	Total-P	0.31		mg P/L	P353755	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P354153	
2035937	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.26		mg P/L	P353715	
2035949	EPA 200.7 Rev. 4.4	Iron	250	I	ug/L	P353933	
		Zinc	15	U	ug/L	P353933	
	EPA 200.8 Rev. 5.4	Arsenic	2.14		ug/L	P353933	
		Cadmium	0.060	U	ug/L	P353933	
		Chromium	4.0	U	ug/L	P353933	
		Copper	0.60	U	ug/L	P353933	
		Lead	0.15	U	ug/L	P353933	
		Nickel	0.60	U	ug/L	P353933	
		Silver	0.030	U	ug/L	P353933	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The nickel result was confirmed in the undigested sample on 11/14/2018.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353683

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353933

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: P353933

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	0.056	I	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353912

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353829

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353715

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P353651

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	8.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Ibuprofen	0.020	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
Naproxen	0.0080	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: P353656

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2320 B-97
Batch ID: P354097

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

Reference Method: SM 2540 D-97
Batch ID: P354033

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354035

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P354100

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P354361

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353996

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

Reference Method: SM 5310 B-00
Batch ID: P354153

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: P353933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	102		P	85 - 115
Zinc	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	97.0		P	85 - 115
Chromium	104		P	85 - 115
Copper	97.2		P	85 - 115
Lead	90.8		P	85 - 115
Nickel	98.9		P	85 - 115
Silver	95.1		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353912

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353829

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P353651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	84.4		P	40 - 150
Acetaminophen	135		P	30 - 150
Bentazon	91.0		P	30 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P353651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Carbamazepine	103		P	40 - 150
Diuron	99.3		P	40 - 150
Fenuron	137		P	40 - 150
Fluridone	115		P	40 - 150
Hydrocodone	104		P	40 - 150
Ibuprofen	96.2		P	40 - 150
Imazapyr	101		P	40 - 150
Imidacloprid	124		P	40 - 160
Linuron	83.5		P	40 - 150
MCPP	111		P	40 - 150
Naproxen	95.7		P	40 - 150
Primidone	124		P	40 - 150
Pyraclostrobin	77.2		P	40 - 150
Triclopyr	115		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P353656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	75.7		P	40 - 150
Sucralose	81.2		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P354097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P354100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P354361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353996

