

Chemical Analysis Report

NW-DIST-2021-03-26-01

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

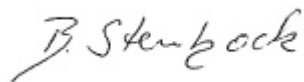
Event Description: **Holmes Bay Run**
Request ID: **RQ-2021-03-01-58**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 19-APR-2021 16:59



NON-CONFORMANCE REPORT INCLUDED

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: Bay Branch upstream of Hwy 331

Collection Date/Time: 03/25/2021 09:35

Field ID: G3NW0171

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2234388	EPA 180.1 Rev. 2.0	Turbidity	6.0		NTU	P395559	
	EPA 300.0 Rev. 2.1	Chloride	3.5		mg Cl/L	P395841	
		Sulfate	1.4		mg SO4/L	P395842	
		Color (true)	140		PCU	P395562	
	SM 2320 B-2011	Total Alkalinity	6.5		mg CaCO3/L	P395640	
	SM 2540 C-2011	TDS	37		mg/L	P396071	
	SM 2540 D-2011	TSS	2	I	mg/L	P396075	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P395642	
2234390	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P395914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P395966	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P395650	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P395733	
	SM 5310 B-2011	Organic Carbon	8.6		mg C/L	P395843	
2234392	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P395549	
2234402	EPA 200.7 Rev. 4.4	Barium	11.2		ug/L	P395613	
		Calcium	3.50		mg/L	P395613	
		Iron	760		ug/L	P395613	
		Magnesium	0.78		mg/L	P395613	
		Manganese	10.3		ug/L	P395613	
		Potassium	0.40	I	mg/L	P395613	
		Sodium	2.6		mg/L	P395613	
		Zinc	6.0	I	ug/L	P395613	
	EPA 200.8 Rev. 5.4	Aluminum	384		ug/L	P395613	
		Antimony	0.050	U	ug/L	P395613	
		Arsenic	0.34		ug/L	P395613	
		Beryllium	0.023	I	ug/L	P395613	
		Boron**	13.4		ug/L	P395613	
		Cadmium	0.020	U	ug/L	P395613	
		Chromium	0.46	I	ug/L	P395613	
		Copper	0.48	I	ug/L	P395613	
		Lead	0.42		ug/L	P395613	
		Nickel	0.50	U	ug/L	P395613	
		Selenium	0.20	U	ug/L	P395613	
		Silver	0.010	U	ug/L	P395613	
		Thallium	0.10	U	ug/L	P395613	
		Hardness	12.0		mg/L	P395613	

Ref. Method and Comment:

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

Sample Location: Panther Creek upstream of SR280

Collection Date/Time: 03/25/2021 10:10

Field ID: G3NW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2234385	EPA 180.1 Rev. 2.0	Turbidity	8.8		NTU	P395559	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P395841	
		Sulfate	1.1		mg SO4/L	P395842	
	SM 2120 B-2011	Color (true)	60	A	PCU	P395562	
	SM 2320 B-2011	Total Alkalinity	2.4	I	mg CaCO3/L	P395640	
	SM 2540 C-2011	TDS	29		mg/L	P396071	
	SM 2540 D-2011	TSS	8	I	mg/L	P396075	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P395642	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P395914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P395966	
2234386	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P395650	
	EPA 365.1 Rev. 2.0	Total-P	0.46		mg P/L	P395733	
	SM 5310 B-2011	Organic Carbon	5.0		mg C/L	P395843	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P395549	
	dissolved						
2234401	EPA 8321B	2,4-D	0.0020	U	ug/L	P395359	
		Acesulfame K	0.10	U	ug/L	P395638	MS
		2,4,5-T	0.0040	U	ug/L	P395359	
		AMPA	0.10	U	ug/L	P395638	
		Sucralose	0.026	I	ug/L	P395638	
		Acetaminophen	0.038		ug/L	P395359	
		Acetamiprid	0.0020	U	ug/L	P395359	
		Endothall	0.25	U	ug/L	P395638	
		Glufosinate	0.10	U	ug/L	P395638	
		Glyphosate	0.10	U	ug/L	P395638	MS
		Afidopyropen	0.0020	U	ug/L	P395359	
		Bentazon	8.0E-04	U	ug/L	P395359	
		Benzovindiflupyr	0.0020	U	ug/L	P395359	
		Carbamazepine	8.0E-04	U	ug/L	P395359	
		Clothianidin	0.0020	U	ug/L	P395359	
		Dinotefuran	0.0020	U	ug/L	P395359	
		Diuron	0.0020	U	ug/L	P395359	
		Fenuron	0.016	U	ug/L	P395359	
		Fluridone	8.0E-04	U	ug/L	P395359	
		Imazapyr	0.0040	U	ug/L	P395359	
		Hydrocodone	0.0020	U	ug/L	P395359	
		Ibuprofen	0.020	U	ug/L	P395359	
		Imidacloprid	0.0020	U	ug/L	P395359	MS
		Linuron	0.0040	U	ug/L	P395359	
		Mandestrobin	0.0020	U	ug/L	P395359	
		MCP	0.0020	U	ug/L	P395359	
		Naproxen	0.0080	U	ug/L	P395359	
		Primidone	0.0040	U	ug/L	P395359	
		Pyraclostrobin	0.0020	U	ug/L	P395359	

