Chemical Analysis Report

WAS-SECT-2018-11-07-01

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

Event Description: **Big B. Black Crk.**
Request ID: **RQ-2018-11-05-47**
Customer: **WAS-SECT**
Project ID: **SMP**

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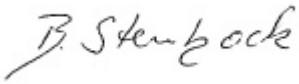

Case Narrative

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: Black Creek upstream of CR158 **Collection Date/Time: 11/07/2018 08:24**

Field ID: G1WA0072 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2039685	EPA 180.1 Rev. 2.0	Turbidity	2.3	A	NTU	P354479	
	EPA 300.0 Rev. 2.1	Chloride	7.5		mg Cl/L	P355116	
		Sulfate	0.84		mg SO4/L	P355119	
	SM 2120 B	Color (true)	92	A	PCU	P354393	
	SM 2320 B-97	Total Alkalinity	5.8		mg CaCO3/L	P354579	
	SM 2540 C-97	TDS	47		mg/L	P354707	
	SM 2540 D-97	TSS	2	I	mg/L	P354719	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P354582	
2039687	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P354634	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P354602	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P354672	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P354591	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P354624	
2039689	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P354418	
2039714	EPA 8321B	2,4-D	0.0020	U	ug/L	P354331	
		Bentazon	8.0E-04	U	ug/L	P354331	
		MCPP	0.0020	U	ug/L	P354331	
		Triclopyr**	0.0040	U	ug/L	P354331	
		Imidacloprid	0.0045	I	ug/L	P354331	
		Diuron	0.0020	U	ug/L	P354331	
		Pyraclostrobin**	0.0020	U	ug/L	P354331	
		Primidone**	0.0040	U	ug/L	P354331	
		Linuron	0.0040	U	ug/L	P354331	
		Acetaminophen**	0.0080	U	ug/L	P354331	
		Fenuron	0.016	U	ug/L	P354331	
		Imazapyr**	0.0040	U	ug/L	P354331	
		Carbamazepine**	8.0E-04	U	ug/L	P354331	
		Fluridone**	4.0E-04	U	ug/L	P354331	
		Hydrocodone**	8.0E-04	U	ug/L	P354331	
		Naproxen**	0.0080	U	ug/L	P354331	
		Ibuprofen**	0.020	U	ug/L	P354331	
		Sucralose**	0.099		ug/L	P354118	
		Acesulfame K**	0.10	U	ug/L	P354118	
2039716	EPA 200.7 Rev. 4.4	Calcium	3.08		mg/L	P354593	
		Iron	850		ug/L	P354593	
		Magnesium	1.73		mg/L	P354593	
		Potassium	0.93	I	mg/L	P354593	
		Sodium	3.6		mg/L	P354593	
		Zinc	5.0	U	ug/L	P354593	
	EPA 200.8 Rev. 5.4	Arsenic	0.56		ug/L	P354593	
		Cadmium	0.020	U	ug/L	P354593	
		Chromium	0.60	I	ug/L	P354593	
		Copper	0.23	I	ug/L	P354593	

Field ID: G1WA0072 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2039716	EPA 200.8 Rev. 5.4	Lead	0.26		ug/L	P354593	
		Nickel	0.27	I	ug/L	P354593	
		Silver	0.010	U	ug/L	P354593	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 8321B: MS accuracy for imazapyr could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Big Branch 50 meters upstream of CR67 **Collection Date/Time: 11/07/2018 09:48**

