Chemical Analysis Report

NE-DIST-2021-04-20-01

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

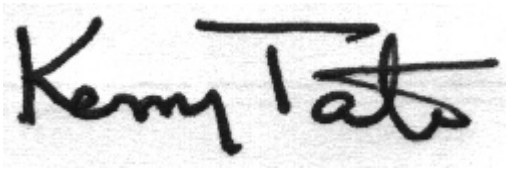
Event Description: **ICW Boat and Arlington**
Request ID: **RQ-2021-04-05-32**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

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

Date Certified: 11-MAY-2021 14:01



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: Arlington River at Carlton Oaks **Collection Date/Time: 04/19/2021 10:15**

Field ID: G2NE1152 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2241043	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P396876	
	SM 2320 B-2011	Total Alkalinity	80		mg CaCO3/L	P397115	
	SM 2540 D-2011	TSS	4	I	mg/L	P397165	
	SM 4500 F-C-2011	Fluoride	0.26		mg F/L	P396944	
2241044	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P397509	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P397063	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.097		mg N/L	P397045	
	EPA 365.1 Rev. 2.0	Total-P	0.073		mg P/L	P397013	
	SM 5310 B-2011	Organic Carbon	8.8		mg C/L	P397239	
2241045	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P396860	

Sample Location: Little Pottsburg Creek at Atlantic Blvd. **Collection Date/Time: 04/19/2021 09:55**

Field ID: 20030679 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2241040	EPA 180.1 Rev. 2.0	Turbidity	7.9		NTU	P396876	
	SM 2320 B-2011	Total Alkalinity	81		mg CaCO3/L	P397115	
	SM 2540 D-2011	TSS	10		mg/L	P397165	
	SM 4500 F-C-2011	Fluoride	0.19		mg F/L	P396944	
2241041	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P397509	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P397063	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P397045	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P397013	
	SM 5310 B-2011	Organic Carbon	8.1		mg C/L	P397239	
2241042	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.059		mg P/L	P396860	
2241050	EPA 8321B	2,4-D	0.083		ug/L	P396769	
		Acesulfame K	0.19	I	ug/L	P396893	MS
		2,4,5-T	0.0040	U	ug/L	P396769	
		AMPA	0.34	I	ug/L	P396893	
		Sucralose	0.62		ug/L	P396893	
		Acetaminophen	0.079		ug/L	P396769	MS, RPD
		Acetamiprid	0.0020	U	ug/L	P396769	
		Endothall	0.25	U	ug/L	P396893	
		Glufosinate	0.10	U	ug/L	P396893	
		Glyphosate	5.4		ug/L	P396893	
		Afidopyropen	0.0020	U	ug/L	P396769	
		Bentazon	0.026		ug/L	P396769	
		Benzovindiflupyr	0.0020	U	ug/L	P396769	
		Carbamazepine	0.0013	I	ug/L	P396769	
		Clothianidin	0.0020	U	ug/L	P396769	
		Dinotefuran	0.0059	I	ug/L	P396769	
		Diuron	0.0020	U	ug/L	P396769	
		Fenuron	0.016	U	ug/L	P396769	
		Fluridone	0.021		ug/L	P396769	
		Imazapyr	0.16		ug/L	P396769	
		Hydrocodone	0.0020	U	ug/L	P396769	
		Ibuprofen	0.020	U	ug/L	P396769	
		Imidacloprid	0.11		ug/L	P396769	MS
		Linuron	0.0040	U	ug/L	P396769	
		Mandestrobin	0.0020	U	ug/L	P396769	
		MCPP	0.014		ug/L	P396769	MS
		Naproxen	0.0080	U	ug/L	P396769	
		Primidone	0.0040	U	ug/L	P396769	
		Pyraclostrobin	0.0020	U	ug/L	P396769	
		Thiamethoxam	0.0025	I	ug/L	P396769	MS
		Tolfenpyrad	0.0020	U	ug/L	P396769	
		Triclopyr	0.0040	U	ug/L	P396769	RPD
2241051	EPA 200.7 Rev. 4.4	Calcium	65.4		mg/L	P397606	

