

Chemical Analysis Report

NW-DIST-2021-10-29-01

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

Event Description: **Escambia Bay Whaler Run**
Request ID: **RQ-2021-10-18-23**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 19-NOV-2021 15:12



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: Bayou Texar near Baars Park

Collection Date/Time: 10/28/2021 10:25

Field ID: G4NW0516

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286759	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P405777	
	SM 2320 B-2011	Total Alkalinity	16		mg CaCO3/L	P406172	
	SM 2540 D-2011	TSS	6	I	mg/L	P406280	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P405988	
2286761	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P406066	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P406121	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.34		mg N/L	P405847	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P405924	
	SM 5310 B-2011	Organic Carbon	6.6		mg C/L	P405838	
2286763	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P405768	
2286771	EPA 8321B	2,4-D	0.049		ug/L	P405750	
		Acesulfame K	0.10	U	ug/L	P405602	
		2,4,5-T	0.0040	U	ug/L	P405750	
		AMPA	0.10	U	ug/L	P405602	
		Acetaminophen	0.022	I	ug/L	P405750	
		Acetamiprid	0.0020	U	ug/L	P405750	
		Endothall	0.25	U	ug/L	P405602	
		Glufosinate	0.10	U	ug/L	P405602	
		Glyphosate	0.65		ug/L	P405602	
		Afidopyropen	0.0020	U	ug/L	P405750	
		Bentazon	8.0E-04	U	ug/L	P405750	
		Sucralose	0.19		ug/L	P405602	
		Benzovindiflupyr	0.0020	U	ug/L	P405750	
		Carbamazepine	0.0013	I	ug/L	P405750	
		Clothianidin	0.0020	U	ug/L	P405750	
		Dinotefuran	0.0020	U	ug/L	P405750	
		Diuron	0.0037	I	ug/L	P405750	
		Fenuron	0.016	U	ug/L	P405750	
		Fluridone	8.0E-04	U	ug/L	P405750	
		Imazapyr	0.0068	I	ug/L	P405750	
		Hydrocodone	0.0020	U	ug/L	P405750	
		Ibuprofen	0.020	U	ug/L	P405750	
		Imidacloprid	0.034		ug/L	P405750	MS
		Linuron	0.0040	U	ug/L	P405750	
		Mandestrobin	0.0020	U	ug/L	P405750	
		MCP	0.0079	I	ug/L	P405750	
		Naproxen	0.0080	U	ug/L	P405750	MS
		Primidone	0.0040	U	ug/L	P405750	
		Pyraclostrobin	0.0020	U	ug/L	P405750	
		Thiamethoxam	0.0020	U	ug/L	P405750	
		Tolfenpyrad	0.0020	U	ug/L	P405750	
		Triclopyr	0.0040	U	ug/L	P405750	
2286773	EPA 200.7 Rev. 4.4	Calcium	7.76		mg/L	P405786	

Field ID: G4NW0516

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286773	EPA 200.7 Rev. 4.4	Iron	600		ug/L	P405786	
		Magnesium	1.83		mg/L	P405786	
		Manganese	24.4		ug/L	P405786	
		Zinc	10	I	ug/L	P405786	
	EPA 200.8 Rev. 5.4	Aluminum	254		ug/L	P405786	
		Antimony	0.21		ug/L	P405786	
		Arsenic	0.53		ug/L	P405786	
		Beryllium	0.010	U	ug/L	P405786	
		Cadmium	0.020	U	ug/L	P405786	
		Chromium	0.49	I	ug/L	P405786	
		Copper	1.82		ug/L	P405786	
		Lead	1.06		ug/L	P405786	
		Nickel	0.50	U	ug/L	P405786	
		Selenium	0.20	U	ug/L	P405786	
		Silver	0.010	U	ug/L	P405786	
		Thallium	0.10	U	ug/L	P405786	

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 11/15/2021.

Sample Location: Judges Bayou Mouth

Collection Date/Time: 10/28/2021 12:10

Field ID: G4NW0441

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286756	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P405776	
	SM 2320 B-2011	Total Alkalinity	34		mg CaCO3/L	P406013	
	SM 2540 D-2011	TSS	6	I	mg/L	P406280	
	SM 4500 F-C-2011	Fluoride	0.24		mg F/L	P406015	
2286757	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P406063	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P406122	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P405809	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P405925	
	SM 5310 B-2011	Organic Carbon	6.0		mg C/L	P405838	
2286758	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P405769	

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: Bayou Texar 200 Meters above Hwy 90 Bridge Collection Date/Time: 10/28/2021 09:50

