

Chemical Analysis Report

TLH-ROC-2022-05-31-02

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

Event Description: **Run 8**
Request ID: **RQ-2022-02-21-75**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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

Date Certified: 22-JUN-2022 09:19

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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 and Nutrients.

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: Brothers River

Collection Date/Time: 05/31/2022 11:00

Field ID: G2TLHR0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2330729	DEP SOP: NU-094-1	Color (true)**	22	A	PCU	P414601	
	EPA 180.1 Rev. 2.0	Turbidity	19		NTU	P414605	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P414982	
		Sulfate	5.1		mg SO4/L	P414986	
	SM 2320 B-2011	Total Alkalinity	47		mg CaCO3/L	P414793	
	SM 2540 C-2011	TDS	80		mg/L	P414802	
	SM 2540 D-2011	TSS	17		mg/L	P414768	
	SM 4500-F- C-2011	Fluoride	0.051	I	mg F/L	P414800	
2330731	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P415377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P414857	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.49		mg N/L	P415290	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P414629	
	SM 5310 B-2011	Organic Carbon	4.4		mg C/L	P414683	
2330733	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P414593	
2330737	EPA 200.7 Rev. 4.4	Calcium	16.4		mg/L	P414616	
		Iron	470		ug/L	P414616	
		Magnesium	1.80		mg/L	P414616	
		Potassium	1.4		mg/L	P414616	
		Sodium	5.0		mg/L	P414616	
		Strontium	31.6		ug/L	P414616	
		Tin	3.0	U	ug/L	P414616	
	EPA 200.8 Rev. 5.4	Titanium	4.5		ug/L	P414616	
		Vanadium	2.0	U	ug/L	P414616	
		Zinc	5.0	U	ug/L	P414616	
		Aluminum	293		ug/L	P414616	
		Antimony	0.053	I	ug/L	P414616	
		Arsenic	0.38		ug/L	P414616	
		Barium	22.2		ug/L	P414616	
		Beryllium	0.039	I	ug/L	P414616	
		Boron**	13.7		ug/L	P414616	
		Cadmium	0.020	U	ug/L	P414616	
		Chromium	0.47	I	ug/L	P414616	
		Cobalt	0.227		ug/L	P414616	
		Copper	0.57	I	ug/L	P414616	
		Lead	0.37	I	ug/L	P414616	
		Manganese	65.5		ug/L	P414616	
		Molybdenum	0.20	I	ug/L	P414616	
		Nickel	0.50	U	ug/L	P414616	
		Selenium	0.20	U	ug/L	P414616	
		Silver	0.010	U	ug/L	P414616	
		Thallium	0.10	U	ug/L	P414616	
	SM 2340 B-2011	Hardness	48.3		mg/L	P414616	

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: Apalachicola River .8 miles upstream Owl Creek

Collection Date/Time: 05/31/2022 10:20

Field ID: G2TLHR0042

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2330730	DEP SOP: NU-094-1	Color (true)**	24		PCU	P414601	
	EPA 180.1 Rev. 2.0	Turbidity	19		NTU	P414605	
	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P414982	
		Sulfate	5.2		mg SO4/L	P414986	
	SM 2320 B-2011	Total Alkalinity	46		mg CaCO3/L	P415107	
	SM 2540 C-2011	TDS	73		mg/L	P414802	
	SM 2540 D-2011	TSS	18		mg/L	P414768	
	SM 4500-F- C-2011	Fluoride	0.051	I	mg F/L	P415111	
2330732	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P415079	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P414691	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.52		mg N/L	P415070	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P414629	
	SM 5310 B-2011	Organic Carbon	4.4		mg C/L	P414683	
2330734	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P414593	
2330738	EPA 200.7 Rev. 4.4	Calcium	16.2		mg/L	P414616	
		Iron	900		ug/L	P414616	
		Magnesium	1.84		mg/L	P414616	
		Potassium	1.4		mg/L	P414616	
		Sodium	5.2		mg/L	P414616	
		Strontium	31.6		ug/L	P414616	
		Tin	3.0	U	ug/L	P414616	
	EPA 200.8 Rev. 5.4	Titanium	19.0		ug/L	P414616	
		Vanadium	2.1	I	ug/L	P414616	
		Zinc	5.0	U	ug/L	P414616	
		Aluminum	808		ug/L	P414616	
		Antimony	0.051	I	ug/L	P414616	
		Arsenic	0.46		ug/L	P414616	
		Barium	24.1		ug/L	P414616	
		Beryllium	0.059		ug/L	P414616	
		Boron**	13.6		ug/L	P414616	
		Cadmium	0.020	U	ug/L	P414616	
		Chromium	1.3	I	ug/L	P414616	
		Cobalt	0.374		ug/L	P414616	
		Copper	0.74	I	ug/L	P414616	
		Lead	0.55		ug/L	P414616	
		Manganese	57.5		ug/L	P414616	
		Molybdenum	0.24	I	ug/L	P414616	
		Nickel	0.62	I	ug/L	P414616	
		Selenium	0.20	U	ug/L	P414616	
		Silver	0.010	U	ug/L	P414616	
		Thallium	0.10	U	ug/L	P414616	
	SM 2340 B-2011	Hardness	48.1		mg/L	P414616	

