

Chemical Analysis Report

CEN-DIST-2019-02-12-02

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

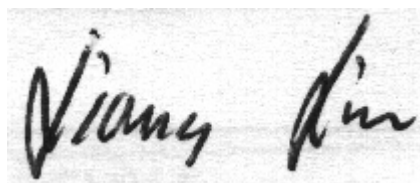
Event Description: **Long Branch+SCI**
Request ID: **RQ-2019-02-11-36**
Customer: **CEN-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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: Liang Lin, Environmental Administrator

Date Certified: 01-MAR-2019 12:03

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Long Branch @ 0.7 mi DS of CR 13

Collection Date/Time: 02/11/2019 10:45

Field ID: G2CE0036

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2061786	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P358806	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P359449	
		Sulfate	18		mg SO4/L	P359453	
	SM 2120 B	Color (true)	200		PCU	P358811	
	SM 2320 B-97	Total Alkalinity	70	A	mg CaCO3/L	P359116	
	SM 2540 C-97	TDS	217		mg/L	P359130	
	SM 2540 D-97	TSS	3	I	mg/L	P359151	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P359121	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P359058	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P358839	
2061787	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P359142	
	EPA 365.1 Rev. 2.0	Total-P	0.080		mg P/L	P358862	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P358985	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.055		mg P/L	P358815	
	EPA 8321B	2,4-D	0.0020	U	ug/L	P358573	
2061794		Acesulfame K**	0.11	I	ug/L	P358749	
		AMPA**	0.10	U	ug/L	P358749	
		Sucralose**	0.26		ug/L	P358749	
		Acetaminophen**	0.0080	U	ug/L	P358573	
		Endothall**	0.25	U	ug/L	P358749	MS
		Glufosinate**	0.10	U	ug/L	P358749	
		Bentazon	8.0E-04	U	ug/L	P358573	
		Glyphosate**	0.12	I	ug/L	P358749	
		Carbamazepine**	8.0E-04	U	ug/L	P358573	
		Diuron	0.0020	U	ug/L	P358573	
		Fenuron	0.016	U	ug/L	P358573	
		Imazapyr**	0.012	I	ug/L	P358573	
		Imidacloprid	0.0020	U	ug/L	P358573	MS
		Linuron	0.0040	U	ug/L	P358573	
		MCP	0.0020	U	ug/L	P358573	
		Primidone**	0.0040	U	ug/L	P358573	
		Pyraclostrobin**	0.0020	U	ug/L	P358573	
		Triclopyr**	0.0040	U	ug/L	P358573	
		Fluridone**	0.0034		ug/L	P358573	
		Hydrocodone**	0.0020	U	ug/L	P358573	
		Naproxen**	0.0080	U	ug/L	P358573	
2061795		Ibuprofen**	0.020	U	ug/L	P358573	
	EPA 200.7 Rev. 4.4	Calcium	37.9		mg/L	P358870	
		Iron	610		ug/L	P358870	
		Magnesium	2.75		mg/L	P358870	
		Potassium	1.6		mg/L	P358870	
		Sodium	20.5		mg/L	P358870	
		Zinc	5.0	U	ug/L	P358870	

Field ID: G2CE0036

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2061795	EPA 200.8 Rev. 5.4	Arsenic	0.79		ug/L	P358870	
		Cadmium	0.020	U	ug/L	P358870	
		Chromium	0.81	I	ug/L	P358870	
		Copper	0.78	I	ug/L	P358870	
		Lead	0.40		ug/L	P358870	
		Nickel	0.50	U	ug/L	P358870	
		Silver	0.010	U	ug/L	P358870	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 8321B: 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: P358806

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P358870

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: P358870

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359449

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359453

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359058

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358839

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: P359142

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358862

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358815

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

Reference Method: EPA 8321B
Batch ID: P358573

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	8.0E-04	U	ug/L
Hydrocodone	0.0020	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: P358749

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P358811

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P359116

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

Reference Method: SM 2540 C-97
Batch ID: P359130

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359151

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P359121

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P358985

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: P358870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	106		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	109		P	85 - 115
Sodium	110		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P358870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	112		P	80 - 120
Cadmium	107		P	80 - 120
Chromium	110		P	80 - 120
Copper	110		P	80 - 120
Lead	110		P	80 - 120
Nickel	110		P	80 - 120
Silver	107		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359449

