

Chemical Analysis Report

SE-DIST-2018-10-05-02

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

Event Description: **SMP- Blank**
Request ID: **RQ-2018-08-27-36**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 31-OCT-2018 15:03



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: OKEEHREE PARK RAMP

Collection Date/Time: 10/04/2018 11:50

Field ID: BLANK_04102018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2031779	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P352915	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P353436	
		Sulfate	0.20	U	mg SO4/L	P353441	
	SM 2120 B	Color (true)	2.5	U	PCU	P352866	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P353317	
	SM 2540 C-97	TDS	15	U	mg/L	P353220	
	SM 2540 D-97	TSS	2	U	mg/L	P353133	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P353320	
2031780	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P353480	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P353190	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353146	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P353259	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P353394	
2031781	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352871	
2031794	EPA 8321B	2,4-D	0.0020	U	ug/L	P352686	
		Bentazon	8.0E-04	U	ug/L	P352686	
		MCP	0.0020	U	ug/L	P352686	
		Triclopyr**	0.0040	U	ug/L	P352686	
		Imidacloprid	0.0020	U	ug/L	P352686	MS
		Diuron	0.0020	U	ug/L	P352686	
		Pyraclostrobin**	0.0020	U	ug/L	P352686	
		Primidone**	0.0040	U	ug/L	P352686	
		Linuron	0.0040	U	ug/L	P352686	
		Acetaminophen**	0.0080	U	ug/L	P352686	
		Fenuron	0.016	U	ug/L	P352686	MS
		Imazapyr**	0.0040	U	ug/L	P352686	
		Carbamazepine**	8.0E-04	U	ug/L	P352686	
		Fluridone**	4.0E-04	U	ug/L	P352686	
		Hydrocodone**	8.0E-04	U	ug/L	P352686	
		Naproxen**	0.0080	U	ug/L	P352686	
		Ibuprofen**	0.020	U	ug/L	P352686	
		Sucralose**	0.010	U	ug/L	P352677	
		Acesulfame K**	0.10	U	ug/L	P352677	
2031795	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P353153	
		Iron	30	U	ug/L	P353153	
		Magnesium	0.040	U	mg/L	P353153	
		Potassium	0.30	U	mg/L	P353153	
		Sodium	0.50	U	mg/L	P353153	
		Zinc	5.0	U	ug/L	P353153	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P353153	
		Cadmium	0.020	U	ug/L	P353153	
		Chromium	0.40	U	ug/L	P353153	
		Copper	0.20	U	ug/L	P353153	

Field ID: BLANK_04102018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2031795	EPA 200.8 Rev. 5.4	Lead	0.050	U	ug/L	P353153	
		Nickel	0.20	U	ug/L	P353153	
		Silver	0.010	U	ug/L	P353153	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352915

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353153

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353153

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353480

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353190

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353146

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353259

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352871

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

Reference Method: EPA 8321B
Batch ID: P352677

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

Reference Method: EPA 8321B
Batch ID: P352686

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
MCP	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: SM 2120 B
Batch ID: P352866

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P353317

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

Reference Method: SM 2540 C-97
Batch ID: P353220

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353133

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353394

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: P353153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	105		P	85 - 115
Magnesium	111		P	85 - 115
Potassium	108		P	85 - 115
Sodium	105		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.2		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	95.3		P	85 - 115
Copper	94.0		P	85 - 115
Lead	103		P	85 - 115
Nickel	98.2		P	85 - 115
Silver	105		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353480

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353190

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353146

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353259

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352871

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

Reference Method: EPA 8321B
Batch ID: P352677

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	122		P	40 - 150
Sucralose	97.2		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P352686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	90.3		P	40 - 150
Acetaminophen	102		P	30 - 150
Bentazon	91.1		P	30 - 150
Carbamazepine	86.7		P	40 - 150
Diuron	79.5		P	40 - 150
Fenuron	114		P	40 - 150
Fluridone	109		P	40 - 150
Hydrocodone	104		P	40 - 150
Ibuprofen	77.7		P	40 - 150
Imazapyr	84.5		P	40 - 150
Imidacloprid	108		P	40 - 160
Linuron	76.5		P	40 - 150
MCPP	96.8		P	40 - 150
Naproxen	83.7		P	40 - 150
Primidone	92.9		P	40 - 150
Pyraclostrobin	73.0		P	40 - 150
Triclopyr	95.6		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P352866