Field ID: G3NW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2234401	EPA 8321B	Thiamethoxam	0.0020	U	ug/L	P395359	MS
		Tolfenpyrad	0.0020	U	ug/L	P395359	
		Triclopyr	0.0040	U	ug/L	P395359	

Ref. Method and Comment:

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

Sample Location: Gum Creek downstream of Bess Nook Rd

Collection Date/Time: 03/25/2021 11:45

Field ID: G3NW0452

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2234389	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P395559	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P395841	
		Sulfate	0.20	U	mg SO4/L	P395842	
		Color (true)	140		PCU	P395562	
	SM 2120 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P395640	
	SM 2540 C-2011	TDS	33		mg/L	P396071	
	SM 2540 D-2011	TSS	2	I	mg/L	P396075	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P395642	
2234391	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P395918	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P395966	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P395650	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P395733	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P395843	
2234393	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P395549	
2234403	EPA 200.7 Rev. 4.4	Barium	8.1		ug/L	P395613	
		Calcium	1.04		mg/L	P395613	
		Iron	690		ug/L	P395613	
		Magnesium	0.47		mg/L	P395613	
		Manganese	36.0		ug/L	P395613	
		Potassium	0.30	U	mg/L	P395613	
		Sodium	1.9	I	mg/L	P395613	
		Zinc	5.0	U	ug/L	P395613	
	EPA 200.8 Rev. 5.4	Aluminum	420		ug/L	P395613	
		Antimony	0.050	U	ug/L	P395613	
		Arsenic	0.32		ug/L	P395613	
		Beryllium	0.015	I	ug/L	P395613	
		Boron**	8.3		ug/L	P395613	
		Cadmium	0.020	U	ug/L	P395613	
		Chromium	0.41	I	ug/L	P395613	
		Copper	0.40	U	ug/L	P395613	
		Lead	0.55		ug/L	P395613	
		Nickel	0.50	U	ug/L	P395613	
		Selenium	0.20	U	ug/L	P395613	
		Silver	0.010	U	ug/L	P395613	
		Thallium	0.10	U	ug/L	P395613	
		Hardness	4.5		mg/L	P395613	

Ref. Method and Comment:

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

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 04/01/2021.

Non-Conformance Report

NCR ID: 8740

Event(s)

NW-DIST-2021-03-26-01

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Samples arrived late

Observation: Due to a FedEx shipping delay only 1 of 2 coolers shipped for this RQ was received.

Resolution: Received samples and overflow samples logged in.
Customer contacted, email correspondence attached to sample submittal forms.

Update: Missing cooler received on Tuesday (3/30/21), Customer request that the samples from the late cooler be discarded; they have elected to resample.

Authorized by/Date: Joshua Ayres 4/1/2021

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P395559

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P395613

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/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: P395613

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
Boron	2.0	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 300.0 Rev. 2.1
Batch ID: P395841

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395842

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395914

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395918

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395966

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395650

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395733

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395549

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

Reference Method: EPA 8321B
Batch ID: P395359

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P395359

Component	Result	Code	Units
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: EPA 8321B

Batch ID: P395638

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-2011

Batch ID: P395562

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011

Batch ID: P395640

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

Reference Method: SM 2540 C-2011

Batch ID: P396071

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011

Batch ID: P396075

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011

Batch ID: P395642

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011

Batch ID: P395843

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: P395613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	96.7		P	80 - 120
Calcium	106		P	80 - 120
Iron	103		P	80 - 120
Magnesium	102		P	80 - 120
Manganese	101		P	80 - 120
Potassium	104		P	80 - 120
Sodium	104		P	80 - 120
Zinc	90.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P395613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.2		P	80 - 120
Antimony	98.1		P	80 - 120
Arsenic	97.8		P	80 - 120
Beryllium	91.3		P	85 - 115
Boron	98.0		P	80 - 120
Cadmium	97.7		P	80 - 120
Chromium	94.4		P	80 - 120
Copper	93.6		P	85 - 115
Lead	105		P	85 - 115
Nickel	95.4		P	80 - 120
Selenium	96.0		P	80 - 120
Silver	104		P	85 - 115
Thallium	100		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395841

