

Chemical Analysis Report

TLH-ROC-2021-08-18-01

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

Event Description: **Run 1**
Request ID: **RQ-2021-08-02-70**
Customer: **TLH-ROC**
Project ID: **SMP**

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

Date Certified: 14-SEP-2021 12:01

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the "T" and a long horizontal stroke at the end.

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: Waccasassa River @ Boat Ramp

Collection Date/Time: 08/18/2021 10:55

Field ID: G1TLHR0032

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2270360	EPA 180.1 Rev. 2.0	Turbidity	1.9	A	NTU	P402710	
	SM 2320 B-2011	Total Alkalinity	90		mg CaCO3/L	P402850	
	SM 2540 D-2011	TSS	2	I	mg/L	P403197	
	SM 4500 F-C-2011	Fluoride	0.089	I	mg F/L	P402852	
2270361	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P402908	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P403352	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P403069	
	EPA 365.1 Rev. 2.0	Total-P	0.063		mg P/L	P402818	
	SM 5310 B-2011	Organic Carbon	27		mg C/L	P403117	
2270362	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P402698	
2270374	EPA 8321B	2,4-D	0.0020	U	ug/L	P402808	
		Acesulfame K	0.10	U	ug/L	P402556	
		2,4,5-T	0.0040	U	ug/L	P402808	
		AMPA	0.10	U	ug/L	P402556	MS
		Acetaminophen	0.0080	U	ug/L	P402808	
		Acetamiprid	0.0020	U	ug/L	P402808	
		Endothall	0.25	U	ug/L	P402556	
		Glufosinate	0.10	U	ug/L	P402556	
		Glyphosate	0.10	U	ug/L	P402556	
		Afidopyropen	0.0020	U	ug/L	P402808	
		Bentazon	8.0E-04	U	ug/L	P402808	
		Sucralose	0.15		ug/L	P402556	
		Benzovindiflupyr	0.0020	U	ug/L	P402808	
		Carbamazepine	8.0E-04	U	ug/L	P402808	
		Clothianidin	0.0020	U	ug/L	P402808	
		Dinotefuran	0.0020	U	ug/L	P402808	
		Diuron	0.0020	U	ug/L	P402808	
		Fenuron	0.016	U	ug/L	P402808	
		Fluridone	8.0E-04	U	ug/L	P402808	
		Imazapyr	0.0094	I	ug/L	P402808	MS
		Hydrocodone	0.0020	U	ug/L	P402808	
		Ibuprofen	0.020	U	ug/L	P402808	
		Imidacloprid	0.0020	U	ug/L	P402808	MS
		Linuron	0.0040	U	ug/L	P402808	
		Mandestrobin	0.0020	U	ug/L	P402808	
		MCP	0.0020	U	ug/L	P402808	
		Naproxen	0.0080	U	ug/L	P402808	
		Primidone	0.0040	U	ug/L	P402808	
		Pyraclostrobin	0.0020	U	ug/L	P402808	
		Thiamethoxam	0.0020	U	ug/L	P402808	
		Tolfenpyrad	0.0020	U	ug/L	P402808	
		Triclopyr	0.0040	U	ug/L	P402808	
2270375	EPA 200.7 Rev. 4.4	Calcium	37.8		mg/L	P402737	

Field ID: G1TLHR0032

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2270375	EPA 200.7 Rev. 4.4	Iron	1.11E+03		ug/L	P402737	
		Magnesium	6.17		mg/L	P402737	
		Manganese	33.4		ug/L	P402737	
		Zinc	5.0	U	ug/L	P402737	
	EPA 200.8 Rev. 5.4	Aluminum	76		ug/L	P402737	
		Antimony	0.050	U	ug/L	P402737	
		Arsenic	0.85		ug/L	P402737	
		Beryllium	0.015	I	ug/L	P402737	
		Cadmium	0.020	U	ug/L	P402737	
		Chromium	0.49	I	ug/L	P402737	
		Copper	0.40	U	ug/L	P402737	
		Lead	0.20	U	ug/L	P402737	
		Nickel	0.50	U	ug/L	P402737	
		Selenium	0.24	I	ug/L	P402737	
		Silver	0.010	U	ug/L	P402737	
		Thallium	0.10	U	ug/L	P402737	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 8321B: MS accuracy for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

EPA 8321B: MS accuracy for glyphosate could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Waccasassa River @ Otter Creek