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P354153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035995	Iron	100	99.1	P/P	70 - 130
2035995	Zinc	107	104	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035995	Arsenic	108	110	P/P	70 - 130
2035995	Cadmium	95.7	96.8	P/P	70 - 130
2035995	Chromium	106	106	P/P	80 - 120
2035995	Copper	92.9	93.0	P/P	70 - 130
2035995	Lead	98.5	101	P/P	70 - 130
2035995	Nickel	90.1	91.6	P/P	70 - 130
2035995	Silver	89.3	90.2	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035964	Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035413	Kjeldahl Nitrogen	98.9	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035413	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035345	Total-P	94.0	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035968	O-Phosphate-P	99.4	96.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P353651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035844	2,4-D	126	127	P/P	40 - 150
2035844	Acetaminophen	103	107	P/P	30 - 150
2035844	Bentazon	43.9	41.0	P/P	30 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P353651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035844	Carbamazepine	60.8	63.2	P/P	40 - 150
2035844	Diuron	55.5	54.5	P/P	40 - 150
2035844	Fenuron	79.7	86.2	P/P	40 - 150
2035844	Fluridone	102	105	P/P	40 - 150
2035844	Hydrocodone	88.8	88.9	P/P	40 - 150
2035844	Ibuprofen	70.3	74.4	P/P	40 - 150
2035844	Imazapyr	80.0	87.4	P/P	40 - 150
2035844	Imidacloprid	142	145	P/P	40 - 160
2035844	Linuron	60.3	60.5	P/P	40 - 150
2035844	MCPP	134	138	P/P	40 - 150
2035844	Naproxen	81.4	82.1	P/P	40 - 150
2035844	Primidone	91.6	93.6	P/P	40 - 150
2035844	Pyraclostrobin	84.9	88.9	P/P	40 - 150
2035844	Triclopyr	136	130	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P353656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036071	Acesulfame K	59.3	63.4	P/P	40 - 150
2036071	Sucralose	67.0	73.3	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P354100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035932	Fluoride	97.5	98.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035340	Organic Carbon	97.8	97.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P354153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035810	Organic Carbon	101	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036085	Turbidity	4.38	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035995	Iron	0.972	Spike	P	0 - 20
2035995	Zinc	2.29	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035995	Arsenic	1.71	Spike	P	0 - 20
2035995	Cadmium	1.19	Spike	P	0 - 20
2035995	Chromium	0.196	Spike	P	0 - 20
2035995	Copper	0.0864	Spike	P	0 - 20
2035995	Lead	2.66	Spike	P	0 - 20
2035995	Nickel	1.66	Spike	P	0 - 20
2035995	Silver	1.03	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035964	Ammonia-N	0.0820	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035413	Kjeldahl Nitrogen	1.12	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035413	NO2NO3-N	0.451	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035345	Total-P	2.10	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035968	O-Phosphate-P	2.35	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P353651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035844	2,4-D	0.300	Spike	P	0 - 30
2035844	Acetaminophen	3.99	Spike	P	0 - 30
2035844	Bentazon	6.77	Spike	P	0 - 30
2035844	Carbamazepine	3.94	Spike	P	0 - 30
2035844	Diuron	1.79	Spike	P	0 - 30
2035844	Fenuron	7.83	Spike	P	0 - 30
2035844	Fluridone	3.22	Spike	P	0 - 30
2035844	Hydrocodone	0.152	Spike	P	0 - 30
2035844	Ibuprofen	5.55	Spike	P	0 - 30
2035844	Imazapyr	7.21	Spike	P	0 - 30
2035844	Imidacloprid	1.64	Spike	P	0 - 30
2035844	Linuron	0.281	Spike	P	0 - 30
2035844	MCP	3.41	Spike	P	0 - 30
2035844	Naproxen	0.897	Spike	P	0 - 30
2035844	Primidone	2.08	Spike	P	0 - 30
2035844	Pyraclostrobin	4.58	Spike	P	0 - 30
2035844	Triclopyr	4.27	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P353656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036071	Acesulfame K	6.60	Spike	P	0 - 30
2036071	Sucralose	8.13	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P354097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035932	Total Alkalinity	0.133	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P354100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035932	Fluoride	0.470	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P354361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038201	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035340	Organic Carbon	0.174	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P354153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035810	Organic Carbon	0.247	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: 2035946
Field Sample ID: G2SD0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	122	P	30 - 160
EPA 8321B	Acetaminophen-d4	113	P	30 - 160
EPA 8321B	Carbamazepine-d10	70.2	P	30 - 160
EPA 8321B	Diuron-d6	62.8	P	30 - 160
EPA 8321B	Endothall-d6	103	P	40 - 160
EPA 8321B	Ibuprofen-d3	106	P	30 - 160
EPA 8321B	Primidone-d5	107	P	30 - 160
EPA 8321B	Sucralose-d6	122	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87288

Included Lab Sample IDs: 2035929, 2035932, 2035935

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	101	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A87305

Included Lab Sample IDs: 2035931, 2035934, 2035937

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	101	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A87330

Included Lab Sample IDs: 2035946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	77.5	76.1	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87354

Included Lab Sample IDs: 2035930, 2035933, 2035936

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87360

Included Lab Sample IDs: 2035930, 2035933, 2035936

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

Reference Method: EPA 8321B

Run ID: A87369

Included Lab Sample IDs: 2035946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	60.8	63.9	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87414

Included Lab Sample IDs: 2035930, 2035933, 2035936

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	104	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A87420

Included Lab Sample IDs: 2035930

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A87443

Included Lab Sample IDs: 2035946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	120	118	P/P	60 - 160
Carbamazepine	125	127	P/P	60 - 160
Diuron	139	130	P/P	60 - 150
Fenuron	107	95.2	P/P	60 - 150
Fluridone	126	123	P/P	60 - 160
Hydrocodone	132	130	P/P	60 - 150
Imazapyr	121	109	P/P	50 - 150
Imidacloprid	128	113	P/P	60 - 160
Linuron	125	121	P/P	60 - 150
Primidone	129	132	P/P	60 - 160
Pyraclostrobin	126	121	P/P	60 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87465