Field ID: G4NW0402

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286760	EPA 180.1 Rev. 2.0	Turbidity	2.5	A	NTU	P405777	
	SM 2320 B-2011	Total Alkalinity	45	A	mg CaCO3/L	P406013	
	SM 2540 D-2011	TSS	6	I	mg/L	P406281	
	SM 4500 F-C-2011	Fluoride	0.44		mg F/L	P406015	
2286762	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P406063	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P406122	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P405809	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P405869	
	SM 5310 B-2011	Organic Carbon	3.7		mg C/L	P406059	
2286764	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P405769	
2286772	EPA 8321B	Acesulfame K	0.10	U	ug/L	P405602	
		2,4-D	0.0059	I	ug/L	P405750	
		AMPA	1.0	U	ug/L	P405602	
		2,4,5-T	0.0040	U	ug/L	P405750	
		Acetaminophen	0.0080	U	ug/L	P405750	
		Endothall	0.25	U	ug/L	P405602	
		Acetamiprid	0.0020	U	ug/L	P405750	
		Glufosinate	1.0	U	ug/L	P405602	
		Glyphosate	1.0	U	ug/L	P405602	
		Afidopyropen	0.0020	U	ug/L	P405750	
		Sucralose	0.12		ug/L	P405602	
		Bentazon	0.0010	I	ug/L	P405750	
		Benzovindiflupyr	0.0020	U	ug/L	P405750	
		Carbamazepine	8.0E-04	U	ug/L	P405750	
		Clothianidin	0.0020	U	ug/L	P405750	
		Dinotefuran	0.0020	U	ug/L	P405750	
		Diuron	0.0020	U	ug/L	P405750	
		Fenuron	0.016	U	ug/L	P405750	
		Fluridone	8.0E-04	U	ug/L	P405750	
		Imazapyr	0.032		ug/L	P405750	
		Hydrocodone	0.0020	U	ug/L	P405750	
		Ibuprofen	0.020	U	ug/L	P405750	
		Imidacloprid	0.0069	I	ug/L	P405750	MS
		Linuron	0.0040	U	ug/L	P405750	
		Mandestrobin	0.0020	U	ug/L	P405750	
		MCP	0.0040	U	ug/L	P405750	
		Naproxen	0.0080	U	ug/L	P405750	MS
		Primidone	0.0040	U	ug/L	P405750	
		Pyraclostrobin	0.0020	U	ug/L	P405750	
		Thiamethoxam	0.0020	U	ug/L	P405750	
		Tolfenpyrad	0.0020	U	ug/L	P405750	
		Triclopyr	0.0040	U	ug/L	P405750	
2286774	EPA 200.7 Rev. 4.4	Calcium	116		mg/L	P406034	

Field ID: G4NW0402

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286774	EPA 200.7 Rev. 4.4	Iron	110	I	ug/L	P406034	
		Magnesium	368		mg/L	P406034	
		Manganese	29		ug/L	P406034	
		Zinc	15	U	ug/L	P406034	
	EPA 200.8 Rev. 5.4	Aluminum	111		ug/L	P406034	
		Antimony	0.20	U	ug/L	P406034	
		Arsenic	1.12		ug/L	P406034	
		Beryllium	0.040	U	ug/L	P406034	
		Cadmium	0.080	U	ug/L	P406034	
		Chromium	1.6	U	ug/L	P406034	
		Copper	1.6	U	ug/L	P406034	
		Lead	0.80	U	ug/L	P406034	
		Nickel	2.0	U	ug/L	P406034	
		Selenium	0.80	U	ug/L	P406034	
		Silver	0.040	U	ug/L	P406034	
		Thallium	0.40	U	ug/L	P406034	

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: MDL for some parameters elevated due to matrix interference.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P405776

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P405777

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P405786

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 200.7 Rev. 4.4
Batch ID: P406034

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: P405786

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 200.8 Rev. 5.4
Batch ID: P406034

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P406034

Component	Result	Code	Units
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: P406063

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406066

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406121

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406122

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405809

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405847

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405869

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
Batch ID: P405924

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405925

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405769

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

Reference Method: EPA 8321B
Batch ID: P405602

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: P405750

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P405750

Component	Result	Code	Units
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCP	0.0040	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: P406013

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

Reference Method: SM 2320 B-2011

Batch ID: P406172

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

Reference Method: SM 2540 D-2011

Batch ID: P406280

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011

Batch ID: P406281

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011

Batch ID: P405988

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011

Batch ID: P406015

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011

Batch ID: P405838

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P406059

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: P405786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	111		P	85 - 115
Iron	108		P	85 - 115
Magnesium	111		P	85 - 115
Manganese	106		P	85 - 115
Zinc	109		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P406034

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	95.8		P	85 - 115
Magnesium	102		P	85 - 115
Manganese	92.6		P	85 - 115
Zinc	91.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P405786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	105		P	85 - 115
Antimony	110		P	85 - 115
Arsenic	104		P	85 - 115
Beryllium	96.8		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	105		P	85 - 115
Copper	99.9		P	85 - 115
Lead	96.5		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	100		P	85 - 115
Thallium	108		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P406034