Field ID: G2TLHR0042

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P414601

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P414605

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P414616

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P414616

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	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
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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: P414982

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414986

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415079

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415377

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414691

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414857

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415070

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415290

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414593

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P414793

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

Reference Method: SM 2320 B-2011
Batch ID: P415107

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

Reference Method: SM 2540 C-2011
Batch ID: P414802

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P414768

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P414800

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P415111

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P414683

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P414601

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	105		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P414605

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.4		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P414616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	105		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	103		P	85 - 115
Sodium	104		P	85 - 115
Strontium	102		P	85 - 115
Tin	103		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	97.5		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P414616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.7		P	85 - 115
Antimony	99.5		P	85 - 115
Arsenic	96.8		P	85 - 115
Barium	102		P	85 - 115
Beryllium	95.6		P	85 - 115
Boron	101		P	85 - 115
Cadmium	97.5		P	85 - 115
Chromium	97.0		P	85 - 115
Cobalt	97.1		P	85 - 115
Copper	94.2		P	85 - 115
Lead	96.4		P	85 - 115
Manganese	96.4		P	85 - 115
Molybdenum	96.9		P	85 - 115
Nickel	96.3		P	85 - 115
Selenium	95.4		P	85 - 115
Silver	99.3		P	85 - 115
Thallium	97.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414982

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415079

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415377

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414857

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415070

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415290

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414593

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P414793

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

Reference Method: SM 2320 B-2011
Batch ID: P415107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P414800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P415111