Included Lab Sample IDs: 2035930, 2035933, 2035936

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A87466

Included Lab Sample IDs: 2035947, 2035948, 2035949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	103	102	P/P	90 - 110
Zinc	105	105	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A87470

Included Lab Sample IDs: 2035929, 2035932, 2035935

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.8	P/P	90 - 110
Total Alkalinity	99.8	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87470

Included Lab Sample IDs: 2035929, 2035932

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.6	P/P	90 - 110
Fluoride	98.6	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A87498

Included Lab Sample IDs: 2035933, 2035936

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A87543

Included Lab Sample IDs: 2035946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	88.7	89.5	P/P	50 - 150
Bentazon	109	110	P/P	50 - 160
Ibuprofen	62.5	100	P/P	50 - 160
MCP	97.2	96.6	P/P	50 - 150
Naproxen	104	103	P/P	50 - 160
Triclopyr	112	106	P/P	50 - 160

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87591

Included Lab Sample IDs: 2035947, 2035948, 2035949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.1	99.9	P/P	90 - 110
Cadmium	95.0	95.6	P/P	90 - 110
Lead	92.6	92.0	P/P	90 - 110
Nickel	97.6	96.0	P/P	90 - 110
Silver	91.2	90.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87599

Included Lab Sample IDs: 2035935

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87705

Included Lab Sample IDs: 2035947, 2035948, 2035949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	103	101	P/P	90 - 110
Lead	99.2	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87798

Included Lab Sample IDs: 2035947, 2035948, 2035949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	100	95.8	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					4.38	
EPA 200.7 Rev. 4.4	Iron	102	100	99.1			0.972
	Zinc	107	107	104			2.29
EPA 200.8 Rev. 5.4	Arsenic	100	108	110			1.71
	Cadmium	97.0	95.7	96.8			1.19
	Chromium	104	106	106			0.196
	Copper	97.2	92.9	93.0			0.0864
	Lead	90.8	98.5	101			2.66
	Nickel	98.9	90.1	91.6			1.66
	Silver	95.1	89.3	90.2			1.03
EPA 350.1 Rev. 2.0	Ammonia-N	105	106	106			0.0820
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	98.9	100			1.12
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	101	101			0.451
EPA 365.1 Rev. 2.0	Total-P	99.3	94.0	92.0			2.10
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	99.4	96.3			2.35
EPA 8321B	2,4-D	84.4	127	126			0.300
	Acesulfame K	75.7	59.3	63.4			6.60
	Acetaminophen	135	103	107			3.99
	Bentazon	91.0	41.0	43.9			6.77
	Carbamazepine	103	60.8	63.2			3.94
	Diuron	99.3	55.5	54.5			1.79
	Fenuron	137	79.7	86.2			7.83
	Fluridone	115	102	105			3.22
	Hydrocodone	104	88.8	88.9			0.152
	Ibuprofen	96.2	70.3	74.4			5.55
	Imazapyr	101	80.0	87.4			7.21
	Imidacloprid	124	142	145			1.64
	Linuron	83.5	60.3	60.5			0.281
	MCP	111	134	138			3.41
	Naproxen	95.7	81.4	82.1			0.897
	Primidone	124	91.6	93.6			2.08
	Pyraclostrobin	77.2	84.9	88.9			4.58
	Sucralose	81.2	67.0	73.3			8.13
	Triclopyr	115	136	130			4.27
SM 2320 B-97	Total Alkalinity	102				0.133	
SM 4500 F-C-97	Fluoride	98.5	97.5	98.2			0.470
	Fluoride	99.8					0.0
SM 5310 B-00	Organic Carbon	98.8	97.8	97.6			0.174
	Organic Carbon	101	101	101			0.247

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2035929, 2035932, 2035935
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2035947, 2035948, 2035949
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2035947, 2035948, 2035949
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2035930, 2035933, 2035936
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2035930, 2035933, 2035936

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2035930, 2035933, 2035936
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2035930, 2035933, 2035936
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2035931, 2035934, 2035937
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2035946
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2035929, 2035932, 2035935
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2035929, 2035932, 2035935
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2035929, 2035932, 2035935
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2035930, 2035933, 2035936