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P353317

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031666	Calcium	97.5		P	80 - 120
2031666	Iron	107		P	80 - 120
2031666	Magnesium	99.7		P	80 - 120
2031666	Potassium	103		P	80 - 120
2031666	Sodium	99.1		P	80 - 120
2031666	Zinc	104		P	80 - 120
2031746	Calcium	104	104	P/P	80 - 120
2031746	Iron	104	104	P/P	80 - 120
2031746	Magnesium	108	109	P/P	80 - 120
2031746	Potassium	103	104	P/P	80 - 120
2031746	Sodium	101	102	P/P	80 - 120
2031746	Zinc	104	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031666	Arsenic	101		P	80 - 120
2031666	Cadmium	100		P	80 - 120
2031666	Chromium	95.2		P	80 - 120
2031666	Copper	94.1		P	80 - 120
2031666	Lead	104		P	80 - 120
2031666	Nickel	99.0		P	80 - 120
2031666	Silver	107		P	80 - 120
2031746	Arsenic	99.4	100	P/P	80 - 120
2031746	Cadmium	100	100	P/P	80 - 120
2031746	Chromium	96.7	97.0	P/P	80 - 120
2031746	Copper	85.3	86.4	P/P	80 - 120
2031746	Lead	104	107	P/P	80 - 120
2031746	Nickel	102	103	P/P	80 - 120
2031746	Silver	109	110	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031782	Chloride	102		P	90 - 110
2031899	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031782	Sulfate	101		P	90 - 110
2031899	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353480

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031810	Ammonia-N	93.7	91.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031724	Kjeldahl Nitrogen	98.1	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031787	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031689	O-Phosphate-P	95.9	96.5	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P352677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2030560	Acesulfame K	130	119	P/P	40 - 150
2030560	Sucralose	98.2	97.4	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P352686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031728	2,4-D	129	124	P/P	40 - 150
2031728	Acetaminophen	130	131	P/P	30 - 150
2031728	Bentazon	47.0	44.0	P/P	30 - 150
2031728	Carbamazepine	70.5	71.8	P/P	40 - 150
2031728	Diuron	51.6	63.1	P/P	40 - 150
2031728	Fenuron	38.4	41.6	F/P	40 - 150
2031728	Fluridone	109	115	P/P	40 - 150
2031728	Hydrocodone	113	109	P/P	40 - 150
2031728	Ibuprofen	74.7	81.3	P/P	40 - 150
2031728	Imazapyr	93.3	101	P/P	40 - 150
2031728	Imidacloprid	182	183	F/F	40 - 160
2031728	Linuron	67.0	68.1	P/P	40 - 150
2031728	MCPP	140	136	P/P	40 - 150
2031728	Naproxen	90.6	78.0	P/P	40 - 150
2031728	Primidone	89.7	92.7	P/P	40 - 150
2031728	Pyraclostrobin	74.5	74.3	P/P	40 - 150
2031728	Triclopyr	122	134	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032610	Fluoride	98.9	98.2	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P353394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031658	Organic Carbon	96.9	96.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031720	Turbidity	6.23	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031746	Calcium	0.266	Spike	P	0 - 20
2031746	Iron	0.0859	Spike	P	0 - 20
2031746	Magnesium	0.473	Spike	P	0 - 20
2031746	Potassium	0.780	Spike	P	0 - 20
2031746	Sodium	0.140	Spike	P	0 - 20
2031746	Zinc	1.40	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031746	Arsenic	0.501	Spike	P	0 - 20
2031746	Cadmium	0.388	Spike	P	0 - 20
2031746	Chromium	0.371	Spike	P	0 - 20
2031746	Copper	1.13	Spike	P	0 - 20
2031746	Lead	2.32	Spike	P	0 - 20
2031746	Nickel	1.31	Spike	P	0 - 20
2031746	Silver	1.00	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031782	Chloride	1.73	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031782	Sulfate	1.37	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353480

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031810	Ammonia-N	1.63	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031724	Kjeldahl Nitrogen	0.0930	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031787	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031724	Total-P	0.680	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031689	O-Phosphate-P	0.624	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P352677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2030560	Acesulfame K	8.26	Spike	P	0 - 30
2030560	Sucralose	0.735	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P352686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031728	2,4-D	3.36	Spike	P	0 - 30
2031728	Acetaminophen	0.832	Spike	P	0 - 30
2031728	Bentazon	6.44	Spike	P	0 - 30
2031728	Carbamazepine	1.78	Spike	P	0 - 30
2031728	Diuron	20.1	Spike	P	0 - 30
2031728	Fenuron	3.39	Spike	P	0 - 30
2031728	Fluridone	5.27	Spike	P	0 - 30
2031728	Hydrocodone	3.92	Spike	P	0 - 30
2031728	Ibuprofen	8.40	Spike	P	0 - 30
2031728	Imazapyr	8.23	Spike	P	0 - 30
2031728	Imidacloprid	0.486	Spike	P	0 - 30
2031728	Linuron	1.62	Spike	P	0 - 30
2031728	MCP	2.89	Spike	P	0 - 30
2031728	Naproxen	14.9	Spike	P	0 - 30
2031728	Primidone	3.23	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P352686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031728	Pyraclostrobin	0.274	Spike	P	0 - 30
2031728	Triclopyr	9.32	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P352866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031809	Color (true)	0.867	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032610	Total Alkalinity	0.438	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353220