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.5		P	85 - 115
Antimony	95.9		P	85 - 115
Arsenic	90.5		P	85 - 115
Beryllium	91.5		P	85 - 115
Cadmium	91.1		P	85 - 115
Chromium	91.9		P	85 - 115
Copper	91.5		P	85 - 115
Lead	92.0		P	85 - 115
Nickel	92.0		P	85 - 115
Selenium	93.2		P	85 - 115
Silver	98.4		P	85 - 115
Thallium	93.6		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406063

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406066

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406121

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406122

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405809

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405869

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405924

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405925

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405769

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

Reference Method: EPA 8321B
Batch ID: P405602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	104		P	40 - 150
AMPA	95.8		P	40 - 160
Endothall	82.9		P	40 - 150
Glufosinate	97.0		P	40 - 160
Glyphosate	95.6		P	40 - 160
Sucralose	94.8		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P405750

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	89.0		P	40 - 150
2,4,5-T	89.5		P	40 - 150
Acetaminophen	82.9		P	30 - 150
Acetamiprid	84.3		P	40 - 150
Afidopyropen	68.8		P	40 - 150
Bentazon	88.0		P	30 - 150
Benzovindiflupyr	75.5		P	40 - 150
Carbamazepine	86.1		P	40 - 150
Clothianidin	88.8		P	40 - 150
Dinotefuran	74.6		P	40 - 150
Diuron	80.2		P	40 - 150
Fenuron	83.2		P	40 - 150
Fluridone	89.9		P	40 - 150
Hydrocodone	78.1		P	40 - 150
Ibuprofen	79.0		P	40 - 150
Imazapyr	92.9		P	40 - 150
Imidacloprid	80.8		P	40 - 150
Linuron	69.4		P	40 - 150
Mandestrobin	77.1		P	40 - 150
MCPP	88.2		P	40 - 150
Naproxen	95.5		P	40 - 150
Primidone	81.7		P	40 - 150
Pyraclostrobin	77.9		P	40 - 150
Thiamethoxam	81.6		P	40 - 150
Tolfenpyrad	50.2		P	30 - 150
Triclopyr	90.1		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P406013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.0		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P406172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.3		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P405988

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P406015

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P405838

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P406059

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P405786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286611	Calcium	109	110	P/P	80 - 120
2286611	Iron	109	109	P/P	80 - 120
2286611	Magnesium	111	111	P/P	80 - 120
2286611	Manganese	107	108	P/P	80 - 120
2286611	Zinc	113	115	P/P	80 - 120
2287005	Calcium	115		P	80 - 120
2287005	Iron	108		P	80 - 120
2287005	Magnesium	110		P	80 - 120
2287005	Manganese	106		P	80 - 120
2287005	Zinc	108		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P406034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286774	Iron	93.5	92.9	P/P	70 - 130
2286774	Manganese	89.8	88.5	P/P	70 - 130
2286774	Zinc	89.5	88.0	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P405786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286611	Aluminum	105	106	P/P	80 - 120
2286611	Antimony	112	114	P/P	80 - 120
2286611	Arsenic	105	105	P/P	80 - 120
2286611	Beryllium	97.9	94.3	P/P	80 - 120
2286611	Cadmium	105	104	P/P	80 - 120
2286611	Chromium	105	105	P/P	80 - 120
2286611	Copper	102	102	P/P	80 - 120
2286611	Lead	97.5	98.7	P/P	80 - 120
2286611	Nickel	104	104	P/P	80 - 120
2286611	Selenium	100	101	P/P	80 - 120
2286611	Silver	102	102	P/P	80 - 120
2286611	Thallium	109	111	P/P	80 - 120
2287005	Aluminum	104		P	80 - 120
2287005	Antimony	116		P	80 - 120
2287005	Arsenic	108		P	80 - 120
2287005	Beryllium	92.7		P	80 - 120
2287005	Cadmium	106		P	80 - 120
2287005	Chromium	102		P	80 - 120
2287005	Copper	101		P	80 - 120
2287005	Lead	100		P	80 - 120
2287005	Nickel	103		P	80 - 120
2287005	Selenium	92.7		P	80 - 120
2287005	Silver	98.0		P	80 - 120
2287005	Thallium	112		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P406034

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

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P406034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286774	Aluminum	93.9	91.7	P/P	70 - 130
2286774	Antimony	100	96.6	P/P	70 - 130
2286774	Arsenic	96.5	93.7	P/P	70 - 130
2286774	Beryllium	107	103	P/P	70 - 130
2286774	Cadmium	92.2	87.7	P/P	70 - 130
2286774	Chromium	89.4	86.6	P/P	70 - 130
2286774	Copper	103	99.3	P/P	70 - 130
2286774	Lead	94.1	91.4	P/P	70 - 130
2286774	Nickel	97.0	93.2	P/P	70 - 130
2286774	Selenium	96.9	94.3	P/P	70 - 130
2286774	Silver	103	106	P/P	70 - 130
2286774	Thallium	94.9	92.5	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287093	Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286609	Ammonia-N	95.2	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P406121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286698	Kjeldahl Nitrogen	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P406122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286762	Kjeldahl Nitrogen	102	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P405809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286569	NO2NO3-N	99.5	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P405847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286761	NO2NO3-N	94.5	94.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286571	Total-P	104	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405924