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359453

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359058

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358839

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359142

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358862

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358815

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

Reference Method: EPA 8321B
Batch ID: P358573

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	60.5		P	40 - 150
Acetaminophen	82.2		P	30 - 150
Bentazon	64.9		P	30 - 150
Carbamazepine	85.2		P	40 - 150
Diuron	83.0		P	40 - 150
Fenuron	101		P	40 - 150
Fluridone	101		P	40 - 150
Hydrocodone	96.7		P	40 - 150
Ibuprofen	75.9		P	40 - 150
Imazapyr	74.4		P	40 - 150
Imidacloprid	111		P	40 - 150
Linuron	82.4		P	40 - 150
MCPP	79.2		P	40 - 150
Naproxen	70.7		P	40 - 150
Primidone	94.4		P	40 - 150
Pyraclostrobin	78.1		P	40 - 150
Triclopyr	50.5		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P358749

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	112		P	40 - 150
AMPA	103		P	40 - 150
Endothall	100		P	40 - 150
Glufosinate	94.1		P	40 - 150
Glyphosate	107		P	40 - 140
Sucralose	99.4		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P358811

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

Reference Method: SM 2320 B-97
Batch ID: P359116

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: P359121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P358985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P358870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061776	Calcium	102		P	80 - 120
2061776	Iron	109	108	P/P	80 - 120
2061776	Magnesium	113	112	P/P	80 - 120
2061776	Potassium	107	105	P/P	80 - 120
2061776	Sodium	108	107	P/P	80 - 120
2061776	Zinc	103	102	P/P	80 - 120
2061877	Calcium	97.7		P	80 - 120
2061877	Iron	109		P	80 - 120
2061877	Magnesium	109		P	80 - 120
2061877	Potassium	105		P	80 - 120
2061877	Sodium	104		P	80 - 120
2061877	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P358870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061776	Arsenic	108	107	P/P	80 - 120
2061776	Cadmium	109	108	P/P	80 - 120
2061776	Chromium	104	103	P/P	80 - 120
2061776	Copper	107	105	P/P	80 - 120
2061776	Lead	107	106	P/P	80 - 120
2061776	Nickel	105	104	P/P	80 - 120
2061776	Silver	108	106	P/P	80 - 120
2061877	Arsenic	107		P	80 - 120
2061877	Cadmium	109		P	80 - 120
2061877	Chromium	102		P	80 - 120
2061877	Copper	101		P	80 - 120
2061877	Lead	104		P	80 - 120
2061877	Nickel	103		P	80 - 120
2061877	Silver	106		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061675	Chloride	103		P	90 - 110
2061726	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359453

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061675	Sulfate	102		P	90 - 110
2061726	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061730	Ammonia-N	99.3	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061732	Kjeldahl Nitrogen	105	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061787	NO2NO3-N	98.4	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358862

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061852	Total-P	101	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358815

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061739	O-Phosphate-P	98.8	100	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P358573

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061239	2,4-D	70.1	65.3	P/P	40 - 150
2061239	Acetaminophen	118	116	P/P	30 - 150
2061239	Bentazon	36.7	36.3	P/P	30 - 150
2061239	Carbamazepine	71.9	74.9	P/P	40 - 150
2061239	Diuron	62.4	66.4	P/P	40 - 150
2061239	Fenuron	83.3	80.6	P/P	40 - 150
2061239	Fluridone	80.8	87.0	P/P	40 - 150
2061239	Hydrocodone	78.8	79.7	P/P	40 - 150
2061239	Ibuprofen	87.9	87.0	P/P	40 - 150
2061239	Imidacloprid	184	167	F/F	40 - 150
2061239	Linuron	66.6	70.5	P/P	40 - 150
2061239	MCP	88.5	79.5	P/P	40 - 150
2061239	Naproxen	51.7	50.3	P/P	40 - 150
2061239	Primidone	109	102	P/P	40 - 150
2061239	Pyraclostrobin	78.7	76.3	P/P	40 - 150
2061239	Triclopyr	47.4	40.6	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P358749