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395842

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395918

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P395966

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P395650

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: P395733

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P395549

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

Reference Method: EPA 8321B

Batch ID: P395359

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	122		P	30 - 160
2,4,5-T	92.4		P	30 - 160
Acetaminophen	87.9		P	30 - 160
Acetamiprid	108		P	30 - 160
Afidopyropen	81.9		P	30 - 160
Bentazon	59.0		P	30 - 160
Benzovindiflupyr	103		P	30 - 160
Carbamazepine	106		P	30 - 160
Clothianidin	121		P	30 - 160
Dinotefuran	96.3		P	30 - 160
Diuron	80.6		P	30 - 160
Fenuron	102		P	30 - 160
Fluridone	97.4		P	30 - 160
Hydrocodone	114		P	30 - 160
Ibuprofen	77.5		P	30 - 160
Imazapyr	87.4		P	30 - 160
Imidacloprid	118		P	30 - 160
Linuron	80.4		P	30 - 160
Mandestrobin	102		P	30 - 160
MCPP	113		P	30 - 160
Naproxen	68.8		P	30 - 160
Primidone	103		P	30 - 160
Pyraclostrobin	83.7		P	30 - 160
Thiamethoxam	125		P	30 - 160
Tolfenpyrad	52.6		P	30 - 160
Triclopyr	103		P	30 - 160

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P395638

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	117		P	40 - 150
AMPA	96.4		P	40 - 150
Endothall	74.0		P	40 - 150
Glufosinate	100		P	40 - 150
Glyphosate	116		P	40 - 140
Sucralose	96.0		P	40 - 150

Reference Method: SM 2120 B-2011

Batch ID: P395562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011

Batch ID: P395640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	93 - 104

Reference Method: SM 4500 F-C-2011

Batch ID: P395642

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	90 - 106

Reference Method: SM 5310 B-2011

Batch ID: P395843

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P395613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233663	Barium	99.6		P	80 - 120
2233663	Calcium	103		P	80 - 120
2233663	Iron	105		P	80 - 120
2233663	Magnesium	100		P	80 - 120
2233663	Manganese	104		P	80 - 120
2233663	Potassium	104		P	80 - 120
2233663	Sodium	103		P	80 - 120
2233663	Zinc	95.0		P	80 - 120
2234403	Barium	103	99.5	P/P	80 - 120
2234403	Calcium	113	109	P/P	80 - 120
2234403	Iron	111	107	P/P	80 - 120
2234403	Magnesium	109	106	P/P	80 - 120
2234403	Manganese	107	103	P/P	80 - 120
2234403	Potassium	115	112	P/P	80 - 120
2234403	Sodium	110	108	P/P	80 - 120
2234403	Zinc	98.7	95.4	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P395613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233663	Aluminum	96.4		P	80 - 120
2233663	Antimony	100		P	80 - 120
2233663	Arsenic	97.3		P	80 - 120
2233663	Beryllium	89.6		P	80 - 120
2233663	Boron	97.8		P	80 - 120
2233663	Cadmium	97.7		P	80 - 120
2233663	Chromium	94.7		P	80 - 120
2233663	Copper	92.1		P	80 - 120
2233663	Lead	104		P	80 - 120
2233663	Nickel	93.6		P	80 - 120
2233663	Selenium	94.9		P	80 - 120
2233663	Silver	103		P	80 - 120
2233663	Thallium	103		P	80 - 120
2234403	Aluminum	84.9	95.4	P/P	80 - 120
2234403	Antimony	96.0	98.9	P/P	80 - 120
2234403	Arsenic	96.9	99.1	P/P	80 - 120
2234403	Beryllium	90.2	81.6	P/P	80 - 120
2234403	Boron	95.8	99.9	P/P	80 - 120
2234403	Cadmium	98.7	99.3	P/P	80 - 120
2234403	Chromium	92.3	95.5	P/P	80 - 120
2234403	Copper	91.6	94.6	P/P	80 - 120
2234403	Lead	102	106	P/P	80 - 120
2234403	Nickel	94.1	97.0	P/P	80 - 120
2234403	Selenium	93.6	96.3	P/P	80 - 120
2234403	Silver	101	105	P/P	80 - 120
2234403	Thallium	101	107	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P395841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233845	Chloride	99.9		P	90 - 110
2234385	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233845	Sulfate	98.1		P	90 - 110
2234385	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233846	Ammonia-N	96.0	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395918