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286698	Total-P	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286744	Total-P	97.6	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286699	O-Phosphate-P	97.7	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286758	O-Phosphate-P	97.9	99.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P405602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285918	Acesulfame K	150	142	P/P	40 - 150
2285918	AMPA	61.8	60.3	P/P	40 - 160
2285918	Endothall	96.3	89.5	P/P	40 - 150
2285918	Glufosinate	64.7	65.4	P/P	40 - 160
2285918	Glyphosate	106	107	P/P	40 - 160
2285918	Sucralose	94.5	96.6	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P405750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286692	2,4-D	110	95.7	P/P	40 - 150
2286692	2,4,5-T	109	113	P/P	40 - 150
2286692	Acetaminophen	115	102	P/P	30 - 150
2286692	Acetamiprid	84.1	85.6	P/P	40 - 150
2286692	Afidopyrophen	79.4	74.3	P/P	40 - 150
2286692	Bentazon	58.9	62.3	P/P	30 - 150
2286692	Benzovindiflupyr	95.1	89.9	P/P	40 - 150
2286692	Carbamazepine	106	102	P/P	40 - 150
2286692	Clothianidin	124	103	P/P	40 - 150
2286692	Dinotefuran	131	115	P/P	40 - 150
2286692	Diuron	85.1	80.1	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P405750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286692	Fenuron	93.8	92.4	P/P	40 - 150
2286692	Fluridone	106	97.7	P/P	40 - 150
2286692	Hydrocodone	107	97.8	P/P	40 - 150
2286692	Ibuprofen	89.6	90.7	P/P	40 - 150
2286692	Imazapyr	135	93.1	P/P	40 - 150
2286692	Imidacloprid	166	160	F/F	40 - 150
2286692	Linuron	80.9	82.1	P/P	40 - 150
2286692	Mandestrobin	95.0	94.6	P/P	40 - 150
2286692	MCPP	110	114	P/P	40 - 150
2286692	Naproxen	156	121	F/P	40 - 150
2286692	Primidone	99.3	98.8	P/P	40 - 150
2286692	Pyraclostrobin	91.2	86.4	P/P	40 - 150
2286692	Thiamethoxam	126	146	P/P	40 - 150
2286692	Tolfenpyrad	57.4	53.8	P/P	30 - 150
2286692	Triclopyr	107	110	P/P	40 - 150

Reference Method: SM 4500 F-C-2011

Batch ID: P405988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287474	Fluoride	99.5	100	P/P	92 - 107

Reference Method: SM 4500 F-C-2011

Batch ID: P406015

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286760	Fluoride	98.0	99.5	P/P	92 - 107

Reference Method: SM 5310 B-2011

Batch ID: P405838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286687	Organic Carbon	99.6	98.8	P/P	85 - 115

Reference Method: SM 5310 B-2011

Batch ID: P406059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286762	Organic Carbon	92.2	93.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P405776

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286670	Turbidity	0.686	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P405777

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286760	Turbidity	6.32	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P405786

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286611	Calcium	0.352	Spike	P	0 - 20
2286611	Iron	0.294	Spike	P	0 - 20
2286611	Magnesium	0.312	Spike	P	0 - 20
2286611	Manganese	0.498	Spike	P	0 - 20
2286611	Zinc	2.17	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P406034

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286774	Calcium	0.782	Spike	P	0 - 20
2286774	Iron	0.663	Spike	P	0 - 20
2286774	Magnesium	1.61	Spike	P	0 - 20
2286774	Manganese	1.26	Spike	P	0 - 20
2286774	Zinc	1.61	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P405786