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	10/25/2018			10/25/2018 17:19	Julia Storbeck	2035929, 2035932, 2035935
EPA 200.7 Rev. 4.4	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/01/2018 16:11	Betina Topolski	2035947
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/01/2018 16:17	Betina Topolski	2035948
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/01/2018 16:23	Betina Topolski	2035949
EPA 200.8 Rev. 5.4	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/07/2018 06:24	Robert K Palmer	2035947
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/07/2018 06:33	Robert K Palmer	2035948
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/07/2018 06:43	Robert K Palmer	2035949
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 18:37	Allison Taylor	2035947
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 18:44	Allison Taylor	2035948
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 18:51	Allison Taylor	2035949
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 23:00	Allison Taylor	2035947
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/15/2018 22:43	Robert K Palmer	2035947
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/15/2018 22:48	Robert K Palmer	2035948
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/15/2018 22:53	Robert K Palmer	2035949
EPA 350.1 Rev. 2.0	10/25/2018			11/01/2018 13:47	Ping Hua	2035933
	10/25/2018			11/01/2018 13:49	Ping Hua	2035936
	10/25/2018			11/01/2018 13:50	Ping Hua	2035930
EPA 351.2 Rev. 2.0	10/25/2018	10/30/2018 11:55	Adrian Shelby	10/31/2018 11:57	Virginia P. Brown	2035930
	10/25/2018	10/30/2018 11:55	Adrian Shelby	10/31/2018 12:02	Virginia P. Brown	2035933
	10/25/2018	10/30/2018 11:55	Adrian Shelby	10/31/2018 12:03	Virginia P. Brown	2035936
EPA 353.2 Rev. 2.0	10/25/2018			10/29/2018 11:24	Beverly Y. Sanders	2035933
	10/25/2018			10/29/2018 11:26	Beverly Y. Sanders	2035936
	10/25/2018			10/29/2018 12:46	Beverly Y. Sanders	2035930
EPA 365.1 Rev. 2.0	10/25/2018	10/26/2018 12:55	Sima Feizi	10/29/2018 11:57	Lipi Saha	2035930
	10/25/2018	10/26/2018 12:55	Sima Feizi	10/29/2018 11:58	Lipi Saha	2035933
	10/25/2018	10/26/2018 12:55	Sima Feizi	10/29/2018 12:00	Lipi Saha	2035936
EPA 365.1 Rev. 2.0 dissolved	10/25/2018			10/26/2018 08:53	Lipi Saha	2035931
	10/25/2018			10/26/2018 08:54	Lipi Saha	2035934
	10/25/2018			10/26/2018 08:55	Lipi Saha	2035937
EPA 8321B	10/25/2018	10/26/2018 10:00	Hoor Shaik	10/28/2018 18:38	Juyoung Kim	2035946
	10/25/2018	10/26/2018 10:00	Hoor Shaik	11/04/2018 03:46	Juyoung Kim	2035946
	10/25/2018	10/26/2018 10:00	Rebecca Ware	10/27/2018 21:10	Mohammad Ghaffari	2035946
	10/25/2018	10/26/2018 10:00	Rebecca Ware	10/29/2018 22:25	Rebecca Ware	2035946
SM 2320 B-97	10/25/2018			10/30/2018 22:48	Dale L. Simmons	2035932
	10/25/2018			10/30/2018 23:20	Dale L. Simmons	2035935
	10/25/2018			10/31/2018 02:25	Dale L. Simmons	2035929
SM 2540 D-97	10/25/2018			10/26/2018 14:25	Yijie Li	2035929, 2035932, 2035935
SM 4500 F-C-97	10/25/2018			10/30/2018 20:37	Dale L. Simmons	2035932
	10/25/2018			10/30/2018 22:17	Dale L. Simmons	2035929
	10/25/2018			11/06/2018 23:29	Dale L. Simmons	2035935

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	10/25/2018			10/31/2018 08:48	Megan Treadwell	2035930
	10/25/2018			11/01/2018 09:58	Megan Treadwell	2035933
	10/25/2018			11/01/2018 10:43	Megan Treadwell	2035936