Field ID: 20030679 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2241051	EPA 200.7 Rev. 4.4	Iron	640		ug/L	P397606	
		Magnesium	110		mg/L	P397606	
		Manganese	41.8		ug/L	P397606	
		Zinc	11	I	ug/L	P397606	
	EPA 200.8 Rev. 5.4	Aluminum	225		ug/L	P397606	
		Antimony	0.31		ug/L	P397606	
		Arsenic	1.35		ug/L	P397606	
		Beryllium	0.017	I	ug/L	P397606	
		Cadmium	0.020	U	ug/L	P397606	
		Chromium	0.61	I	ug/L	P397606	
		Copper	2.23		ug/L	P397606	
		Lead	1.15		ug/L	P397606	
		Nickel	0.51	I	ug/L	P397606	
		Selenium	0.20	U	ug/L	P397606	
		Silver	0.010	U	ug/L	P397606	
		Thallium	0.10	U	ug/L	P397606	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P396876

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P397606

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: P397606

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P397509

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397063

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397045

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397013

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P396860

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

Reference Method: EPA 8321B
Batch ID: P396769

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
2,4,5-T	0.0040	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCPP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P396893

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 2320 B-2011
Batch ID: P397115

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P397165

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P396944

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P397239

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: P397606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	105		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	101		P	85 - 115
Zinc	99.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P397606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.5		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	85.4		P	85 - 115
Cadmium	95.6		P	85 - 115
Chromium	95.8		P	85 - 115
Copper	95.6		P	85 - 115
Lead	93.3		P	85 - 115
Nickel	97.5		P	85 - 115
Selenium	100		P	85 - 115
Silver	98.5		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P397509

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397063

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: P397045

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397013

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P396860

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P396769

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	127		P	30 - 160
2,4,5-T	119		P	30 - 160
Acetaminophen	76.4		P	30 - 150
Acetamiprid	94.3		P	30 - 160
Afidopyropen	73.3		P	30 - 160
Bentazon	37.3		P	30 - 150
Benzovindiflupyr	82.9		P	30 - 160
Carbamazepine	85.9		P	30 - 160
Clothianidin	97.4		P	30 - 160
Dinotefuran	87.2		P	30 - 160
Diuron	76.7		P	30 - 160
Fenuron	98.2		P	30 - 160
Fluridone	97.0		P	30 - 160
Hydrocodone	93.0		P	30 - 160
Ibuprofen	82.3		P	30 - 160
Imazapyr	107		P	30 - 160
Imidacloprid	107		P	30 - 160
Linuron	70.9		P	30 - 160
Mandestrobin	90.0		P	30 - 160
MCPP	140		P	30 - 160
Naproxen	99.3		P	30 - 160
Primidone	75.4		P	30 - 160
Pyraclostrobin	79.3		P	30 - 160
Thiamethoxam	101		P	30 - 160
Tolfenpyrad	56.7		P	30 - 160
Triclopyr	125		P	30 - 160

Reference Method: EPA 8321B
Batch ID: P396893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	124		P	40 - 150
AMPA	97.8		P	40 - 150
Endothall	143		P	40 - 150
Glufosinate	99.6		P	40 - 150
Glyphosate	89.4		P	40 - 140
Sucralose	105		P	40 - 150

Reference Method: SM 2320 B-2011
Batch ID: P397115

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

Reference Method: SM 4500 F-C-2011
Batch ID: P396944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.1		P	90 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P397239