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031687	TDS	5.66	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032610	Fluoride	0.509	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031658	Organic Carbon	0.537	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: 2031794

Field Sample ID: BLANK_04102018

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	84.5	P	30 - 160
EPA 8321B	Acetaminophen-d4	129	P	30 - 160
EPA 8321B	Carbamazepine-d10	72.9	P	30 - 160
EPA 8321B	Diuron-d6	88.3	P	30 - 160
EPA 8321B	Endothall-d6	95.1	P	40 - 160
EPA 8321B	Ibuprofen-d3	83.8	P	30 - 160
EPA 8321B	Primidone-d5	96.6	P	30 - 160
EPA 8321B	Sucralose-d6	108	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A86953
Included Lab Sample IDs: 2031794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	88.3	104	P/P	60 - 160

Reference Method: SM 2120 B
Run ID: A86954
Included Lab Sample IDs: 2031779

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86955
Included Lab Sample IDs: 2031781

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86965
Included Lab Sample IDs: 2031779

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

Reference Method: EPA 8321B
Run ID: A86996
Included Lab Sample IDs: 2031794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	98.8	102	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87067
Included Lab Sample IDs: 2031780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87105
Included Lab Sample IDs: 2031779

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

Reference Method: EPA 8321B
Run ID: A87117
Included Lab Sample IDs: 2031794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	97.4	101	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A87117
Included Lab Sample IDs: 2031794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bentazon	95.9	85.2	P/P	50 - 160
Ibuprofen	89.3	101	P/P	50 - 160
MCP	86.5	96.0	P/P	50 - 150
Naproxen	83.1	85.4	P/P	50 - 160
Triclopyr	95.0	107	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A87121
Included Lab Sample IDs: 2031794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	126	98.5	P/P	60 - 160
Carbamazepine	106	111	P/P	60 - 160
Diuron	114	117	P/P	60 - 150
Fenuron	106	111	P/P	60 - 150
Fluridone	117	115	P/P	60 - 160
Hydrocodone	112	118	P/P	60 - 150
Imazapyr	101	96.1	P/P	50 - 150
Imidacloprid	99.5	92.3	P/P	60 - 150
Linuron	112	110	P/P	60 - 150
Primidone	102	113	P/P	60 - 150
Pyraclostrobin	103	102	P/P	60 - 150

Reference Method: SM 2320 B-97
Run ID: A87130
Included Lab Sample IDs: 2031779

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

Reference Method: SM 4500 F-C-97
Run ID: A87130
Included Lab Sample IDs: 2031779

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

Reference Method: SM 5310 B-00
Run ID: A87167
Included Lab Sample IDs: 2031780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87175
Included Lab Sample IDs: 2031780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87180

Included Lab Sample IDs: 2031780

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87205

Included Lab Sample IDs: 2031780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87207

Included Lab Sample IDs: 2031795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	95.5	95.0	P/P	90 - 110
Cadmium	97.6	96.4	P/P	90 - 110
Chromium	93.4	94.3	P/P	90 - 110
Copper	93.3	92.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87266

Included Lab Sample IDs: 2031795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	98.7	98.7	P/P	90 - 110
Nickel	93.9	94.4	P/P	90 - 110
Silver	98.3	97.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A87279

Included Lab Sample IDs: 2031795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	100	P/P	95 - 105
Iron	100	99.1	P/P	95 - 105
Magnesium	102	100	P/P	95 - 105
Potassium	101	101	P/P	95 - 105
Sodium	96.5	95.2	P/P	95 - 105
Zinc	103	104	P/P	95 - 105