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061239	Acesulfame K	71.3	72.6	P/P	40 - 150
2061239	Endothall	25.1	20.9	F/F	40 - 150
2061239	Sucralose	101	109	P/P	40 - 150
2061887	AMPA	94.0	92.8	P/P	40 - 150
2061887	Glufosinate	80.5	85.4	P/P	40 - 150
2061887	Glyphosate	89.8	89.1	P/P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P359121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061786	Fluoride	92.6	93.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P358985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061620	Organic Carbon	101		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061812	Turbidity	2.50	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P358870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061776	Calcium	1.57	Spike	P	0 - 20
2061776	Iron	0.957	Spike	P	0 - 20
2061776	Magnesium	0.261	Spike	P	0 - 20
2061776	Potassium	1.38	Spike	P	0 - 20
2061776	Sodium	0.341	Spike	P	0 - 20
2061776	Zinc	1.07	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P358870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061776	Arsenic	1.13	Spike	P	0 - 20
2061776	Cadmium	0.227	Spike	P	0 - 20
2061776	Chromium	1.18	Spike	P	0 - 20
2061776	Copper	1.56	Spike	P	0 - 20
2061776	Lead	1.05	Spike	P	0 - 20
2061776	Nickel	0.434	Spike	P	0 - 20
2061776	Silver	1.56	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061675	Chloride	0.0456	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061675	Sulfate	0.0756	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061730	Ammonia-N	1.51	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061732	Kjeldahl Nitrogen	2.43	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061787	NO2NO3-N	0.421	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061852	Total-P	1.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061739	O-Phosphate-P	1.31	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P358573

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061239	2,4-D	4.88	Spike	P	0 - 30
2061239	Acetaminophen	2.21	Spike	P	0 - 30
2061239	Bentazon	0.308	Spike	P	0 - 30
2061239	Carbamazepine	3.99	Spike	P	0 - 30
2061239	Diuron	5.81	Spike	P	0 - 30
2061239	Fenuron	3.35	Spike	P	0 - 30
2061239	Fluridone	3.32	Spike	P	0 - 30
2061239	Hydrocodone	1.14	Spike	P	0 - 30
2061239	Ibuprofen	1.12	Spike	P	0 - 30
2061239	Imazapyr	24.4	Spike	P	0 - 30
2061239	Imidacloprid	7.98	Spike	P	0 - 30
2061239	Linuron	5.72	Spike	P	0 - 30
2061239	MCPP	10.6	Spike	P	0 - 30
2061239	Naproxen	2.75	Spike	P	0 - 30
2061239	Primidone	6.24	Spike	P	0 - 30
2061239	Pyraclostrobin	3.10	Spike	P	0 - 30
2061239	Triclopyr	15.6	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P358749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P358749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061239	Acesulfame K	1.72	Spike	P	0 - 30
2061239	Endothall	18.5	Spike	P	0 - 30
2061239	Sucralose	5.41	Spike	P	0 - 30
2061887	AMPA	1.37	Spike	P	0 - 30
2061887	Glufosinate	5.80	Spike	P	0 - 30
2061887	Glyphosate	0.769	Spike	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P358811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061857	Color (true)	6.17	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P359116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061786	Total Alkalinity	0.477	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P359130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061675	TDS	4.62	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P359121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061786	Fluoride	0.474	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P358985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061620	Organic Carbon	0.488	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: 2061794
Field Sample ID: G2CE0036

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	87.7	P	30 - 160
EPA 8321B	Acetaminophen-d4	107	P	30 - 160
EPA 8321B	Carbamazepine-d10	59.1	P	30 - 160
EPA 8321B	Diuron-d6	60.0	P	30 - 160
EPA 8321B	Endothall-d6	118	P	40 - 160
EPA 8321B	Endothall-d6	118	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	67.9	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	67.9	P	40 - 160
EPA 8321B	Ibuprofen-d3	78.1	P	30 - 160
EPA 8321B	Primidone-d5	73.3	P	30 - 160
EPA 8321B	Sucralose-d6	110	P	40 - 160
EPA 8321B	Sucralose-d6	110	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89377