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P397606

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240961	Calcium	104		P	80 - 120
2240961	Iron	106	104	P/P	80 - 120
2240961	Magnesium	98.5		P	80 - 120
2240961	Manganese	101	99.4	P/P	80 - 120
2240961	Zinc	99.8	97.8	P/P	80 - 120
2240990	Calcium	108		P	80 - 120
2240990	Iron	105		P	80 - 120
2240990	Magnesium	105		P	80 - 120
2240990	Manganese	103		P	80 - 120
2240990	Zinc	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P397606

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240961	Aluminum	90.4	94.3	P/P	80 - 120
2240961	Antimony	100	104	P/P	80 - 120
2240961	Arsenic	94.5	100	P/P	80 - 120
2240961	Beryllium	101	90.1	P/P	80 - 120
2240961	Cadmium	96.3	106	P/P	80 - 120
2240961	Chromium	95.0	98.1	P/P	80 - 120
2240961	Copper	92.6	96.9	P/P	80 - 120
2240961	Lead	92.4	104	P/P	80 - 120
2240961	Nickel	92.0	94.8	P/P	80 - 120
2240961	Selenium	95.6	101	P/P	80 - 120
2240961	Silver	96.1	98.7	P/P	80 - 120
2240961	Thallium	101	107	P/P	80 - 120
2240990	Aluminum	93.1		P	80 - 120
2240990	Antimony	99.3		P	80 - 120
2240990	Arsenic	97.1		P	80 - 120
2240990	Beryllium	89.1		P	80 - 120
2240990	Cadmium	100		P	80 - 120
2240990	Chromium	97.4		P	80 - 120
2240990	Copper	99.2		P	80 - 120
2240990	Lead	94.8		P	80 - 120
2240990	Nickel	95.4		P	80 - 120
2240990	Selenium	96.7		P	80 - 120
2240990	Silver	103		P	80 - 120
2240990	Thallium	104		P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P397509

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244325	Ammonia-N	97.2	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2239605	Kjeldahl Nitrogen	101	95.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2239605	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2241041	Total-P	109	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P396860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2241042	O-Phosphate-P	96.9	99.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P396769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240190	2,4-D	130	149	P/P	30 - 160
2240190	2,4,5-T	97.7	132	P/P	30 - 160
2240190	Acetaminophen	96.0	237	P/F	30 - 150
2240190	Acetamiprid	106	109	P/P	30 - 160
2240190	Afidopyropen	80.6	79.3	P/P	30 - 160
2240190	Bentazon	33.0	41.8	P/P	30 - 150
2240190	Benzovindiflupyr	85.2	96.8	P/P	30 - 160
2240190	Carbamazepine	84.5	95.2	P/P	30 - 160
2240190	Clothianidin	120	129	P/P	30 - 160
2240190	Dinotefuran	114	118	P/P	30 - 160
2240190	Diuron	74.4	70.0	P/P	30 - 160
2240190	Fenuron	112	122	P/P	30 - 160
2240190	Fluridone	103	106	P/P	30 - 160
2240190	Hydrocodone	115	125	P/P	30 - 160
2240190	Ibuprofen	69.9	90.7	P/P	30 - 160
2240190	Imazapyr	129	149	P/P	30 - 160
2240190	Imidacloprid	149	185	P/F	30 - 160
2240190	Linuron	89.4	94.7	P/P	30 - 160
2240190	Mandestrobin	88.6	94.9	P/P	30 - 160
2240190	MCPP	152	177	P/F	30 - 160
2240190	Naproxen	90.5	99.2	P/P	30 - 160
2240190	Primidone	108	112	P/P	30 - 160
2240190	Pyraclostrobin	77.8	87.0	P/P	30 - 160
2240190	Thiamethoxam	146	170	P/F	30 - 160
2240190	Tolfenpyrad	62.1	57.3	P/P	30 - 160
2240190	Triclopyr	98.0	149	P/P	30 - 160

Reference Method: EPA 8321B
Batch ID: P396893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240988	Acesulfame K	152	137	F/P	40 - 150
2240988	AMPA	99.5	102	P/P	40 - 150
2240988	Endothall	98.4	90.0	P/P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P396893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240988	Glufosinate	101	94.4	P/P	40 - 150
2240988	Glyphosate	63.8	80.9	P/P	40 - 140
2240988	Sucralose	108	107	P/P	40 - 150