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234462	Ammonia-N	97.4	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234462	Kjeldahl Nitrogen	96.1	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234386	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395733

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233959	Total-P	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233861	O-Phosphate-P	99.5	98.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P395359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233518	2,4-D	97.3	97.2	P/P	30 - 160
2233518	2,4,5-T	70.7	69.6	P/P	30 - 160

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P395359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233518	Acetaminophen	83.0	94.8	P/P	30 - 160
2233518	Acetamiprid	114	93.5	P/P	30 - 160
2233518	Afidopyropen	76.1	60.5	P/P	30 - 160
2233518	Bentazon	32.3	37.3	P/P	30 - 160
2233518	Benzovindiflupyr	94.4	93.3	P/P	30 - 160
2233518	Carbamazepine	87.3	90.1	P/P	30 - 160
2233518	Clothianidin	123	116	P/P	30 - 160
2233518	Dinotefuran	112	99.9	P/P	30 - 160
2233518	Diuron	53.8	59.2	P/P	30 - 160
2233518	Fenuron	81.8	86.5	P/P	30 - 160
2233518	Fluridone	83.7	82.1	P/P	30 - 160
2233518	Hydrocodone	121	116	P/P	30 - 160
2233518	Ibuprofen	68.8	70.6	P/P	30 - 160
2233518	Imazapyr	82.4	83.7	P/P	30 - 160
2233518	Imidacloprid	169	160	F/F	30 - 160
2233518	Linuron	65.7	65.5	P/P	30 - 160
2233518	Mandestrobin	90.7	89.2	P/P	30 - 160
2233518	MCPP	91.9	92.0	P/P	30 - 160
2233518	Naproxen	55.5	65.4	P/P	30 - 160
2233518	Primidone	95.7	102	P/P	30 - 160
2233518	Pyraclostrobin	87.0	87.9	P/P	30 - 160
2233518	Thiamethoxam	163	153	F/P	30 - 160
2233518	Tolfenpyrad	55.4	63.0	P/P	30 - 160
2233518	Triclopyr	75.5	80.6	P/P	30 - 160

Reference Method: EPA 8321B

Batch ID: P395638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234101	Acesulfame K	192	203	F/F	40 - 150
2234101	AMPA	108	112	P/P	40 - 150
2234101	Endothall	101	84.7	P/P	40 - 150
2234101	Glufosinate	119	104	P/P	40 - 150
2234101	Glyphosate	64.8	176	P/F	40 - 140
2234101	Sucralose	113	112	P/P	40 - 150

Reference Method: SM 4500 F-C-2011

Batch ID: P395642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233850	Fluoride	95.1	95.9	P/P	94 - 107

Reference Method: SM 5310 B-2011

Batch ID: P395843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233860	Organic Carbon	95.3	94.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P395559

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234128	Turbidity	0.551	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P395613

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234403	Barium	3.30	Spike	P	0 - 20
2234403	Calcium	3.29	Spike	P	0 - 20
2234403	Iron	2.78	Spike	P	0 - 20
2234403	Magnesium	2.76	Spike	P	0 - 20
2234403	Manganese	3.05	Spike	P	0 - 20
2234403	Potassium	2.98	Spike	P	0 - 20
2234403	Sodium	1.84	Spike	P	0 - 20
2234403	Zinc	3.40	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P395613

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234403	Aluminum	7.35	Spike	P	0 - 20
2234403	Antimony	2.97	Spike	P	0 - 20
2234403	Arsenic	2.24	Spike	P	0 - 20
2234403	Beryllium	9.57	Spike	P	0 - 20
2234403	Boron	3.86	Spike	P	0 - 20
2234403	Cadmium	0.698	Spike	P	0 - 20
2234403	Chromium	3.43	Spike	P	0 - 20
2234403	Copper	3.13	Spike	P	0 - 20
2234403	Lead	3.66	Spike	P	0 - 20
2234403	Nickel	3.05	Spike	P	0 - 20
2234403	Selenium	2.85	Spike	P	0 - 20
2234403	Silver	4.17	Spike	P	0 - 20
2234403	Thallium	5.67	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P395841

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233845	Chloride	0.356	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P395842

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233845	Sulfate	0.416	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233846	Ammonia-N	1.22	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395918