Field ID: G1WA0001 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2039686	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P354479	
	EPA 300.0 Rev. 2.1	Chloride	3.5		mg Cl/L	P355116	
		Sulfate	0.36	I	mg SO4/L	P355119	
	SM 2120 B	Color (true)	290		PCU	P354393	
	SM 2320 B-97	Total Alkalinity	9.1		mg CaCO3/L	P354579	
	SM 2540 C-97	TDS	51		mg/L	P354707	
	SM 2540 D-97	TSS	2	I	mg/L	P354719	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P354582	
2039688	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P354634	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P354602	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P354672	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P354591	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P354624	
2039690	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P354418	
2039715	EPA 8321B	2,4-D	0.0020	U	ug/L	P354331	
		Bentazon	8.0E-04	U	ug/L	P354331	
		MCPP	0.0020	U	ug/L	P354331	
		Triclopyr**	0.0040	U	ug/L	P354331	
		Imidacloprid	0.0020	U	ug/L	P354331	
		Diuron	0.0020	U	ug/L	P354331	
		Pyraclostrobin**	0.0020	U	ug/L	P354331	
		Primidone**	0.0040	U	ug/L	P354331	
		Linuron	0.0040	U	ug/L	P354331	
		Acetaminophen**	0.0080	U	ug/L	P354331	
		Fenuron	0.016	U	ug/L	P354331	
		Imazapyr**	0.0054	I	ug/L	P354331	
		Carbamazepine**	8.0E-04	U	ug/L	P354331	
		Fluridone**	4.0E-04	U	ug/L	P354331	
		Hydrocodone**	8.0E-04	U	ug/L	P354331	
		Naproxen**	0.0080	U	ug/L	P354331	
		Ibuprofen**	0.020	U	ug/L	P354331	
		Sucralose**	0.010	U	ug/L	P354118	
		Acesulfame K**	0.10	U	ug/L	P354118	
2039717	EPA 200.7 Rev. 4.4	Calcium	6.95		mg/L	P354593	
		Iron	800		ug/L	P354593	
		Magnesium	0.68		mg/L	P354593	
		Potassium	0.30	U	mg/L	P354593	
		Sodium	2.0	I	mg/L	P354593	
		Zinc	5.0	U	ug/L	P354593	
	EPA 200.8 Rev. 5.4	Arsenic	0.46		ug/L	P354593	
		Cadmium	0.020	U	ug/L	P354593	
		Chromium	0.48	I	ug/L	P354593	
		Copper	0.20	U	ug/L	P354593	

Field ID: G1WA0001 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2039717	EPA 200.8 Rev. 5.4	Lead	0.39		ug/L	P354593	
		Nickel	0.28	I	ug/L	P354593	
		Silver	0.010	U	ug/L	P354593	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 8321B: MS accuracy for imazapyr could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P354479

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P354593

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: P354593

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: P355116

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355119

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354634

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354602

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: P354672

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354591

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354418

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

Reference Method: EPA 8321B
Batch ID: P354118

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

Reference Method: EPA 8321B
Batch ID: P354331

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: SM 2120 B
Batch ID: P354393

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P354579

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

Reference Method: SM 2540 C-97
Batch ID: P354707

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354719

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P354582

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P354624

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: P354593

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	104		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	102		P	85 - 115
Sodium	107		P	85 - 115
Zinc	99.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P354593

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	107		P	85 - 115
Cadmium	106		P	85 - 115
Chromium	105		P	85 - 115
Copper	104		P	85 - 115
Lead	104		P	85 - 115
Nickel	105		P	85 - 115
Silver	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355116

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355119

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354634

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354602

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354672

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: P354591

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354418

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

Reference Method: EPA 8321B
Batch ID: P354118

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	83.7		P	40 - 150
Sucralose	85.2		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P354331

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	97.6		P	40 - 150
Acetaminophen	71.6		P	30 - 150
Bentazon	81.6		P	30 - 150
Carbamazepine	83.9		P	40 - 150
Diuron	67.3		P	40 - 150
Fenuron	95.9		P	40 - 150
Fluridone	83.4		P	40 - 150
Hydrocodone	93.1		P	40 - 150
Ibuprofen	105		P	40 - 150
Imazapyr	91.4		P	40 - 150
Imidacloprid	90.9		P	40 - 160
Linuron	70.7		P	40 - 150
MCPP	103		P	40 - 150
Naproxen	122		P	40 - 150
Primidone	87.7		P	40 - 150
Pyraclostrobin	68.1		P	40 - 150
Triclopyr	105		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P354393