Collection Date/Time: 08/18/2021 11:05

Field ID: G1TLHR0101

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2270376	EPA 200.7 Rev. 4.4	Calcium	38.8		mg/L	P402737	
		Iron	1.03E+03		ug/L	P402737	
		Magnesium	7.03		mg/L	P402737	
		Manganese	28.6		ug/L	P402737	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P402737	
		Aluminum	75		ug/L	P402737	
		Antimony	0.050	U	ug/L	P402737	
		Arsenic	1.20		ug/L	P402737	
		Beryllium	0.015	I	ug/L	P402737	
		Cadmium	0.020	U	ug/L	P402737	
		Chromium	0.52	I	ug/L	P402737	
		Copper	0.40	U	ug/L	P402737	
		Lead	0.20	U	ug/L	P402737	
		Nickel	0.50	U	ug/L	P402737	
		Selenium	0.20	U	ug/L	P402737	
		Silver	0.010	U	ug/L	P402737	
		Thallium	0.10	U	ug/L	P402737	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P402710

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402737

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402737

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	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
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402908

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403352

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403069

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402818

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402698

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

Reference Method: EPA 8321B
Batch ID: P402556

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: EPA 8321B
Batch ID: P402808

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
2,4,5-T	0.0040	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	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
Mandestrobin	0.0020	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
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: SM 2320 B-2011
Batch ID: P402850

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P403197

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P402852

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P403117

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: P402737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	106		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	101		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P402737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	103		P	85 - 115
Beryllium	99.2		P	85 - 115
Cadmium	99.5		P	85 - 115
Chromium	99.5		P	85 - 115
Copper	102		P	85 - 115
Lead	102		P	85 - 115
Nickel	102		P	85 - 115
Selenium	100		P	85 - 115
Silver	105		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P402908

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P403352

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P403069

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

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P402818

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P402698

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P402556

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	88.2		P	40 - 150
AMPA	98.9		P	40 - 160
Endothall	126		P	40 - 150
Glufosinate	96.1		P	40 - 160
Glyphosate	96.4		P	40 - 160
Sucralose	105		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P402808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	82.9		P	40 - 150
2,4,5-T	87.1		P	40 - 150
Acetaminophen	75.1		P	30 - 150
Acetamiprid	80.5		P	40 - 150
Afidopyropen	65.6		P	40 - 150
Bentazon	92.0		P	30 - 150
Benzovindiflupyr	78.8		P	40 - 150
Carbamazepine	77.0		P	40 - 150
Clothianidin	74.8		P	40 - 150
Dinotefuran	75.8		P	40 - 150
Diuron	96.1		P	40 - 150
Fenuron	85.3		P	40 - 150
Fluridone	81.8		P	40 - 150
Hydrocodone	77.3		P	40 - 150
Ibuprofen	71.7		P	40 - 150
Imazapyr	91.6		P	40 - 150
Imidacloprid	85.0		P	40 - 150
Linuron	79.4		P	40 - 150
Mandestrobin	77.6		P	40 - 150
MCPP	87.3		P	40 - 150
Naproxen	58.1		P	40 - 150
Primidone	87.9		P	40 - 150
Pyraclostrobin	66.5		P	40 - 150
Thiamethoxam	78.0		P	40 - 150
Tolfenpyrad	35.0		P	30 - 150
Triclopyr	76.0		P	40 - 150

Reference Method: SM 2320 B-2011

Batch ID: P402850

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Reference Method: SM 4500 F-C-2011