Included Lab Sample IDs: 2061786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	101	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A89379

Included Lab Sample IDs: 2061786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89380

Included Lab Sample IDs: 2061788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89410

Included Lab Sample IDs: 2061787

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89421

Included Lab Sample IDs: 2061787

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	99.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89433

Included Lab Sample IDs: 2061795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.7	98.8	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	98.7	99.3	P/P	90 - 110
Sodium	98.5	99.2	P/P	90 - 110
Zinc	101	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89440

Included Lab Sample IDs: 2061787

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A89461
Included Lab Sample IDs: 2061794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	84.8	97.5	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89467
Included Lab Sample IDs: 2061787

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A89473
Included Lab Sample IDs: 2061795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	102	104	P/P	90 - 110
Silver	101	103	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A89490
Included Lab Sample IDs: 2061786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A89490
Included Lab Sample IDs: 2061786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.8	94.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A89498
Included Lab Sample IDs: 2061787

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

Reference Method: EPA 8321B
Run ID: A89502
Included Lab Sample IDs: 2061794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	80.2	83.8	P/P	50 - 150
Acetaminophen	111	104	P/P	60 - 160
Bentazon	74.6	79.6	P/P	50 - 160
Carbamazepine	98.4	97.9	P/P	60 - 150
Diuron	89.5	97.1	P/P	60 - 150
Fenuron	97.0	95.0	P/P	60 - 150
Fluridone	104	106	P/P	60 - 160
Hydrocodone	98.7	81.1	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A89502
Included Lab Sample IDs: 2061794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ibuprofen	82.8	90.6	P/P	50 - 160
Imazapyr	63.5	76.3	P/P	50 - 150
Imidacloprid	93.7	98.6	P/P	60 - 150
Linuron	104	101	P/P	60 - 150
MCPP	87.0	89.2	P/P	50 - 150
Naproxen	93.1	112	P/P	50 - 160
Primidone	91.5	101	P/P	60 - 150
Pyraclostrobin	111	109	P/P	60 - 150
Triclopyr	82.1	91.2	P/P	50 - 150

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A89518
Included Lab Sample IDs: 2061795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	100	P/P	90 - 110
Chromium	99.9	101	P/P	90 - 110
Copper	102	101	P/P	90 - 110
Lead	104	104	P/P	90 - 110
Nickel	101	101	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A89578
Included Lab Sample IDs: 2061794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	101	107	P/P	60 - 160
Glufosinate	104	105	P/P	60 - 160
Glyphosate	112	116	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A89585
Included Lab Sample IDs: 2061794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	97.9	104	P/P	60 - 160
Endothall	94.4	90.1	P/P	60 - 160

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A89617
Included Lab Sample IDs: 2061786

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.50	
EPA 200.7 Rev. 4.4	Calcium	101	102	97.7				1.57
	Iron	106	109	108	109			0.957
	Magnesium	112	113	112	109			0.261
	Potassium	109	107	105	105			1.38
	Sodium	110	108	107	104			0.341
	Zinc	102	103	102	102			1.07
EPA 200.8 Rev. 5.4	Arsenic	112	108	107	107			1.13
	Cadmium	107	109	108	109			0.227
	Chromium	110	104	103	102			1.18
	Copper	110	107	105	101			1.56
	Lead	110	107	106	104			1.05
	Nickel	110	105	104	103			0.434
	Silver	107	108	106	106			1.56
EPA 300.0 Rev. 2.1	Chloride	105	103	105			0.0456	
	Sulfate	105	102	104			0.0756	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	99.3	101				1.51
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	105	109				2.43
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	98.4	98.0				0.421
EPA 365.1 Rev. 2.0	Total-P	97.6	101	99.3				1.54
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.8	100				1.31
EPA 8321B	2,4-D	60.5	65.3	70.1				4.88
	Acesulfame K	112	71.3	72.6				1.72
	Acetaminophen	82.2	116	118				2.21
	AMPA	103	94.0	92.8				1.37
	Bentazon	64.9	36.3	36.7				0.308
	Carbamazepine	85.2	74.9	71.9				3.99
	Diuron	83.0	66.4	62.4				5.81
	Endothall	100	25.1	20.9				18.5
	Fenuron	101	80.6	83.3				3.35
	Fluridone	101	87.0	80.8				3.32
	Glufosinate	94.1	80.5	85.4				5.80
	Glyphosate	107	89.8	89.1				0.769
	Hydrocodone	96.7	79.7	78.8				1.14
	Ibuprofen	75.9	87.0	87.9				1.12
	Imazapyr	74.4						24.4
	Imidacloprid	111	167	184				7.98
	Linuron	82.4	70.5	66.6				5.72
	MCPP	79.2	79.5	88.5				10.6
	Naproxen	70.7	50.3	51.7				2.75
	Primidone	94.4	102	109				6.24
	Pyraclostrobin	78.1	76.3	78.7				3.10
	Sucralose	99.4	109	101				5.41
	Triclopyr	50.5	40.6	47.4				15.6
SM 2120 B	Color (true)	102					6.17	
SM 2320 B-97	Total Alkalinity	102					0.477	
SM 2540 C-97	TDS						4.62	
SM 4500 F-C-97	Fluoride	93.6	92.6	93.1				0.474
SM 5310 B-00	Organic Carbon	97.1	101					0.488