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286611	Aluminum	1.01	Spike	P	0 - 20
2286611	Antimony	1.20	Spike	P	0 - 20
2286611	Arsenic	0.145	Spike	P	0 - 20
2286611	Beryllium	3.38	Spike	P	0 - 20
2286611	Cadmium	1.09	Spike	P	0 - 20
2286611	Chromium	0.246	Spike	P	0 - 20
2286611	Copper	0.195	Spike	P	0 - 20
2286611	Lead	1.27	Spike	P	0 - 20
2286611	Nickel	0.0596	Spike	P	0 - 20
2286611	Selenium	0.811	Spike	P	0 - 20
2286611	Silver	0.378	Spike	P	0 - 20
2286611	Thallium	1.38	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P406034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286774	Aluminum	2.13	Spike	P	0 - 20
2286774	Antimony	3.72	Spike	P	0 - 20
2286774	Arsenic	2.85	Spike	P	0 - 20
2286774	Beryllium	3.89	Spike	P	0 - 20
2286774	Cadmium	4.99	Spike	P	0 - 20
2286774	Chromium	3.26	Spike	P	0 - 20
2286774	Copper	3.45	Spike	P	0 - 20
2286774	Lead	3.01	Spike	P	0 - 20
2286774	Nickel	3.99	Spike	P	0 - 20
2286774	Selenium	2.78	Spike	P	0 - 20
2286774	Silver	3.10	Spike	P	0 - 20
2286774	Thallium	2.60	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287093	Ammonia-N	1.87	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286609	Ammonia-N	1.87	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286698	Kjeldahl Nitrogen	0.413	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286762	Kjeldahl Nitrogen	4.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286569	NO2NO3-N	0.952	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286761	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286571	Total-P	4.28	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286698	Total-P	0.966	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286744	Total-P	3.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286699	O-Phosphate-P	0.102	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286758	O-Phosphate-P	1.32	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P405602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285918	Acesulfame K	5.21	Spike	P	0 - 30
2285918	AMPA	2.38	Spike	P	0 - 30
2285918	Endothall	7.33	Spike	P	0 - 30
2285918	Glufosinate	1.06	Spike	P	0 - 30
2285918	Glyphosate	0.379	Spike	P	0 - 30
2285918	Sucralose	1.28	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P405750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286692	2,4-D	9.82	Spike	P	0 - 30
2286692	2,4,5-T	3.75	Spike	P	0 - 30
2286692	Acetaminophen	12.2	Spike	P	0 - 30
2286692	Acetamiprid	1.74	Spike	P	0 - 30
2286692	Afidopyropen	6.75	Spike	P	0 - 30
2286692	Bentazon	5.56	Spike	P	0 - 30
2286692	Benzovindiflupyr	5.66	Spike	P	0 - 30
2286692	Carbamazepine	3.54	Spike	P	0 - 30
2286692	Clothianidin	9.41	Spike	P	0 - 30
2286692	Dinotefuran	13.2	Spike	P	0 - 30
2286692	Diuron	4.48	Spike	P	0 - 30
2286692	Fenuron	1.47	Spike	P	0 - 30
2286692	Fluridone	8.48	Spike	P	0 - 30
2286692	Hydrocodone	9.38	Spike	P	0 - 30
2286692	Ibuprofen	1.29	Spike	P	0 - 30
2286692	Imazapyr	15.0	Spike	P	0 - 30
2286692	Imidacloprid	1.03	Spike	P	0 - 30
2286692	Linuron	1.49	Spike	P	0 - 30
2286692	Mandestrobin	0.469	Spike	P	0 - 30
2286692	MCP	3.81	Spike	P	0 - 30
2286692	Naproxen	25.1	Spike	P	0 - 30
2286692	Primidone	0.473	Spike	P	0 - 30
2286692	Pyraclostrobin	5.36	Spike	P	0 - 30
2286692	Thiamethoxam	4.21	Spike	P	0 - 30
2286692	Tolfenpyrad	6.37	Spike	P	0 - 30
2286692	Triclopyr	3.04	Spike	P	0 - 30

Reference Method: SM 2320 B-2011
Batch ID: P406013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286760	Total Alkalinity	0.963	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P406172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287474	Total Alkalinity	1.35	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P405988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287474	Fluoride	0.476	Spike	P	0 - 2.1

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P406015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286760	Fluoride	0.967	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P405838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286687	Organic Carbon	0.367	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P406059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286762	Organic Carbon	1.52	Spike	P	0 - 20

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

Quality Assurance Report Surrogates

Lab Sample ID: 2286771

Field Sample ID: G4NW0516

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	105	P	30 - 160
EPA 8321B	Acetaminophen-d4	101	P	30 - 160
EPA 8321B	Carbamazepine-d10	98.0	P	30 - 160
EPA 8321B	Diuron-d6	95.7	P	30 - 160
EPA 8321B	Endothall-d6	76.5	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	118	P	30 - 160
EPA 8321B	Ibuprofen-d3	73.8	P	30 - 160
EPA 8321B	Primidone-d5	103	P	30 - 160
EPA 8321B	Sucralose-d6	85.9	P	30 - 160

Lab Sample ID: 2286772

Field Sample ID: G4NW0402

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	92.0	P	30 - 160
EPA 8321B	Acetaminophen-d4	84.7	P	30 - 160
EPA 8321B	Carbamazepine-d10	86.3	P	30 - 160
EPA 8321B	Diuron-d6	92.9	P	30 - 160
EPA 8321B	Endothall-d6	74.8	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	48.2	P	30 - 160
EPA 8321B	Ibuprofen-d3	57.6	P	30 - 160
EPA 8321B	Primidone-d5	89.6	P	30 - 160
EPA 8321B	Sucralose-d6	82.6	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A108618

Included Lab Sample IDs: 2286771, 2286772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	99.7	93.8	P/P	60 - 160
Endothall	80.5	76.9	P/P	60 - 160
Sucralose	87.9	94.0	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108620

Included Lab Sample IDs: 2286758, 2286763, 2286764

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	98.7	P/P	90 - 110
O-Phosphate-P	98.7	97.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108623