Batch ID: P402852

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P403117

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P402737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270375	Calcium	99.9		P	80 - 120
2270375	Iron	103		P	80 - 120
2270375	Magnesium	101		P	80 - 120
2270375	Manganese	99.4		P	80 - 120
2270375	Zinc	100		P	80 - 120
2270488	Calcium	97.5		P	80 - 120
2270488	Iron	104	106	P/P	80 - 120
2270488	Magnesium	99.6		P	80 - 120
2270488	Manganese	98.8	101	P/P	80 - 120
2270488	Zinc	98.6	98.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P402737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270375	Aluminum	97.2		P	80 - 120
2270375	Antimony	101		P	80 - 120
2270375	Arsenic	101		P	80 - 120
2270375	Beryllium	94.2		P	80 - 120
2270375	Cadmium	99.2		P	80 - 120
2270375	Chromium	98.4		P	80 - 120
2270375	Copper	97.8		P	80 - 120
2270375	Lead	102		P	80 - 120
2270375	Nickel	98.2		P	80 - 120
2270375	Selenium	97.1		P	80 - 120
2270375	Silver	102		P	80 - 120
2270375	Thallium	107		P	80 - 120
2270488	Aluminum	97.1	97.7	P/P	80 - 120
2270488	Antimony	102	103	P/P	80 - 120
2270488	Arsenic	103	103	P/P	80 - 120
2270488	Beryllium	96.1	96.9	P/P	80 - 120
2270488	Cadmium	101	102	P/P	80 - 120
2270488	Chromium	102	102	P/P	80 - 120
2270488	Copper	96.5	96.7	P/P	80 - 120
2270488	Lead	102	102	P/P	80 - 120
2270488	Nickel	97.5	98.0	P/P	80 - 120
2270488	Selenium	98.0	98.3	P/P	80 - 120
2270488	Silver	103	103	P/P	80 - 120
2270488	Thallium	107	107	P/P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P402908

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270004	Ammonia-N	91.6	93.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P403352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272419	Kjeldahl Nitrogen	101	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P403069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270390	NO2NO3-N	96.5	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P402818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270131	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P402698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270543	O-Phosphate-P	98.9	99.0	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P402556

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269820	Acesulfame K	81.1	65.2	P/P	40 - 150
2269820	AMPA	55.8	39.5	P/F	40 - 160
2269820	Endothall	69.7	64.1	P/P	40 - 150
2269820	Glufosinate	158	143	P/P	40 - 160
2269820	Sucralose	114	110	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P402808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270486	2,4-D	107	104	P/P	40 - 150
2270486	2,4,5-T	100	99.1	P/P	40 - 150
2270486	Acetaminophen	85.7	86.3	P/P	30 - 150
2270486	Acetamiprid	94.1	94.9	P/P	40 - 150
2270486	Afidopyropen	80.2	67.1	P/P	40 - 150
2270486	Benzovindiflupyr	80.8	89.7	P/P	40 - 150
2270486	Carbamazepine	89.4	96.8	P/P	40 - 150
2270486	Clothianidin	114	102	P/P	40 - 150
2270486	Dinotefuran	101	108	P/P	40 - 150
2270486	Diuron	78.5	74.7	P/P	40 - 150
2270486	Fenuron	88.6	88.4	P/P	40 - 150
2270486	Fluridone	84.1	85.0	P/P	40 - 150
2270486	Hydrocodone	89.9	88.8	P/P	40 - 150
2270486	Ibuprofen	84.5	70.1	P/P	40 - 150
2270486	Imazapyr	157	133	F/P	40 - 150
2270486	Imidacloprid	142	151	P/F	40 - 150
2270486	Linuron	76.2	85.8	P/P	40 - 150
2270486	Mandestrobin	83.6	84.6	P/P	40 - 150
2270486	MCPP	101	104	P/P	40 - 150
2270486	Naproxen	76.5	80.5	P/P	40 - 150
2270486	Primidone	92.5	91.2	P/P	40 - 150
2270486	Pyraclostrobin	77.8	81.9	P/P	40 - 150
2270486	Thiamethoxam	127	127	P/P	40 - 150
2270486	Tolfenpyrad	50.0	55.1	P/P	30 - 150

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P402808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270486	Triclopyr	86.8	92.8	P/P	40 - 150

Reference Method: SM 4500 F-C-2011
Batch ID: P402852

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270807	Fluoride	100	99.0	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P403117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270134	Organic Carbon	96.6	96.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P402710

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270360	Turbidity	1.08	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P402737

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270488	Calcium	0.268	Spike	P	0 - 20
2270488	Iron	1.21	Spike	P	0 - 20
2270488	Magnesium	1.05	Spike	P	0 - 20
2270488	Manganese	1.80	Spike	P	0 - 20
2270488	Zinc	0.224	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P402737

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270488	Aluminum	0.626	Spike	P	0 - 20
2270488	Antimony	0.876	Spike	P	0 - 20
2270488	Arsenic	0.0239	Spike	P	0 - 20
2270488	Beryllium	0.758	Spike	P	0 - 20
2270488	Cadmium	0.818	Spike	P	0 - 20
2270488	Chromium	0.478	Spike	P	0 - 20
2270488	Copper	0.267	Spike	P	0 - 20
2270488	Lead	0.744	Spike	P	0 - 20
2270488	Nickel	0.541	Spike	P	0 - 20
2270488	Selenium	0.279	Spike	P	0 - 20
2270488	Silver	0.638	Spike	P	0 - 20
2270488	Thallium	0.701	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P402908