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234462	Ammonia-N	0.360	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234462	Kjeldahl Nitrogen	1.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234386	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233959	Total-P	0.0425	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233861	O-Phosphate-P	0.909	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P395359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233518	2,4-D	0.191	Spike	P	0 - 30
2233518	2,4,5-T	1.64	Spike	P	0 - 30
2233518	Acetaminophen	11.5	Spike	P	0 - 30
2233518	Acetamiprid	19.4	Spike	P	0 - 30
2233518	Afidopyropen	22.8	Spike	P	0 - 30
2233518	Bentazon	14.3	Spike	P	0 - 30
2233518	Benzovindiflupyr	1.16	Spike	P	0 - 30
2233518	Carbamazepine	3.20	Spike	P	0 - 30
2233518	Clothianidin	5.50	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P395359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233518	Dinotefuran	11.6	Spike	P	0 - 30
2233518	Diuron	9.59	Spike	P	0 - 30
2233518	Fenuron	5.63	Spike	P	0 - 30
2233518	Fluridone	1.94	Spike	P	0 - 30
2233518	Hydrocodone	4.41	Spike	P	0 - 30
2233518	Ibuprofen	2.54	Spike	P	0 - 30
2233518	Imazapyr	1.53	Spike	P	0 - 30
2233518	Imidacloprid	5.22	Spike	P	0 - 30
2233518	Linuron	0.364	Spike	P	0 - 30
2233518	Mandestrobin	1.66	Spike	P	0 - 30
2233518	MCPP	0.161	Spike	P	0 - 30
2233518	Naproxen	16.4	Spike	P	0 - 30
2233518	Primidone	6.09	Spike	P	0 - 30
2233518	Pyraclostrobin	0.979	Spike	P	0 - 30
2233518	Thiamethoxam	6.43	Spike	P	0 - 30
2233518	Tolfenpyrad	12.8	Spike	P	0 - 30
2233518	Triclopyr	6.59	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P395638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234101	Acesulfame K	5.43	Spike	P	0 - 30
2234101	AMPA	2.77	Spike	P	0 - 30
2234101	Endothall	17.9	Spike	P	0 - 30
2234101	Glufosinate	14.3	Spike	P	0 - 30
2234101	Glyphosate	15.7	Spike	P	0 - 30
2234101	Sucralose	1.37	Spike	P	0 - 30

Reference Method: SM 2120 B-2011

Batch ID: P395562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234385	Color (true)	3.90	Sample	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P395640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233850	Total Alkalinity	0.969	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011

Batch ID: P396071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233856	TDS	3.94	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P395642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233850	Fluoride	0.457	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P395843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233860	Organic Carbon	0.760	Spike	P	0 - 20

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

Quality Assurance Report Surrogates

Lab Sample ID: 2234401

Field Sample ID: G3NW0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	100	P	30 - 160
EPA 8321B	Acetaminophen-d4	103	P	30 - 160
EPA 8321B	Carbamazepine-d10	88.9	P	30 - 160
EPA 8321B	Diuron-d6	72.4	P	30 - 160
EPA 8321B	Endothall-d6	101	P	40 - 160
EPA 8321B	Endothall-d6	101	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	133	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	133	P	40 - 160
EPA 8321B	Ibuprofen-d3	73.4	P	30 - 160
EPA 8321B	Primidone-d5	103	P	30 - 160
EPA 8321B	Sucralose-d6	106	P	30 - 160
EPA 8321B	Sucralose-d6	106	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A104297
Included Lab Sample IDs: 2234401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	89.2	82.2	P/P	50 - 150
2,4,5-T	71.3	77.4	P/P	50 - 150
Acetaminophen	93.0	92.1	P/P	60 - 160
Acetamiprid	107	108	P/P	50 - 150
Afidopyropen	96.6	97.0	P/P	50 - 150
Bentazon	67.2	64.4	P/P	50 - 160
Benzovindiflupyr	117	117	P/P	50 - 160
Carbamazepine	107	103	P/P	60 - 150
Clothianidin	109	115	P/P	60 - 150
Dinotefuran	99.6	96.3	P/P	50 - 150
Diuron	103	105	P/P	60 - 160
Fenuron	98.1	100	P/P	60 - 150
Fluridone	112	115	P/P	60 - 160
Hydrocodone	124	123	P/P	60 - 150
Ibuprofen	92.9	82.8	P/P	50 - 160
Imazapyr	73.8	74.3	P/P	50 - 160
Imidacloprid	105	96.8	P/P	60 - 150
Linuron	99.5	95.6	P/P	60 - 150
Mandestrobin	115	111	P/P	50 - 150
MCPP	91.2	91.1	P/P	50 - 150
Naproxen	75.6	69.1	P/P	50 - 160
Primidone	95.8	89.8	P/P	60 - 150
Pyraclostrobin	111	113	P/P	60 - 150
Thiamethoxam	120	116	P/P	50 - 150
Tolfenpyrad	114	111	P/P	60 - 150
Triclopyr	88.0	85.0	P/P	50 - 150