Included Lab Sample IDs: 2286756, 2286759, 2286760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	101	101	P/P	95 - 105

Reference Method: EPA 8321B

Run ID: A108641

Included Lab Sample IDs: 2286771, 2286772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	96.0	97.2	P/P	60 - 160
AMPA	100	96.0	P/P	60 - 160
Glufosinate	93.6	93.3	P/P	60 - 160
Glufosinate	97.9	93.6	P/P	60 - 160
Glyphosate	104	102	P/P	60 - 160
Glyphosate	105	104	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108647

Included Lab Sample IDs: 2286757, 2286762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	100	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A108656

Included Lab Sample IDs: 2286757, 2286761

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108660

Included Lab Sample IDs: 2286761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108660

Included Lab Sample IDs: 2286761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A108702

Included Lab Sample IDs: 2286773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	105	104	P/P	90 - 110
Iron	103	101	P/P	90 - 110
Magnesium	105	105	P/P	90 - 110
Manganese	104	104	P/P	90 - 110
Zinc	105	106	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A108707

Included Lab Sample IDs: 2286759

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

Reference Method: SM 2320 B-2011

Run ID: A108714

Included Lab Sample IDs: 2286756, 2286760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	97.8	P/P	90 - 110
Total Alkalinity	97.8	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A108714

Included Lab Sample IDs: 2286756, 2286760

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108721

Included Lab Sample IDs: 2286762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	97.5	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A108741

Included Lab Sample IDs: 2286762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	99.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108743

Included Lab Sample IDs: 2286757, 2286761, 2286762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.0	96.8	P/P	90 - 110
Ammonia-N	97.9	96.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A108750

Included Lab Sample IDs: 2286771, 2286772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	110	91.2	P/P	50 - 150
2,4,5-T	101	99.3	P/P	50 - 150
Acetaminophen	91.7	101	P/P	60 - 160
Acetamiprid	102	105	P/P	50 - 150
Afidopyropen	98.4	97.5	P/P	50 - 150
Bentazon	105	107	P/P	50 - 160
Benzovindiflupyr	110	103	P/P	50 - 150
Carbamazepine	100	103	P/P	60 - 150
Clothianidin	109	109	P/P	60 - 150
Dinotefuran	96.5	105	P/P	50 - 150
Diuron	96.9	117	P/P	60 - 160
Fenuron	97.0	98.9	P/P	60 - 150
Fluridone	105	111	P/P	60 - 160
Hydrocodone	96.4	101	P/P	60 - 150
Ibuprofen	127	84.4	P/P	50 - 160
Imazapyr	105	141	P/P	50 - 150
Imidacloprid	96.1	94.5	P/P	60 - 150
Linuron	107	104	P/P	60 - 150
Mandestrobin	104	103	P/P	50 - 150
MCPP	89.6	86.1	P/P	50 - 150
Naproxen	109	113	P/P	50 - 160
Primidone	109	103	P/P	60 - 150
Pyraclostrobin	102	98.7	P/P	60 - 150
Thiamethoxam	96.2	97.1	P/P	50 - 150
Tolfenpyrad	106	106	P/P	60 - 150
Triclopyr	102	102	P/P	50 - 150

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108758

Included Lab Sample IDs: 2286757, 2286761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	99.0	P/P	90 - 110
Total-P	98.8	97.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A108794

Included Lab Sample IDs: 2286759

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.6	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108800

Included Lab Sample IDs: 2286757, 2286761, 2286762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	106	P/P	90 - 110
Kjeldahl Nitrogen	106	104	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A108810

Included Lab Sample IDs: 2286774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	103	P/P	95 - 105
Iron	101	104	P/P	95 - 105
Magnesium	103	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A108867

Included Lab Sample IDs: 2286774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	103	104	P/P	90 - 110
Zinc	103	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108884

Included Lab Sample IDs: 2286773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	103	P/P	90 - 110
Arsenic	102	100	P/P	90 - 110
Beryllium	92.1	91.9	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	100	102	P/P	90 - 110
Copper	95.5	95.4	P/P	90 - 110
Lead	93.6	92.8	P/P	90 - 110
Nickel	97.3	97.3	P/P	90 - 110
Selenium	104	101	P/P	90 - 110
Silver	91.9	91.9	P/P	90 - 110
Thallium	102	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108892

Included Lab Sample IDs: 2286774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	100	100	P/P	90 - 110
Arsenic	101	100	P/P	90 - 110
Beryllium	99.4	103	P/P	90 - 110
Cadmium	98.9	97.9	P/P	90 - 110
Copper	101	103	P/P	90 - 110
Lead	96.3	95.7	P/P	90 - 110
Nickel	99.5	101	P/P	90 - 110
Selenium	103	103	P/P	90 - 110
Thallium	96.1	94.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108912

Included Lab Sample IDs: 2286773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	103	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108928

Included Lab Sample IDs: 2286774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	100	P/P	90 - 110
Chromium	98.1	95.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108953