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270004	Ammonia-N	1.58	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P403352

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272419	Kjeldahl Nitrogen	1.87	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P403069

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270390	NO2NO3-N	0.562	Spike	P	0 - 20

Quality Assurance Report

Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P402818

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270131	Total-P	1.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P402698

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270543	O-Phosphate-P	0.101	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P402556

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269820	Acesulfame K	21.6	Spike	P	0 - 30
2269820	AMPA	18.8	Spike	P	0 - 30
2269820	Endothall	8.35	Spike	P	0 - 30
2269820	Glufosinate	9.49	Spike	P	0 - 30
2269820	Glyphosate	0.454	Spike	P	0 - 30
2269820	Sucralose	3.85	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P402808

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270486	2,4-D	2.53	Spike	P	0 - 30
2270486	2,4,5-T	1.19	Spike	P	0 - 30
2270486	Acetaminophen	0.572	Spike	P	0 - 30
2270486	Acetamiprid	0.839	Spike	P	0 - 30
2270486	Afidopyropen	17.7	Spike	P	0 - 30
2270486	Bentazon	4.63	Spike	P	0 - 30
2270486	Benzovindiflupyr	10.4	Spike	P	0 - 30
2270486	Carbamazepine	7.90	Spike	P	0 - 30
2270486	Clothianidin	10.7	Spike	P	0 - 30
2270486	Dinotefuran	5.97	Spike	P	0 - 30
2270486	Diuron	4.62	Spike	P	0 - 30
2270486	Fenuron	0.216	Spike	P	0 - 30
2270486	Fluridone	1.02	Spike	P	0 - 30
2270486	Hydrocodone	1.23	Spike	P	0 - 30
2270486	Ibuprofen	18.7	Spike	P	0 - 30
2270486	Imazapyr	11.1	Spike	P	0 - 30
2270486	Imidacloprid	4.03	Spike	P	0 - 30
2270486	Linuron	11.8	Spike	P	0 - 30
2270486	Mandestrobin	1.20	Spike	P	0 - 30
2270486	MCPP	2.30	Spike	P	0 - 30
2270486	Naproxen	5.06	Spike	P	0 - 30
2270486	Primidone	1.46	Spike	P	0 - 30
2270486	Pyraclostrobin	5.05	Spike	P	0 - 30
2270486	Thiamethoxam	0.0550	Spike	P	0 - 30
2270486	Tolfenpyrad	9.75	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P402808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270486	Triclopyr	6.74	Spike	P	0 - 30

Reference Method: SM 2320 B-2011
Batch ID: P402850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270807	Total Alkalinity	1.71	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P402852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270807	Fluoride	0.953	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P403117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270134	Organic Carbon	0.205	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2270374

Field Sample ID: G1TLHR0032

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	120	P	30 - 160
EPA 8321B	Acetaminophen-d4	99.8	P	30 - 160
EPA 8321B	Carbamazepine-d10	92.9	P	30 - 160
EPA 8321B	Diuron-d6	83.2	P	30 - 160
EPA 8321B	Endothall-d6	119	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	82.4	P	30 - 160
EPA 8321B	Ibuprofen-d3	76.7	P	30 - 160
EPA 8321B	Primidone-d5	109	P	30 - 160
EPA 8321B	Sucralose-d6	119	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107343

Included Lab Sample IDs: 2270362

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107344

Included Lab Sample IDs: 2270360

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	102	P/P	95 - 105

Reference Method: EPA 8321B

Run ID: A107353

Included Lab Sample IDs: 2270374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	96.6	97.1	P/P	60 - 160
Glufosinate	105	97.1	P/P	60 - 160
Glyphosate	98.6	93.3	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A107377

Included Lab Sample IDs: 2270374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	89.8	90.2	P/P	60 - 160
Endothall	109	131	P/P	60 - 160
Sucralose	107	103	P/P	60 - 160