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A104301
Included Lab Sample IDs: 2234387, 2234392, 2234393

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A104305
Included Lab Sample IDs: 2234385, 2234388, 2234389

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

Reference Method: SM 2120 B-2011
Run ID: A104306
Included Lab Sample IDs: 2234385, 2234388, 2234389

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A104346

Included Lab Sample IDs: 2234385, 2234388, 2234389

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	108	98.4	P/P	90 - 110
Total Alkalinity	97.8	108	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A104346

Included Lab Sample IDs: 2234385, 2234388, 2234389

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.2	97.7	P/P	90 - 110
Fluoride	98.2	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A104356

Included Lab Sample IDs: 2234386, 2234390, 2234391

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A104377

Included Lab Sample IDs: 2234402, 2234403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Aluminum	101	101	P/P	90 - 110
Antimony	98.1	98.0	P/P	90 - 110
Antimony	99.3	99.3	P/P	90 - 110
Arsenic	100	100	P/P	90 - 110
Arsenic	98.3	99.2	P/P	90 - 110
Boron	104	102	P/P	90 - 110
Boron	97.3	103	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Cadmium	99.9	99.1	P/P	90 - 110
Chromium	97.7	97.8	P/P	90 - 110
Chromium	99.0	98.1	P/P	90 - 110
Nickel	97.5	98.2	P/P	90 - 110
Nickel	99.9	98.4	P/P	90 - 110
Selenium	97.5	99.0	P/P	90 - 110
Selenium	98.3	99.2	P/P	90 - 110
Thallium	102	103	P/P	90 - 110
Thallium	103	106	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A104387

Included Lab Sample IDs: 2234401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	114	125	P/P	40 - 160
AMPA	120	119	P/P	40 - 160
Endothall	63.6	72.4	P/P	40 - 160
Glufosinate	101	100	P/P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A104387
Included Lab Sample IDs: 2234401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Glyphosate	159	119	P/P	40 - 160

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A104389
Included Lab Sample IDs: 2234385, 2234388, 2234389

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.9	98.8	P/P	90 - 110
Chloride	98.8	98.6	P/P	90 - 110
Sulfate	97.4	97.7	P/P	90 - 110
Sulfate	97.7	98.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A104404
Included Lab Sample IDs: 2234402, 2234403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	93.2	92.4	P/P	90 - 110
Copper	95.2	93.2	P/P	90 - 110
Lead	109	108	P/P	90 - 110
Lead	110	109	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Silver	102	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A104409
Included Lab Sample IDs: 2234402, 2234403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	97.7	97.7	P/P	90 - 110
Calcium	100	97.7	P/P	90 - 110
Iron	101	98.5	P/P	90 - 110
Magnesium	102	99.2	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Potassium	100	99.0	P/P	90 - 110
Sodium	100	99.2	P/P	90 - 110
Zinc	91.5	91.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A104412
Included Lab Sample IDs: 2234386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A104434
Included Lab Sample IDs: 2234402, 2234403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	94.7	93.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A104434

Included Lab Sample IDs: 2234402, 2234403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	95.0	94.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A104442

Included Lab Sample IDs: 2234386, 2234390, 2234391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.3	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A104454

Included Lab Sample IDs: 2234390, 2234391

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A104465

Included Lab Sample IDs: 2234386, 2234390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	97.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A104467

Included Lab Sample IDs: 2234391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	99.7	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A104508

Included Lab Sample IDs: 2234401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	92.5	96.4	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A104509