Included Lab Sample IDs: 2286774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	96.3	95.8	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						0.686	
	Turbidity						6.32	
EPA 200.7 Rev. 4.4	Calcium	111	109	110	115			0.352
	Calcium	103						0.782
	Iron	108	109	109	108			0.294
	Iron	95.8	93.5	92.9				0.663
	Magnesium	111	111	111	110			0.312
	Magnesium	102						1.61
	Manganese	106	107	108	106			0.498
	Manganese	92.6	89.8	88.5				1.26
	Zinc	109	108	113	115			2.17
	Zinc	91.3	89.5	88.0				1.61
EPA 200.8 Rev. 5.4	Aluminum	105	105	106	104			1.01
	Aluminum	95.5	93.9	91.7				2.13
	Antimony	110	112	114	116			1.20
	Antimony	95.9	100	96.6				3.72
	Arsenic	104	105	105	108			0.145
	Arsenic	90.5	96.5	93.7				2.85
	Beryllium	96.8	97.9	94.3	92.7			3.38
	Beryllium	91.5	107	103				3.89
	Cadmium	102	105	104	106			1.09
	Cadmium	91.1	92.2	87.7				4.99
	Chromium	105	105	105	102			0.246
	Chromium	91.9	89.4	86.6				3.26
	Copper	99.9	102	102	101			0.195
	Copper	91.5	103	99.3				3.45
	Lead	96.5	97.5	98.7	100			1.27
	Lead	92.0	94.1	91.4				3.01
	Nickel	102	104	104	103			0.0596
	Nickel	92.0	97.0	93.2				3.99
	Selenium	101	100	101	92.7			0.811
	Selenium	93.2	94.3	96.9				2.78
	Silver	100	102	102	98.0			0.378
	Silver	98.4	103	106				3.10
	Thallium	108	109	111	112			1.38
	Thallium	93.6	94.9	92.5				2.60
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	102	100				1.87
	Ammonia-N	95.0	95.2	97.0				1.87
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	101	102				0.413
	Kjeldahl Nitrogen	104	102	96.9				4.36
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.5	98.5				0.952
	NO2NO3-N	99.0	94.5	94.5				0.0
EPA 365.1 Rev. 2.0	Total-P	104	104	99.7				4.28
	Total-P	106	107	108				0.966
	Total-P	104	97.6	94.6				3.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.3	97.7	97.6				0.102
	O-Phosphate-P	99.0	97.9	99.2				1.32
EPA 8321B	2,4-D	89.0	110	95.7				9.82
	2,4,5-T	89.5	109	113				3.75
	Acesulfame K	104	150	142				5.21
	Acetaminophen	82.9	115	102				12.2
	Acetamiprid	84.3	84.1	85.6				1.74
	Afidopyropen	68.8	79.4	74.3				6.75
	AMPA	95.8	61.8	60.3				2.38

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 8321B	Bentazon	88.0	58.9	62.3			5.56
	Benzovindiflupyr	75.5	95.1	89.9			5.66
	Carbamazepine	86.1	106	102			3.54
	Clothianidin	88.8	124	103			9.41
	Dinotefuran	74.6	131	115			13.2
	Diuron	80.2	85.1	80.1			4.48
	Endothall	82.9	96.3	89.5			7.33
	Fenuron	83.2	93.8	92.4			1.47
	Fluridone	89.9	106	97.7			8.48
	Glufosinate	97.0	64.7	65.4			1.06
	Glyphosate	95.6	106	107			0.379
	Hydrocodone	78.1	107	97.8			9.38
	Ibuprofen	79.0	89.6	90.7			1.29
	Imazapyr	92.9	135	93.1			15.0
	Imidacloprid	80.8	166	160			1.03
	Linuron	69.4	80.9	82.1			1.49
	Mandestrobin	77.1	95.0	94.6			0.469
	MCPP	88.2	110	114			3.81
	Naproxen	95.5	156	121			25.1
	Primidone	81.7	99.3	98.8			0.473
	Pyraclostrobin	77.9	91.2	86.4			5.36
	Sucralose	94.8	94.5	96.6			1.28
	Thiamethoxam	81.6	126	146			4.21
	Tolfenpyrad	50.2	57.4	53.8			6.37
	Triclopyr	90.1	107	110			3.04
SM 2320 B-2011	Total Alkalinity	99.0				0.963	
	Total Alkalinity	98.3				1.35	
SM 4500 F-C-2011	Fluoride	100	99.5	100			0.476
	Fluoride	99.4	98.0	99.5			0.967
SM 5310 B-2011	Organic Carbon	99.4	99.6	98.8			0.367
	Organic Carbon	101	92.2	93.8			1.52

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2286756, 2286759, 2286760
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2286773, 2286774
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2286773, 2286774
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2286757, 2286761, 2286762
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2286757, 2286761, 2286762
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2286757, 2286761, 2286762
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2286757, 2286761, 2286762
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2286758, 2286763, 2286764
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2286771, 2286772
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2286756, 2286759, 2286760
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2286756, 2286759, 2286760
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2286756, 2286759, 2286760
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2286757, 2286761, 2286762