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A107401

Included Lab Sample IDs: 2270375, 2270376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.0	98.7	P/P	90 - 110
Antimony	98.3	97.9	P/P	90 - 110
Arsenic	98.5	98.9	P/P	90 - 110
Beryllium	93.8	93.0	P/P	90 - 110
Cadmium	98.8	98.8	P/P	90 - 110
Chromium	96.1	95.8	P/P	90 - 110
Copper	95.3	95.6	P/P	90 - 110
Lead	98.7	98.7	P/P	90 - 110
Nickel	95.3	95.3	P/P	90 - 110
Selenium	96.5	97.0	P/P	90 - 110
Silver	97.2	97.3	P/P	90 - 110
Thallium	103	102	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A107408

Included Lab Sample IDs: 2270360

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A107408

Included Lab Sample IDs: 2270360

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A107416

Included Lab Sample IDs: 2270375, 2270376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.3	98.7	P/P	90 - 110
Iron	98.7	99.9	P/P	90 - 110
Magnesium	98.2	98.6	P/P	90 - 110
Manganese	99.7	100	P/P	90 - 110
Zinc	98.1	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107428

Included Lab Sample IDs: 2270361

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	98.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A107460

Included Lab Sample IDs: 2270374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	94.6	92.7	P/P	50 - 150
2,4,5-T	94.6	99.0	P/P	50 - 150
Acetaminophen	98.4	97.3	P/P	60 - 160
Acetamiprid	102	108	P/P	50 - 150
Afidopyropen	99.4	97.6	P/P	50 - 150
Bentazon	116	116	P/P	50 - 160
Benzovindiflupyr	108	114	P/P	50 - 150
Carbamazepine	106	107	P/P	60 - 150
Clothianidin	87.6	84.9	P/P	60 - 150
Dinotefuran	99.2	103	P/P	50 - 150
Diuron	122	125	P/P	60 - 160
Fenuron	98.3	100	P/P	60 - 150
Fluridone	88.8	107	P/P	60 - 160
Hydrocodone	90.3	97.0	P/P	60 - 150
Ibuprofen	66.8	84.7	P/P	50 - 160
Imazapyr	100	117	P/P	50 - 150
Imidacloprid	97.1	99.2	P/P	60 - 150
Linuron	102	101	P/P	60 - 150
Mandestrobin	101	108	P/P	50 - 150
MCPP	84.3	96.4	P/P	50 - 150
Naproxen	78.9	73.5	P/P	50 - 160
Primidone	77.9	107	P/P	60 - 150
Pyraclostrobin	100	109	P/P	60 - 150
Thiamethoxam	103	97.8	P/P	50 - 150
Tolfenpyrad	97.6	101	P/P	60 - 150
Triclopyr	103	102	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107480