Included Lab Sample IDs: 2234386, 2234390, 2234391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	110	P/P	90 - 110
Kjeldahl Nitrogen	110	107	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						0.551	
EPA 200.7 Rev. 4.4	Barium	96.7	99.6	103	99.5			3.30
	Calcium	106	103	113	109			3.29
	Iron	103	105	111	107			2.78
	Magnesium	102	100	109	106			2.76
	Manganese	101	104	107	103			3.05
	Potassium	104	104	115	112			2.98
	Sodium	104	103	110	108			1.84
	Zinc	90.9	95.0	98.7	95.4			3.40
EPA 200.8 Rev. 5.4	Aluminum	95.2	84.9	95.4	96.4			7.35
	Antimony	98.1	96.0	98.9	100			2.97
	Arsenic	97.8	96.9	99.1	97.3			2.24
	Beryllium	91.3	90.2	81.6	89.6			9.57
	Boron	98.0	95.8	99.9	97.8			3.86
	Cadmium	97.7	98.7	99.3	97.7			0.698
	Chromium	94.4	92.3	95.5	94.7			3.43
	Copper	93.6	91.6	94.6	92.1			3.13
	Lead	105	102	106	104			3.66
	Nickel	95.4	94.1	97.0	93.6			3.05
	Selenium	96.0	93.6	96.3	94.9			2.85
	Silver	104	101	105	103			4.17
	Thallium	100	101	107	103			5.67
EPA 300.0 Rev. 2.1	Chloride	100	99.9	100			0.356	
	Sulfate	99.3	98.1	99.9			0.416	
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	96.0	97.4				1.22
	Ammonia-N	100	97.4	97.8				0.360
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	96.1	97.6				1.35
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	100	100				0.0
EPA 365.1 Rev. 2.0	Total-P	104	106	106				0.0425
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	99.5	98.6				0.909
EPA 8321B	2,4-D	122	97.3	97.2				0.191
	2,4,5-T	92.4	70.7	69.6				1.64
	Acesulfame K	117	192	203				5.43
	Acetaminophen	87.9	83.0	94.8				11.5
	Acetamiprid	108	114	93.5				19.4
	Afidopyropen	81.9	76.1	60.5				22.8
	AMPA	96.4	108	112				2.77
	Bentazon	59.0	32.3	37.3				14.3
	Benzovindiflupyr	103	94.4	93.3				1.16
	Carbamazepine	106	87.3	90.1				3.20
	Clothianidin	121	123	116				5.50
	Dinotefuran	96.3	112	99.9				11.6
	Diuron	80.6	53.8	59.2				9.59
	Endothall	74.0	101	84.7				17.9
	Fenuron	102	81.8	86.5				5.63
	Fluridone	97.4	83.7	82.1				1.94
	Glufosinate	100	119	104				14.3
	Glyphosate	116	64.8	176				15.7
	Hydrocodone	114	121	116				4.41
	Ibuprofen	77.5	68.8	70.6				2.54
	Imazapyr	87.4	82.4	83.7				1.53
	Imidacloprid	118	169	160				5.22
	Linuron	80.4	65.7	65.5				0.364
	Mandestrobin	102	90.7	89.2				1.66

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 8321B	MCPP	113	91.9	92.0		0.161
	Naproxen	68.8	55.5	65.4		16.4
	Primidone	103	95.7	102		6.09
	Pyraclostrobin	83.7	87.0	87.9		0.979
	Sucralose	96.0	113	112		1.37
	Thiamethoxam	125	163	153		6.43
	Tolfenpyrad	52.6	55.4	63.0		12.8
	Triclopyr	103	75.5	80.6		6.59
SM 2120 B-2011	Color (true)	101			3.90	
SM 2320 B-2011	Total Alkalinity	98.9			0.969	
SM 2540 C-2011	TDS				3.94	
SM 4500 F-C-2011	Fluoride	97.3	95.1	95.9		0.457
SM 5310 B-2011	Organic Carbon	96.1	95.3	94.3		0.760

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2234385, 2234388, 2234389
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2234402, 2234403
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2234402, 2234403
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2234385, 2234388, 2234389
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2234385, 2234388, 2234389
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2234386, 2234390, 2234391
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2234386, 2234390, 2234391
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2234386, 2234390, 2234391
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2234386, 2234390, 2234391
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2234387, 2234392, 2234393
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2234401
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2234401
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2234385, 2234388, 2234389
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2234385, 2234388, 2234389
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2234402, 2234403
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2234385, 2234388, 2234389
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2234385, 2234388, 2234389
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2234385, 2234388, 2234389
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2234386, 2234390, 2234391