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

Reference Method: SM 2320 B-97
Batch ID: P354579

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P354582

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

Reference Method: SM 5310 B-00
Batch ID: P354624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P354593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039716	Calcium	106	107	P/P	80 - 120
2039716	Iron	108	109	P/P	80 - 120
2039716	Magnesium	110	110	P/P	80 - 120
2039716	Potassium	103	105	P/P	80 - 120
2039716	Sodium	104	104	P/P	80 - 120
2039716	Zinc	101	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P354593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039716	Arsenic	107	106	P/P	80 - 120
2039716	Cadmium	105	106	P/P	80 - 120
2039716	Chromium	103	103	P/P	80 - 120
2039716	Copper	105	103	P/P	80 - 120
2039716	Lead	104	104	P/P	80 - 120
2039716	Nickel	105	102	P/P	80 - 120
2039716	Silver	101	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039201	Chloride	101		P	90 - 110
2039941	Chloride	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039201	Sulfate	99.3		P	90 - 110
2039941	Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039526	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354672

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039665	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039665	Total-P	98.6	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354418

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039666	O-Phosphate-P	96.6	97.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P354118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038773	Acesulfame K	120	115	P/P	40 - 150
2038773	Sucralose	94.8	84.4	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P354331

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2040338	2,4-D	125	138	P/P	40 - 150
2040338	Acetaminophen	73.7	81.4	P/P	30 - 150
2040338	Bentazon	45.4	46.2	P/P	30 - 150
2040338	Carbamazepine	65.1	74.2	P/P	40 - 150
2040338	Diuron	57.3	58.6	P/P	40 - 150
2040338	Fenuron	78.0	88.1	P/P	40 - 150
2040338	Fluridone	85.0	88.1	P/P	40 - 150
2040338	Hydrocodone	96.8	102	P/P	40 - 150
2040338	Ibuprofen	81.4	69.5	P/P	40 - 150
2040338	Imidacloprid	154	144	P/P	40 - 160
2040338	Linuron	61.9	62.6	P/P	40 - 150
2040338	MCPP	144	134	P/P	40 - 150
2040338	Naproxen	87.4	90.5	P/P	40 - 150
2040338	Primidone	88.8	77.7	P/P	40 - 150
2040338	Pyraclostrobin	70.3	73.5	P/P	40 - 150
2040338	Triclopyr	139	143	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P354582

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2040253	Fluoride	100	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039523	Organic Carbon	101	97.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P354479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039685	Turbidity	2.61	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P354593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039716	Calcium	0.422	Spike	P	0 - 20
2039716	Iron	0.756	Spike	P	0 - 20
2039716	Magnesium	0.0229	Spike	P	0 - 20
2039716	Potassium	1.51	Spike	P	0 - 20
2039716	Sodium	0.00482	Spike	P	0 - 20
2039716	Zinc	4.08	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P354593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039716	Arsenic	1.29	Spike	P	0 - 20
2039716	Cadmium	0.665	Spike	P	0 - 20
2039716	Chromium	0.281	Spike	P	0 - 20
2039716	Copper	1.79	Spike	P	0 - 20
2039716	Lead	0.0361	Spike	P	0 - 20
2039716	Nickel	2.63	Spike	P	0 - 20
2039716	Silver	0.913	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039201	Chloride	0.198	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039201	Sulfate	1.41	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039526	Ammonia-N	0.162	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039568	Kjeldahl Nitrogen	0.629	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354672