Included Lab Sample IDs: 2270361

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107506

Included Lab Sample IDs: 2270361

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

Reference Method: SM 5310 B-2011

Run ID: A107529

Included Lab Sample IDs: 2270361

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107660

Included Lab Sample IDs: 2270361

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.7	98.8	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						1.08	
EPA 200.7 Rev. 4.4	Calcium	101	99.9	97.5				0.268
	Iron	106	103	104	106			1.21
	Magnesium	101	101	99.6				1.05
	Manganese	101	99.4	98.8	101			1.80
	Zinc	104	100	98.6	98.8			0.224
EPA 200.8 Rev. 5.4	Aluminum	100	97.1	97.7	97.2			0.626
	Antimony	101	102	103	101			0.876
	Arsenic	103	103	103	101			0.0239
	Beryllium	99.2	96.1	96.9	94.2			0.758
	Cadmium	99.5	101	102	99.2			0.818
	Chromium	99.5	102	102	98.4			0.478
	Copper	102	96.5	96.7	97.8			0.267
	Lead	102	102	102	102			0.744
	Nickel	102	97.5	98.0	98.2			0.541
	Selenium	100	98.0	98.3	97.1			0.279
	Silver	105	103	103	102			0.638
	Thallium	103	107	107	107			0.701
EPA 350.1 Rev. 2.0	Ammonia-N	94.4	91.6	93.4				1.58
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.0	101	105				1.87
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	96.5	95.5				0.562
EPA 365.1 Rev. 2.0	Total-P	105	103	102				1.32
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	98.9	99.0				0.101
EPA 8321B	2,4-D	82.9	107	104				2.53
	2,4,5-T	87.1	100	99.1				1.19
	Acesulfame K	88.2	81.1	65.2				21.6
	Acetaminophen	75.1	85.7	86.3				0.572
	Acetamiprid	80.5	94.1	94.9				0.839
	Afidopyropen	65.6	80.2	67.1				17.7
	AMPA	98.9	55.8	39.5				18.8
	Bentazon	92.0						4.63
	Benzovindiflupyr	78.8	80.8	89.7				10.4
	Carbamazepine	77.0	89.4	96.8				7.90
	Clothianidin	74.8	114	102				10.7
	Dinotefuran	75.8	101	108				5.97
	Diuron	96.1	78.5	74.7				4.62
	Endothall	126	69.7	64.1				8.35
	Fenuron	85.3	88.6	88.4				0.216
	Fluridone	81.8	84.1	85.0				1.02
	Glufosinate	96.1	158	143				9.49
	Glyphosate	96.4						0.454
	Hydrocodone	77.3	89.9	88.8				1.23
	Ibuprofen	71.7	84.5	70.1				18.7
	Imazapyr	91.6	157	133				11.1
	Imidacloprid	85.0	142	151				4.03
	Linuron	79.4	76.2	85.8				11.8
	Mandestrobin	77.6	83.6	84.6				1.20
	MCPP	87.3	101	104				2.30
	Naproxen	58.1	76.5	80.5				5.06
	Primidone	87.9	92.5	91.2				1.46
	Pyraclostrobin	66.5	77.8	81.9				5.05
	Sucralose	105	114	110				3.85
	Thiamethoxam	78.0	127	127				0.0550
	Tolfenpyrad	35.0	50.0	55.1				9.75

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 8321B	Triclopyr	76.0	86.8 92.8			6.74
SM 2320 B-2011	Total Alkalinity	101			1.71	
SM 4500 F-C-2011	Fluoride	102	100 99.0			0.953
SM 5310 B-2011	Organic Carbon	95.0	96.6 96.3			0.205

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2270360
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2270375, 2270376
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2270375, 2270376
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2270361
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2270361
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2270361
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2270361
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2270362
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2270374
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2270360
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2270360
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2270360
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2270361

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	08/18/2021			08/19/2021 13:01	Sarah A Nixon	2270360
EPA 200.7 Rev. 4.4	08/18/2021	08/20/2021 12:50	Elliott D. Healy	08/24/2021 06:28	Josef B Mick	2270375
	08/18/2021	08/20/2021 12:50	Elliott D. Healy	08/24/2021 06:56	Josef B Mick	2270376
EPA 200.8 Rev. 5.4	08/18/2021	08/20/2021 12:50	Elliott D. Healy	08/23/2021 22:46	Alexander Thompson	2270376
	08/18/2021	08/20/2021 12:50	Elliott D. Healy	08/23/2021 23:34	Alexander Thompson	2270375
EPA 350.1 Rev. 2.0	08/18/2021			08/24/2021 13:58	Roberta Tatti	2270361
EPA 351.2 Rev. 2.0	08/18/2021	09/03/2021 17:03	Benjamin T. Nordmann	09/07/2021 09:49	Alexandra J Mattheus	2270361
EPA 353.2 Rev. 2.0	08/18/2021			08/27/2021 10:15	Beverly Y. Sanders	2270361
EPA 365.1 Rev. 2.0	08/18/2021	08/23/2021 13:48	Simonne.V. Calhoun	08/25/2021 16:42	Shengyu Ding	2270361
EPA 365.1 Rev. 2.0 dissolved	08/18/2021			08/19/2021 13:32	James L Waggeberby	2270362
EPA 8321B	08/18/2021	08/19/2021 12:30	Juyoung Kim	08/19/2021 16:06	Juyoung Kim	2270374
	08/18/2021	08/19/2021 12:30	Juyoung Kim	08/20/2021 18:31	Pramila Ghimire	2270374
	08/18/2021	08/24/2021 09:00	Hoor Shaik	08/25/2021 07:29	Juyoung Kim	2270374
SM 2320 B-2011	08/18/2021			08/23/2021 18:38	Sarah A Nixon	2270360
SM 2540 D-2011	08/18/2021			08/23/2021 15:36	Yijie Li	2270360
SM 4500 F-C-2011	08/18/2021			08/23/2021 18:38	Sarah A Nixon	2270360
SM 5310 B-2011	08/18/2021			08/28/2021 08:39	Madeline Gruver	2270361