Reference Method Descriptions

Method / DoH Cert #

Description

Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2061786
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2061795
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2061795
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2061786
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2061786
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2061787
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2061787
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2061787
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2061787
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2061788
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2061794
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2061794
SM 2120 B / E31780	True Color measured at 450 nm	2061786
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2061786
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2061786
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2061786
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2061786
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2061787

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	02/12/2019			02/12/2019 16:03	Adrian Shelby	2061786
EPA 200.7 Rev. 4.4	02/12/2019	02/13/2019 16:35	Elliott D. Healy	02/14/2019 16:02	Betina Topolski	2061795
EPA 200.8 Rev. 5.4	02/12/2019	02/13/2019 16:35	Elliott D. Healy	02/16/2019 06:13	Allison Taylor	2061795
	02/12/2019	02/13/2019 16:35	Elliott D. Healy	02/19/2019 16:38	Allison Taylor	2061795
EPA 300.0 Rev. 2.1	02/12/2019			02/23/2019 03:36	Lipi Saha	2061786
EPA 350.1 Rev. 2.0	02/12/2019			02/15/2019 13:06	Ping Hua	2061787
EPA 351.2 Rev. 2.0	02/12/2019	02/13/2019 12:15	Adrian Shelby	02/14/2019 13:23	Joseph Suarez	2061787
EPA 353.2 Rev. 2.0	02/12/2019			02/19/2019 09:07	Beverly Y. Sanders	2061787
EPA 365.1 Rev. 2.0	02/12/2019	02/13/2019 12:40	Sima Feizi	02/13/2019 19:34	Rosalyn Ballman	2061787
EPA 365.1 Rev. 2.0 dissolved	02/12/2019			02/12/2019 15:56	Jhamieka S. Greenwood	2061788
EPA 8321B	02/12/2019	02/12/2019 12:00	Hoor Shaik	02/20/2019 07:15	Juyoung Kim	2061794
	02/12/2019	02/13/2019 14:30	Rebecca Ware	02/13/2019 19:58	Mohammad Ghaffari	2061794
	02/12/2019	02/13/2019 14:30	Rebecca Ware	02/14/2019 13:41	Mohammad Ghaffari	2061794
	02/12/2019	02/13/2019 14:30	Rebecca Ware	02/16/2019 13:56	Mohammad Ghaffari	2061794
SM 2120 B	02/12/2019			02/12/2019 16:40	Chelsea Hernandez	2061786
SM 2320 B-97	02/12/2019			02/16/2019 14:54	Dale L. Simmons	2061786
SM 2540 C-97	02/12/2019			02/13/2019 15:22	Yijie Li	2061786
SM 2540 D-97	02/12/2019			02/13/2019 15:22	Yijie Li	2061786
SM 4500 F-C-97	02/12/2019			02/16/2019 14:45	Dale L. Simmons	2061786
SM 5310 B-00	02/12/2019			02/14/2019 20:51	Chelsea Hernandez	2061787