Reference Method: SM 4500 F-C-2011
Batch ID: P396944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240949	Fluoride	98.5	97.9	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P397239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240950	Organic Carbon	96.9	99.7	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P396876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240948	Turbidity	1.48	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P397606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240961	Calcium	1.44	Spike	P	0 - 20
2240961	Iron	1.24	Spike	P	0 - 20
2240961	Magnesium	1.34	Spike	P	0 - 20
2240961	Manganese	2.04	Spike	P	0 - 20
2240961	Zinc	2.04	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P397606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240961	Aluminum	4.18	Spike	P	0 - 20
2240961	Antimony	4.16	Spike	P	0 - 20
2240961	Arsenic	5.86	Spike	P	0 - 20
2240961	Beryllium	11.7	Spike	P	0 - 20
2240961	Cadmium	9.83	Spike	P	0 - 20
2240961	Chromium	3.10	Spike	P	0 - 20
2240961	Copper	4.56	Spike	P	0 - 20
2240961	Lead	11.9	Spike	P	0 - 20
2240961	Nickel	2.97	Spike	P	0 - 20
2240961	Selenium	5.30	Spike	P	0 - 20
2240961	Silver	2.62	Spike	P	0 - 20
2240961	Thallium	6.02	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P397509

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244325	Ammonia-N	2.64	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2239605	Kjeldahl Nitrogen	5.49	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2239605	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2241041	Total-P	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P396860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2241042	O-Phosphate-P	1.72	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P396769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240190	2,4-D	13.6	Spike	P	0 - 30
2240190	2,4,5-T	29.7	Spike	P	0 - 30
2240190	Acetaminophen	84.5	Spike	F	0 - 30
2240190	Acetamiprid	2.55	Spike	P	0 - 30
2240190	Afidopyropen	1.68	Spike	P	0 - 30
2240190	Bentazon	17.0	Spike	P	0 - 30
2240190	Benzovindiflupyr	12.8	Spike	P	0 - 30
2240190	Carbamazepine	11.0	Spike	P	0 - 30
2240190	Clothianidin	7.28	Spike	P	0 - 30
2240190	Dinotefuran	3.60	Spike	P	0 - 30
2240190	Diuron	6.08	Spike	P	0 - 30
2240190	Fenuron	8.32	Spike	P	0 - 30
2240190	Fluridone	2.87	Spike	P	0 - 30
2240190	Hydrocodone	8.23	Spike	P	0 - 30
2240190	Ibuprofen	25.9	Spike	P	0 - 30
2240190	Imazapyr	14.4	Spike	P	0 - 30
2240190	Imidacloprid	19.2	Spike	P	0 - 30
2240190	Linuron	5.80	Spike	P	0 - 30
2240190	Mandestrobin	6.94	Spike	P	0 - 30
2240190	MCPP	14.7	Spike	P	0 - 30
2240190	Naproxen	9.23	Spike	P	0 - 30
2240190	Primidone	2.91	Spike	P	0 - 30
2240190	Pyraclostrobin	11.1	Spike	P	0 - 30
2240190	Thiamethoxam	15.5	Spike	P	0 - 30
2240190	Tolfenpyrad	8.09	Spike	P	0 - 30
2240190	Triclopyr	41.0	Spike	F	0 - 30

Reference Method: EPA 8321B
Batch ID: P396893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240988	Acesulfame K	10.0	Spike	P	0 - 30
2240988	AMPA	2.79	Spike	P	0 - 30
2240988	Endothall	8.93	Spike	P	0 - 30
2240988	Glufosinate	6.28	Spike	P	0 - 30
2240988	Glyphosate	23.7	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P396893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240988	Sucralose	0.828	Spike	P	0 - 30