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039665	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039665	Total-P	2.90	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039666	O-Phosphate-P	0.619	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P354118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038773	Acesulfame K	3.85	Spike	P	0 - 30
2038773	Sucralose	9.90	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P354331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2040338	2,4-D	7.21	Spike	P	0 - 30
2040338	Acetaminophen	9.89	Spike	P	0 - 30
2040338	Bentazon	0.973	Spike	P	0 - 30
2040338	Carbamazepine	12.8	Spike	P	0 - 30
2040338	Diuron	2.15	Spike	P	0 - 30
2040338	Fenuron	12.2	Spike	P	0 - 30
2040338	Fluridone	3.39	Spike	P	0 - 30
2040338	Hydrocodone	4.90	Spike	P	0 - 30
2040338	Ibuprofen	15.7	Spike	P	0 - 30
2040338	Imazapyr	2.48	Spike	P	0 - 30
2040338	Imidacloprid	5.71	Spike	P	0 - 30
2040338	Linuron	1.09	Spike	P	0 - 30
2040338	MCPP	7.39	Spike	P	0 - 30
2040338	Naproxen	3.49	Spike	P	0 - 30
2040338	Primidone	12.6	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P354331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2040338	Pyraclostrobin	4.41	Spike	P	0 - 30
2040338	Triclopyr	2.80	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P354393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039685	Color (true)	0.769	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P354579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2040253	Total Alkalinity	0.804	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P354707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039567	TDS	3.23	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P354582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2040253	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P354624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039523	Organic Carbon	2.34	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: 2039714
Field Sample ID: G1WA0072

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	155	P	30 - 160
EPA 8321B	Acetaminophen-d4	82.9	P	30 - 160
EPA 8321B	Carbamazepine-d10	67.2	P	30 - 160
EPA 8321B	Diuron-d6	58.9	P	30 - 160
EPA 8321B	Endothall-d6	107	P	40 - 160
EPA 8321B	Ibuprofen-d3	130	P	30 - 160
EPA 8321B	Primidone-d5	87.7	P	30 - 160
EPA 8321B	Sucralose-d6	113	P	40 - 160

Lab Sample ID: 2039715
Field Sample ID: G1WA0001

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	108	P	30 - 160
EPA 8321B	Acetaminophen-d4	79.2	P	30 - 160
EPA 8321B	Carbamazepine-d10	72.5	P	30 - 160
EPA 8321B	Diuron-d6	53.1	P	30 - 160
EPA 8321B	Endothall-d6	103	P	40 - 160
EPA 8321B	Ibuprofen-d3	103	P	30 - 160
EPA 8321B	Primidone-d5	76.2	P	30 - 160
EPA 8321B	Sucralose-d6	108	P	40 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A87605
Included Lab Sample IDs: 2039714, 2039715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	82.0	80.8	P/P	60 - 160

Reference Method: SM 2120 B
Run ID: A87608
Included Lab Sample IDs: 2039685, 2039686

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 115
Color (true)	103	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A87628
Included Lab Sample IDs: 2039689, 2039690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.7	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A87650
Included Lab Sample IDs: 2039714, 2039715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	84.6	92.4	P/P	60 - 160

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A87659
Included Lab Sample IDs: 2039685, 2039686

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

Reference Method: SM 2320 B-97
Run ID: A87712
Included Lab Sample IDs: 2039685, 2039686

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A87712
Included Lab Sample IDs: 2039685, 2039686

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

Reference Method: SM 5310 B-00
Run ID: A87733
Included Lab Sample IDs: 2039687, 2039688

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87735
Included Lab Sample IDs: 2039687, 2039688

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

Reference Method: EPA 8321B
Run ID: A87745
Included Lab Sample IDs: 2039714, 2039715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	102	90.4	P/P	50 - 150
Acetaminophen	74.4	75.0	P/P	60 - 160
Bentazon	91.6	91.9	P/P	50 - 160
Carbamazepine	114	106	P/P	60 - 160
Diuron	103	99.1	P/P	60 - 150
Fenuron	92.7	91.1	P/P	60 - 150
Fluridone	94.4	95.3	P/P	60 - 160
Hydrocodone	117	99.0	P/P	60 - 150
Ibuprofen	97.2	129	P/P	50 - 160
Imazapyr	105	107	P/P	50 - 150
Imidacloprid	93.2	73.4	P/P	60 - 160
Linuron	100	101	P/P	60 - 150
MCPP	90.7	94.6	P/P	50 - 150
Naproxen	102	85.7	P/P	50 - 160
Primidone	106	94.9	P/P	60 - 160
Pyraclostrobin	107	105	P/P	60 - 150
Triclopyr	101	105	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87753
Included Lab Sample IDs: 2039687, 2039688