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	10/29/2021			10/29/2021 15:26	Khloe J Berg	2286756, 2286759, 2286760
EPA 200.7 Rev. 4.4	10/29/2021	11/01/2021 11:00	Emily M Philpot	11/03/2021 17:19	Josef B Mick	2286773
	10/29/2021	11/05/2021 09:30	Emily M Philpot	11/09/2021 11:36	Josef B Mick	2286774
	10/29/2021	11/05/2021 09:30	Emily M Philpot	11/09/2021 12:37	Josef B Mick	2286774
	10/29/2021	11/05/2021 09:30	Emily M Philpot	11/10/2021 20:00	Josef B Mick	2286774
EPA 200.8 Rev. 5.4	10/29/2021	11/01/2021 11:00	Emily M Philpot	11/12/2021 19:03	Alexander Thompson	2286773
	10/29/2021	11/01/2021 11:00	Emily M Philpot	11/15/2021 16:54	Alexander Thompson	2286773
	10/29/2021	11/05/2021 09:30	Emily M Philpot	11/12/2021 18:52	McKinley C Carter	2286774
	10/29/2021	11/05/2021 09:30	Emily M Philpot	11/17/2021 00:22	Alexander Thompson	2286774
	10/29/2021	11/05/2021 09:30	Emily M Philpot	11/17/2021 15:54	Alexander Thompson	2286774
EPA 350.1 Rev. 2.0	10/29/2021			11/04/2021 11:41	Ping Hua	2286757
	10/29/2021			11/04/2021 11:42	Ping Hua	2286762
	10/29/2021			11/04/2021 13:26	Ping Hua	2286761
EPA 351.2 Rev. 2.0	10/29/2021	11/08/2021 13:15	Benjamin T. Nordmann	11/09/2021 10:32	Alexandra J Mattheus	2286761
	10/29/2021	11/08/2021 13:15	Benjamin T. Nordmann	11/09/2021 10:50	Alexandra J Mattheus	2286757
	10/29/2021	11/08/2021 13:15	Benjamin T. Nordmann	11/09/2021 10:52	Alexandra J Mattheus	2286762
EPA 353.2 Rev. 2.0	10/29/2021			11/01/2021 11:34	Beverly Y. Sanders	2286757
	10/29/2021			11/01/2021 11:36	Beverly Y. Sanders	2286762
	10/29/2021			11/02/2021 10:22	Beverly Y. Sanders	2286761
EPA 365.1 Rev. 2.0	10/29/2021	11/02/2021 16:18	Simonne.V. Calhoun	11/04/2021 14:28	Lipi Saha	2286762
	10/29/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/05/2021 15:54	Sarah A Nixon	2286761
	10/29/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/05/2021 16:12	Sarah A Nixon	2286757
EPA 365.1 Rev. 2.0 dissolved	10/29/2021			10/29/2021 14:56	James L Waggeberby	2286763
	10/29/2021			10/29/2021 15:01	James L Waggeberby	2286758
	10/29/2021			10/29/2021 15:08	James L Waggeberby	2286764
EPA 8321B	10/29/2021	10/29/2021 12:00	Mohammad Ghaffari	10/29/2021 12:43	Mohammad Ghaffari	2286771
	10/29/2021	10/29/2021 12:00	Mohammad Ghaffari	10/29/2021 14:19	Manjita Shrestha	2286771
	10/29/2021	10/29/2021 12:00	Mohammad Ghaffari	10/29/2021 14:34	Manjita Shrestha	2286772
	10/29/2021	10/29/2021 12:00	Mohammad Ghaffari	10/29/2021 15:46	Mohammad Ghaffari	2286772
	10/29/2021	10/29/2021 14:00	Hoor Shaik	11/03/2021 08:12	Juyoung Kim	2286771
	10/29/2021	10/29/2021 14:00	Hoor Shaik	11/03/2021 08:47	Juyoung Kim	2286772
SM 2320 B-2011	10/29/2021			11/02/2021 22:55	Dale L. Simmons	2286760
	10/29/2021			11/02/2021 23:49	Dale L. Simmons	2286756
	10/29/2021			11/06/2021 00:29	Dale L. Simmons	2286759
SM 2540 D-2011	10/29/2021			11/01/2021 14:21	Yijie Li	2286756, 2286759, 2286760
SM 4500 F-C-2011	10/29/2021			11/02/2021 22:14	Dale L. Simmons	2286760
	10/29/2021			11/02/2021 22:28	Dale L. Simmons	2286756
	10/29/2021			11/03/2021 17:35	Dale L. Simmons	2286759
SM 5310 B-2011	10/29/2021			11/02/2021 04:34	Khloe J Berg	2286757
	10/29/2021			11/02/2021 04:49	Khloe J Berg	2286761

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-2011	10/29/2021			11/04/2021 01:59	Khloe J Berg	2286762