Reference Method: SM 2320 B-2011
Batch ID: P397115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240949	Total Alkalinity	0.595	Sample	P	0 - 8.1

Reference Method: SM 2540 D-2011
Batch ID: P397165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2241567	TSS	8.96	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P396944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240949	Fluoride	0.454	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P397239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240950	Organic Carbon	2.22	Spike	P	0 - 20

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2241050
Field Sample ID: 20030679

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	135	P	30 - 160
EPA 8321B	Acetaminophen-d4	108	P	30 - 160
EPA 8321B	Carbamazepine-d10	104	P	30 - 160
EPA 8321B	Diuron-d6	72.7	P	30 - 160
EPA 8321B	Endothall-d6	126	P	40 - 160
EPA 8321B	Endothall-d6	126	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	146	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	146	P	40 - 160
EPA 8321B	Ibuprofen-d3	101	P	30 - 160
EPA 8321B	Primidone-d5	137	P	30 - 160
EPA 8321B	Sucralose-d6	110	P	30 - 160
EPA 8321B	Sucralose-d6	110	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A104857
Included Lab Sample IDs: 2241042, 2241045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	99.9	P/P	90 - 110
O-Phosphate-P	99.9	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A104861
Included Lab Sample IDs: 2241040, 2241043

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

Reference Method: SM 4500 F-C-2011
Run ID: A104891
Included Lab Sample IDs: 2241040, 2241043

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

Reference Method: EPA 8321B
Run ID: A104895
Included Lab Sample IDs: 2241050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	128	96.0	P/P	40 - 160
AMPA	107	102	P/P	40 - 160
Endothall	139	104	P/P	40 - 160
Glufosinate	83.4	103	P/P	40 - 160
Glyphosate	89.6	86.0	P/P	40 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A104928
Included Lab Sample IDs: 2241041, 2241044

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A104947
Included Lab Sample IDs: 2241041

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

Reference Method: SM 2320 B-2011
Run ID: A104962
Included Lab Sample IDs: 2241040, 2241043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.6	98.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A104990
Included Lab Sample IDs: 2241041, 2241044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.8	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A104993
Included Lab Sample IDs: 2241044

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

Reference Method: SM 5310 B-2011
Run ID: A105018
Included Lab Sample IDs: 2241041, 2241044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	95.3	P/P	90 - 110
Organic Carbon	96.1	95.7	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A105083
Included Lab Sample IDs: 2241050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	111	110	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A105098
Included Lab Sample IDs: 2241050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	97.4	116	P/P	50 - 150
2,4,5-T	118	109	P/P	50 - 150
Acetaminophen	93.2	125	P/P	60 - 160
Acetamiprid	116	122	P/P	50 - 150
Afidopyropen	108	133	P/P	50 - 150
Bentazon	137	132	P/P	50 - 160
Benzovindiflupyr	101	114	P/P	50 - 160
Carbamazepine	104	119	P/P	60 - 150
Clothianidin	107	108	P/P	60 - 150
Dinotefuran	111	135	P/P	50 - 150
Diuron	88.3	110	P/P	60 - 160
Fenuron	107	116	P/P	60 - 150
Fluridone	117	129	P/P	60 - 160
Hydrocodone	113	130	P/P	60 - 150
Ibuprofen	86.0	89.7	P/P	50 - 160
Imazapyr	126	129	P/P	50 - 150
Imidacloprid	102	124	P/P	60 - 150
Linuron	100	122	P/P	60 - 150
Mandestrobin	109	117	P/P	50 - 150
MCPP	112	113	P/P	50 - 150
Naproxen	113	116	P/P	50 - 160
Primidone	95.8	110	P/P	60 - 150

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A105098
Included Lab Sample IDs: 2241050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Pyraclostrobin	116	120	P/P	60 - 150
Thiamethoxam	116	131	P/P	50 - 150
Tolfenpyrad	116	127	P/P	60 - 150
Triclopyr	98.7	115	P/P	50 - 150