* 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						6.23	
EPA 200.7 Rev. 4.4	Calcium	106	97.5	104	104			0.266
	Iron	105	107	104	104			0.0859
	Magnesium	111	99.7	108	109			0.473
	Potassium	108	104	103	103			0.780
	Sodium	105	99.1	101	102			0.140
	Zinc	103	104	104	106			1.40
EPA 200.8 Rev. 5.4	Arsenic	98.2	101	99.4	100			0.501
	Cadmium	102	100	100	100			0.388
	Chromium	95.3	95.2	96.7	97.0			0.371
	Copper	94.0	94.1	85.3	86.4			1.13
	Lead	103	104	104	107			2.32
	Nickel	98.2	99.0	102	103			1.31
	Silver	105	107	109	110			1.00
EPA 300.0 Rev. 2.1	Chloride	103	102	99.4			1.73	
	Sulfate	104	101	101			1.37	
EPA 350.1 Rev. 2.0	Ammonia-N	101	93.7	91.9				1.63
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	98.1	98.3				0.0930
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	102	102				0.491
EPA 365.1 Rev. 2.0	Total-P	106						0.680
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	95.9	96.5				0.624
EPA 8321B	2,4-D	90.3	129	124				3.36
	Acesulfame K	122	130	119				8.26
	Acetaminophen	102	131	130				0.832
	Bentazon	91.1	47.0	44.0				6.44
	Carbamazepine	86.7	70.5	71.8				1.78
	Diuron	79.5	51.6	63.1				20.1
	Fenuron	114	41.6	38.4				3.39
	Fluridone	109	109	115				5.27
	Hydrocodone	104	109	113				3.92
	Ibuprofen	77.7	74.7	81.3				8.40
	Imazapyr	84.5	93.3	101				8.23
	Imidacloprid	108	183	182				0.486
	Linuron	76.5	67.0	68.1				1.62
	MCPP	96.8	140	136				2.89
	Naproxen	83.7	90.6	78.0				14.9
	Primidone	92.9	92.7	89.7				3.23
	Pyraclostrobin	73.0	74.5	74.3				0.274
	Sucralose	97.2	98.2	97.4				0.735
	Triclopyr	95.6	122	134				9.32
SM 2120 B	Color (true)	102					0.867	
SM 2320 B-97	Total Alkalinity	102					0.438	
SM 2540 C-97	TDS						5.66	
SM 4500 F-C-97	Fluoride	98.4	98.9	98.2				0.509
SM 5310 B-00	Organic Carbon	97.2	96.9	96.4				0.537

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2031779
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2031795

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2031795
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2031779
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2031779
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2031780
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2031780
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2031780
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2031780
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2031781
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2031794
SM 2120 B / E31780	True Color measured at 450 nm	2031779
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2031779
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2031779
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2031779
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2031779
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2031780

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	10/05/2018			10/05/2018 17:34	Megan Treadwell	2031779
EPA 200.7 Rev. 4.4	10/05/2018	10/16/2018 18:00	Elliott D. Healy	10/25/2018 10:38	Betina Topolski	2031795
EPA 200.8 Rev. 5.4	10/05/2018	10/16/2018 18:00	Elliott D. Healy	10/19/2018 19:37	Robert K Palmer	2031795
	10/05/2018	10/16/2018 18:00	Elliott D. Healy	10/24/2018 21:08	Robert K Palmer	2031795
EPA 300.0 Rev. 2.1	10/05/2018			10/20/2018 09:42	Lipi Saha	2031779
EPA 350.1 Rev. 2.0	10/05/2018			10/22/2018 13:09	Ping Hua	2031780
EPA 351.2 Rev. 2.0	10/05/2018	10/17/2018 11:30	Adrian Shelby	10/18/2018 14:18	Joseph Suarez	2031780
EPA 353.2 Rev. 2.0	10/05/2018			10/16/2018 12:43	Lauren Bottorf	2031780
EPA 365.1 Rev. 2.0	10/05/2018	10/18/2018 12:55	Sima Feizi	10/19/2018 12:10	Beverly Y. Sanders	2031780
EPA 365.1 Rev. 2.0 dissolved	10/05/2018			10/05/2018 17:24	Julia Storbeck	2031781
EPA 8321B	10/05/2018	10/05/2018 13:00	Hoor Shaik	10/06/2018 19:54	Juyoung Kim	2031794
	10/05/2018	10/05/2018 13:00	Hoor Shaik	10/08/2018 00:45	Juyoung Kim	2031794
	10/05/2018	10/05/2018 16:45	Mohammad Ghaffari	10/05/2018 18:29	Mohammad Ghaffari	2031794
	10/05/2018	10/05/2018 16:45	Mohammad Ghaffari	10/08/2018 21:29	Mohammad Ghaffari	2031794
SM 2120 B	10/05/2018			10/05/2018 16:41	Chelsea Hernandez	2031779
SM 2320 B-97	10/05/2018			10/17/2018 22:11	Dale L. Simmons	2031779
SM 2540 C-97	10/05/2018			10/09/2018 15:15	Yijie Li	2031779
SM 2540 D-97	10/05/2018			10/09/2018 15:15	Yijie Li	2031779
SM 4500 F-C-97	10/05/2018			10/17/2018 22:11	Dale L. Simmons	2031779
SM 5310 B-00	10/05/2018			10/19/2018 03:55	Megan Treadwell	2031780