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	03/26/2021			03/26/2021 14:46	Yen Ta	2234385, 2234388, 2234389
EPA 200.7 Rev. 4.4	03/26/2021	03/29/2021 15:05	Elliott D. Healy	04/01/2021 01:40	Betina Topolski	2234402
	03/26/2021	03/29/2021 15:05	Elliott D. Healy	04/01/2021 01:45	Betina Topolski	2234403
EPA 200.8 Rev. 5.4	03/26/2021	03/29/2021 15:05	Elliott D. Healy	03/30/2021 19:02	McKinley C Carter	2234403
	03/26/2021	03/29/2021 15:05	Elliott D. Healy	03/30/2021 21:46	McKinley C Carter	2234402
	03/26/2021	03/29/2021 15:05	Elliott D. Healy	03/31/2021 15:52	McKinley C Carter	2234403
	03/26/2021	03/29/2021 15:05	Elliott D. Healy	03/31/2021 17:29	McKinley C Carter	2234402
	03/26/2021	03/29/2021 15:05	Elliott D. Healy	04/01/2021 13:17	Alexander Thompson	2234403
	03/26/2021	03/29/2021 15:05	Elliott D. Healy	04/01/2021 14:35	Alexander Thompson	2234402
EPA 300.0 Rev. 2.1	03/26/2021			04/01/2021 12:18	Lipi Saha	2234385
	03/26/2021			04/01/2021 16:08	Lipi Saha	2234388
	03/26/2021			04/01/2021 16:20	Lipi Saha	2234389
EPA 350.1 Rev. 2.0	03/26/2021			04/03/2021 12:11	Ping Hua	2234386
	03/26/2021			04/03/2021 12:13	Ping Hua	2234390
	03/26/2021			04/04/2021 11:26	Ping Hua	2234391
EPA 351.2 Rev. 2.0	03/26/2021	04/05/2021 09:18	Yen Ta	04/06/2021 12:03	Virginia P. Brown	2234386
	03/26/2021	04/05/2021 09:18	Yen Ta	04/06/2021 12:08	Virginia P. Brown	2234390
	03/26/2021	04/05/2021 09:18	Yen Ta	04/06/2021 12:09	Virginia P. Brown	2234391
EPA 353.2 Rev. 2.0	03/26/2021			03/30/2021 10:09	Beverly Y. Sanders	2234386
	03/26/2021			03/30/2021 10:21	Beverly Y. Sanders	2234390
	03/26/2021			03/30/2021 10:22	Beverly Y. Sanders	2234391
EPA 365.1 Rev. 2.0	03/26/2021	03/31/2021 13:21	Yen Ta	03/31/2021 18:28	Shengyu Ding	2234386
	03/26/2021	03/31/2021 13:21	Yen Ta	04/02/2021 13:57	Shengyu Ding	2234390
	03/26/2021	03/31/2021 13:21	Yen Ta	04/02/2021 13:58	Shengyu Ding	2234391
EPA 365.1 Rev. 2.0 dissolved	03/26/2021			03/26/2021 14:28	Lipi Saha	2234387, 2234392
	03/26/2021			03/26/2021 14:29	Lipi Saha	2234393
EPA 8321B	03/26/2021	03/29/2021 10:00	Hoor Shaik	03/30/2021 08:38	Juyoung Kim	2234401
	03/26/2021	03/30/2021 11:30	Rebecca Ware	03/30/2021 14:56	Rebecca Ware	2234401
	03/26/2021	03/30/2021 11:30	Rebecca Ware	04/05/2021 21:22	Rebecca Ware	2234401
SM 2120 B-2011	03/26/2021			03/26/2021 15:59	Benjamin T. Nordmann	2234385, 2234388
	03/26/2021			03/26/2021 16:00	Benjamin T. Nordmann	2234389
SM 2320 B-2011	03/26/2021			03/29/2021 20:08	Dale L. Simmons	2234385
	03/26/2021			03/29/2021 21:02	Dale L. Simmons	2234388
	03/26/2021			03/29/2021 21:11	Dale L. Simmons	2234389
SM 2340B	03/26/2021			04/01/2021 01:40	Betina Topolski	2234402
	03/26/2021			04/01/2021 01:45	Betina Topolski	2234403
SM 2540 C-2011	03/26/2021			03/30/2021 14:36	Yijie Li	2234385, 2234388, 2234389
SM 2540 D-2011	03/26/2021			03/30/2021 14:36	Yijie Li	2234385, 2234388, 2234389
SM 4500 F-C-2011	03/26/2021			03/29/2021 20:08	Dale L. Simmons	2234385
	03/26/2021			03/29/2021 21:02	Dale L. Simmons	2234388

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	03/26/2021			03/29/2021 21:11	Dale L. Simmons	2234389
SM 5310 B-2011	03/26/2021			03/31/2021 19:07	Madeline Gruver	2234386
	03/26/2021			03/31/2021 19:17	Madeline Gruver	2234390
	03/26/2021			03/31/2021 19:27	Madeline Gruver	2234391