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87758
Included Lab Sample IDs: 2039716, 2039717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	105	P/P	90 - 110
Iron	103	106	P/P	90 - 110
Magnesium	103	106	P/P	90 - 110
Potassium	102	104	P/P	90 - 110
Sodium	107	108	P/P	90 - 110
Zinc	99.8	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87770
Included Lab Sample IDs: 2039687, 2039688

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	96.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87776
Included Lab Sample IDs: 2039687, 2039688

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87854
Included Lab Sample IDs: 2039716, 2039717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	105	104	P/P	90 - 110
Cadmium	103	105	P/P	90 - 110
Chromium	103	104	P/P	90 - 110
Copper	105	103	P/P	90 - 110
Lead	104	104	P/P	90 - 110
Nickel	105	103	P/P	90 - 110
Silver	99.7	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87936
Included Lab Sample IDs: 2039685, 2039686

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	101	101	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.61	
EPA 200.7 Rev. 4.4	Calcium	104	106	107			0.422
	Iron	104	108	109			0.756
	Magnesium	107	110	110			0.0229
	Potassium	102	103	105			1.51
	Sodium	107	104	104			0.0048
	Zinc	99.9	101	106			4.08
EPA 200.8 Rev. 5.4	Arsenic	107	107	106			1.29
	Cadmium	106	105	106			0.665
	Chromium	105	103	103			0.281
	Copper	104	105	103			1.79
	Lead	104	104	104			0.0361
	Nickel	105	105	102			2.63
	Silver	102	101	102			0.913
EPA 300.0 Rev. 2.1	Chloride	98.6	101	94.8		0.198	
	Sulfate	97.7	99.3	95.7		1.41	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	101	101			0.162
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102					0.629
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102			0.489
EPA 365.1 Rev. 2.0	Total-P	102	98.6	102			2.90
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	96.6	97.2			0.619
EPA 8321B	2,4-D	97.6	125	138			7.21
	Acesulfame K	83.7	120	115			3.85
	Acetaminophen	71.6	73.7	81.4			9.89
	Bentazon	81.6	45.4	46.2			0.973
	Carbamazepine	83.9	65.1	74.2			12.8
	Diuron	67.3	57.3	58.6			2.15
	Fenuron	95.9	78.0	88.1			12.2
	Fluridone	83.4	85.0	88.1			3.39
	Hydrocodone	93.1	96.8	102			4.90
	Ibuprofen	105	81.4	69.5			15.7
	Imazapyr	91.4					2.48
	Imidacloprid	90.9	154	144			5.71
	Linuron	70.7	61.9	62.6			1.09
	MCPP	103	144	134			7.39
	Naproxen	122	87.4	90.5			3.49
	Primidone	87.7	88.8	77.7			12.6
	Pyraclostrobin	68.1	70.3	73.5			4.41
	Sucralose	85.2	94.8	84.4			9.90
	Triclopyr	105	139	143			2.80
SM 2120 B	Color (true)	102				0.769	
SM 2320 B-97	Total Alkalinity	101				0.804	
SM 2540 C-97	TDS					3.23	
SM 4500 F-C-97	Fluoride	101	100	100			0.0
SM 5310 B-00	Organic Carbon	97.4	101	97.5			2.34

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2039685, 2039686
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2039716, 2039717

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2039716, 2039717
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2039685, 2039686
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2039685, 2039686
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2039687, 2039688
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2039687, 2039688
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2039687, 2039688
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2039687, 2039688
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2039689, 2039690
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2039714, 2039715
SM 2120 B / E31780	True Color measured at 450 nm	2039685, 2039686
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2039685, 2039686
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2039685, 2039686
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2039685, 2039686
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2039685, 2039686
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2039687, 2039688