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A105117
Included Lab Sample IDs: 2241041, 2241044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	97.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A105239
Included Lab Sample IDs: 2241051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	104	P/P	90 - 110
Iron	100	102	P/P	90 - 110
Magnesium	99.3	102	P/P	90 - 110
Manganese	102	104	P/P	90 - 110
Zinc	102	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105242
Included Lab Sample IDs: 2241051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	104	P/P	90 - 110
Antimony	105	105	P/P	90 - 110
Arsenic	100	99.5	P/P	90 - 110
Beryllium	99.9	98.5	P/P	90 - 110
Cadmium	102	103	P/P	90 - 110
Chromium	101	101	P/P	90 - 110
Copper	98.8	98.5	P/P	90 - 110
Nickel	98.8	99.5	P/P	90 - 110
Selenium	103	102	P/P	90 - 110
Silver	99.8	101	P/P	90 - 110
Thallium	101	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105268
Included Lab Sample IDs: 2241051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	106	96.6	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						1.48	
EPA 200.7 Rev. 4.4	Calcium	107	104	108				1.44
	Iron	105	106	104	105			1.24
	Magnesium	101	98.5	105				1.34
	Manganese	101	101	99.4	103			2.04
	Zinc	99.3	99.8	97.8	104			2.04
EPA 200.8 Rev. 5.4	Aluminum	98.5	90.4	94.3	93.1			4.18
	Antimony	103	100	104	99.3			4.16
	Arsenic	101	94.5	100	97.1			5.86
	Beryllium	85.4	101	90.1	89.1			11.7
	Cadmium	95.6	96.3	106	100			9.83
	Chromium	95.8	95.0	98.1	97.4			3.10
	Copper	95.6	92.6	96.9	99.2			4.56
	Lead	93.3	92.4	104	94.8			11.9
	Nickel	97.5	92.0	94.8	95.4			2.97
	Selenium	100	95.6	101	96.7			5.30
	Silver	98.5	96.1	98.7	103			2.62
	Thallium	104	101	107	104			6.02
EPA 350.1 Rev. 2.0	Ammonia-N	102	97.2	99.8				2.64
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	101	95.5				5.49
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100	100				0.0
EPA 365.1 Rev. 2.0	Total-P	106	109	108				1.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	96.9	99.6				1.72
EPA 8321B	2,4-D	127	130	149				13.6
	2,4,5-T	119	97.7	132				29.7
	Acesulfame K	124	152	137				10.0
	Acetaminophen	76.4	96.0	237				84.5
	Acetamiprid	94.3	106	109				2.55
	Afidopyropen	73.3	80.6	79.3				1.68
	AMPA	97.8	102	99.5				2.79
	Bentazon	37.3	33.0	41.8				17.0
	Benzovindiflupyr	82.9	85.2	96.8				12.8
	Carbamazepine	85.9	84.5	95.2				11.0
	Clothianidin	97.4	120	129				7.28
	Dinotefuran	87.2	114	118				3.60
	Diuron	76.7	74.4	70.0				6.08
	Endothall	143	98.4	90.0				8.93
	Fenuron	98.2	112	122				8.32
	Fluridone	97.0	103	106				2.87
	Glufosinate	99.6	94.4	101				6.28
	Glyphosate	89.4	63.8	80.9				23.7
	Hydrocodone	93.0	115	125				8.23
	Ibuprofen	82.3	69.9	90.7				25.9
	Imazapyr	107	129	149				14.4
	Imidacloprid	107	149	185				19.2
	Linuron	70.9	89.4	94.7				5.80
	Mandestrobin	90.0	88.6	94.9				6.94
	MCPP	140	152	177				14.7
	Naproxen	99.3	90.5	99.2				9.23
	Primidone	75.4	108	112				2.91
	Pyraclostrobin	79.3	77.8	87.0				11.1
	Sucralose	105	108	107				0.828
	Thiamethoxam	101	146	170				15.5
	Tolfenpyrad	56.7	62.1	57.3				8.09