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	11/07/2018			11/07/2018 18:20	Megan Treadwell	2039685, 2039686
EPA 200.7 Rev. 4.4	11/07/2018	11/13/2018 14:15	Elliott D. Healy	11/14/2018 14:15	Betina Topolski	2039716
	11/07/2018	11/13/2018 14:15	Elliott D. Healy	11/14/2018 14:37	Betina Topolski	2039717
EPA 200.8 Rev. 5.4	11/07/2018	11/13/2018 14:15	Elliott D. Healy	11/15/2018 17:19	Allison Taylor	2039716
	11/07/2018	11/13/2018 14:15	Elliott D. Healy	11/15/2018 17:48	Allison Taylor	2039717
EPA 300.0 Rev. 2.1	11/07/2018			11/26/2018 21:08	Lipi Saha	2039685
	11/07/2018			11/26/2018 21:20	Lipi Saha	2039686
EPA 350.1 Rev. 2.0	11/07/2018			11/09/2018 13:54	Ping Hua	2039687
	11/07/2018			11/09/2018 13:55	Ping Hua	2039688
EPA 351.2 Rev. 2.0	11/07/2018	11/13/2018 16:30	Adrian Shelby	11/15/2018 09:42	Joseph Suarez	2039687
	11/07/2018	11/13/2018 16:30	Adrian Shelby	11/15/2018 09:44	Joseph Suarez	2039688
EPA 353.2 Rev. 2.0	11/07/2018			11/14/2018 12:52	Lauren Bottorf	2039687
	11/07/2018			11/14/2018 12:54	Lauren Bottorf	2039688
EPA 365.1 Rev. 2.0	11/07/2018	11/13/2018 12:20	Sima Feizi	11/14/2018 15:22	Beverly Y. Sanders	2039687
	11/07/2018	11/13/2018 12:20	Sima Feizi	11/14/2018 15:23	Beverly Y. Sanders	2039688
EPA 365.1 Rev. 2.0 dissolved	11/07/2018			11/07/2018 15:55	Julia Storbeck	2039689
	11/07/2018			11/07/2018 15:56	Julia Storbeck	2039690
EPA 8321B	11/07/2018	11/07/2018 12:00	Mohammad Ghaffari	11/07/2018 13:49	Mohammad Ghaffari	2039714
	11/07/2018	11/07/2018 12:00	Mohammad Ghaffari	11/07/2018 14:03	Mohammad Ghaffari	2039715
	11/07/2018	11/07/2018 12:00	Mohammad Ghaffari	11/08/2018 17:27	Mohammad Ghaffari	2039714
	11/07/2018	11/07/2018 12:00	Mohammad Ghaffari	11/08/2018 17:41	Mohammad Ghaffari	2039715
	11/07/2018	11/13/2018 10:00	Hoor Shaik	11/14/2018 05:27	Juyoung Kim	2039714
	11/07/2018	11/13/2018 10:00	Hoor Shaik	11/14/2018 06:02	Juyoung Kim	2039715
	11/07/2018	11/13/2018 10:00	Hoor Shaik	11/14/2018 18:43	Juyoung Kim	2039714
	11/07/2018	11/13/2018 10:00	Hoor Shaik	11/14/2018 19:18	Juyoung Kim	2039715
SM 2120 B	11/07/2018			11/07/2018 16:03	Chelsea Hernandez	2039685
	11/07/2018			11/07/2018 16:12	Chelsea Hernandez	2039686
SM 2320 B-97	11/07/2018			11/10/2018 09:59	Dale L. Simmons	2039685
	11/07/2018			11/10/2018 10:11	Dale L. Simmons	2039686
SM 2540 C-97	11/07/2018			11/08/2018 14:01	Yijie Li	2039685, 2039686
SM 2540 D-97	11/07/2018			11/08/2018 14:01	Yijie Li	2039685, 2039686
SM 4500 F-C-97	11/07/2018			11/10/2018 09:59	Dale L. Simmons	2039685
	11/07/2018			11/10/2018 10:11	Dale L. Simmons	2039686
SM 5310 B-00	11/07/2018			11/13/2018 05:43	Megan Treadwell	2039687
	11/07/2018			11/13/2018 05:55	Megan Treadwell	2039688