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 8321B	Triclopyr	125	98.0	149			41.0
SM 2320 B-2011	Total Alkalinity	100				0.595	
SM 2540 D-2011	TSS					8.96	
SM 4500 F-C-2011	Fluoride	99.1	98.5	97.9			0.454
SM 5310 B-2011	Organic Carbon	96.9	96.9	99.7			2.22

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2241040, 2241043
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2241051
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2241051
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2241041, 2241044
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2241041, 2241044
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2241041, 2241044
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2241041, 2241044
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2241042, 2241045
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2241050
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2241050
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2241040, 2241043
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2241040, 2241043
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2241040, 2241043
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2241041, 2241044

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	04/20/2021			04/20/2021 15:50	Yen Ta	2241040, 2241043
EPA 200.7 Rev. 4.4	04/20/2021	05/04/2021 13:55	Elliott D. Healy	05/06/2021 16:20	Betina Topolski	2241051
	04/20/2021	05/04/2021 13:55	Elliott D. Healy	05/06/2021 16:28	Betina Topolski	2241051
EPA 200.8 Rev. 5.4	04/20/2021	05/04/2021 13:55	Elliott D. Healy	05/06/2021 16:21	McKinley C Carter	2241051
	04/20/2021	05/04/2021 13:55	Elliott D. Healy	05/08/2021 03:59	Alexander Thompson	2241051
EPA 350.1 Rev. 2.0	04/20/2021			05/01/2021 10:35	Ping Hua	2241041
	04/20/2021			05/01/2021 10:36	Ping Hua	2241044
EPA 351.2 Rev. 2.0	04/20/2021	04/23/2021 13:54	Benjamin T. Nordmann	04/26/2021 14:14	Virginia P. Brown	2241041
	04/20/2021	04/23/2021 13:54	Benjamin T. Nordmann	04/26/2021 14:15	Virginia P. Brown	2241044
EPA 353.2 Rev. 2.0	04/20/2021			04/23/2021 09:03	Beverly Y. Sanders	2241041
	04/20/2021			04/23/2021 09:04	Beverly Y. Sanders	2241044
EPA 365.1 Rev. 2.0	04/20/2021	04/22/2021 16:03	Yen Ta	04/23/2021 15:42	Shengyu Ding	2241041
	04/20/2021	04/22/2021 16:03	Yen Ta	04/26/2021 16:15	Shengyu Ding	2241044
EPA 365.1 Rev. 2.0 dissolved	04/20/2021			04/20/2021 14:46	Patrick M. Roche	2241042
	04/20/2021			04/20/2021 14:55	Patrick M. Roche	2241045
EPA 8321B	04/20/2021	04/20/2021 14:00	Hoor Shaik	04/30/2021 15:33	Juyoung Kim	2241050
	04/20/2021	04/21/2021 12:00	Rebecca Ware	04/21/2021 14:07	Rebecca Ware	2241050
	04/20/2021	04/21/2021 12:00	Rebecca Ware	04/28/2021 21:54	Rebecca Ware	2241050
SM 2320 B-2011	04/20/2021			04/23/2021 21:21	Dale L. Simmons	2241040
	04/20/2021			04/23/2021 21:45	Dale L. Simmons	2241043
SM 2540 D-2011	04/20/2021			04/23/2021 15:31	Yijie Li	2241040, 2241043
SM 4500 F-C-2011	04/20/2021			04/21/2021 23:37	Dale L. Simmons	2241040
	04/20/2021			04/22/2021 00:09	Dale L. Simmons	2241043
SM 5310 B-2011	04/20/2021			04/23/2021 23:23	Lauren Lees	2241041
	04/20/2021			04/23/2021 23:55	Lauren Lees	2241044