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P414683

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P414616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330900	Calcium	112		P	80 - 120
2330900	Iron	111		P	80 - 120
2330900	Magnesium	112		P	80 - 120
2330900	Potassium	112		P	80 - 120
2330900	Sodium	110		P	80 - 120
2330900	Strontium	106		P	80 - 120
2330900	Tin	104		P	80 - 120
2330900	Titanium	107		P	80 - 120
2330900	Vanadium	100		P	80 - 120
2330900	Zinc	103		P	80 - 120
2331183	Calcium	105		P	80 - 120
2331183	Iron	107	110	P/P	80 - 120
2331183	Magnesium	106	109	P/P	80 - 120
2331183	Potassium	106	108	P/P	80 - 120
2331183	Sodium	103	107	P/P	80 - 120
2331183	Strontium	104	106	P/P	80 - 120
2331183	Tin	103	105	P/P	80 - 120
2331183	Titanium	104	107	P/P	80 - 120
2331183	Vanadium	99.2	101	P/P	80 - 120
2331183	Zinc	101	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P414616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330900	Aluminum	98.3		P	80 - 120
2330900	Antimony	102		P	80 - 120
2330900	Arsenic	98.3		P	80 - 120
2330900	Barium	103		P	80 - 120
2330900	Beryllium	99.5		P	80 - 120
2330900	Boron	101		P	80 - 120
2330900	Cadmium	98.5		P	80 - 120
2330900	Chromium	99.6		P	80 - 120
2330900	Cobalt	98.9		P	80 - 120
2330900	Copper	94.7		P	80 - 120
2330900	Lead	100		P	80 - 120
2330900	Manganese	98.9		P	80 - 120
2330900	Molybdenum	99.5		P	80 - 120
2330900	Nickel	97.7		P	80 - 120
2330900	Selenium	95.6		P	80 - 120
2330900	Silver	101		P	80 - 120
2330900	Thallium	101		P	80 - 120
2331183	Aluminum	99.8	103	P/P	80 - 120
2331183	Antimony	100	100	P/P	80 - 120
2331183	Arsenic	96.9	98.6	P/P	80 - 120
2331183	Barium	102	102	P/P	80 - 120
2331183	Beryllium	95.2	96.3	P/P	80 - 120
2331183	Boron	102	101	P/P	80 - 120
2331183	Cadmium	98.6	98.3	P/P	80 - 120
2331183	Chromium	97.6	97.4	P/P	80 - 120
2331183	Cobalt	96.4	97.4	P/P	80 - 120
2331183	Copper	94.4	95.5	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P414616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2331183	Lead	98.2	97.7	P/P	80 - 120
2331183	Manganese	97.6	98.6	P/P	80 - 120
2331183	Molybdenum	99.5	100	P/P	80 - 120
2331183	Nickel	95.6	96.6	P/P	80 - 120
2331183	Selenium	93.8	96.4	P/P	80 - 120
2331183	Silver	101	101	P/P	80 - 120
2331183	Thallium	99.8	99.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330377	Chloride	96.5		P	90 - 110
2330730	Chloride	95.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330377	Sulfate	92.8		P	90 - 110
2330730	Sulfate	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330467	Ammonia-N	96.4	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330731	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2331021	Kjeldahl Nitrogen	98.0	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330822	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2331155	NO2NO3-N	102	99.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330561	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330824	O-Phosphate-P	98.4	99.7	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P414800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330291	Fluoride	98.1	98.7	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P415111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330857	Fluoride	98.0	98.6	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P414683

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330379	Organic Carbon	93.4	92.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P414601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330729	Color (true)	13.2	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P414605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330699	Turbidity	2.89	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P414616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2331183	Calcium	1.43	Spike	P	0 - 20
2331183	Iron	2.11	Spike	P	0 - 20
2331183	Magnesium	2.45	Spike	P	0 - 20
2331183	Potassium	1.64	Spike	P	0 - 20
2331183	Sodium	1.73	Spike	P	0 - 20
2331183	Strontium	1.41	Spike	P	0 - 20
2331183	Tin	1.44	Spike	P	0 - 20
2331183	Titanium	2.73	Spike	P	0 - 20
2331183	Vanadium	2.17	Spike	P	0 - 20
2331183	Zinc	2.60	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P414616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2331183	Aluminum	2.13	Spike	P	0 - 20
2331183	Antimony	0.0862	Spike	P	0 - 20
2331183	Arsenic	1.73	Spike	P	0 - 20
2331183	Barium	0.219	Spike	P	0 - 20
2331183	Beryllium	1.14	Spike	P	0 - 20
2331183	Boron	1.28	Spike	P	0 - 20
2331183	Cadmium	0.291	Spike	P	0 - 20
2331183	Chromium	0.210	Spike	P	0 - 20
2331183	Cobalt	0.930	Spike	P	0 - 20
2331183	Copper	1.25	Spike	P	0 - 20
2331183	Lead	0.422	Spike	P	0 - 20
2331183	Manganese	0.664	Spike	P	0 - 20
2331183	Molybdenum	0.686	Spike	P	0 - 20
2331183	Nickel	1.01	Spike	P	0 - 20
2331183	Selenium	2.75	Spike	P	0 - 20
2331183	Silver	0.179	Spike	P	0 - 20
2331183	Thallium	0.577	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330377	Chloride	0.292	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330377	Sulfate	0.316	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330467	Ammonia-N	0.562	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330731	Ammonia-N	0.523	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330319	Kjeldahl Nitrogen	0.584	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2331021	Kjeldahl Nitrogen	3.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330822	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2331155	NO2NO3-N	1.59	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P414629

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330561	Total-P	0.0219	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P414593

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330824	O-Phosphate-P	1.31	Spike	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P414793

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330291	Total Alkalinity	0.629	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011

Batch ID: P415107

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330857	Total Alkalinity	0.159	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011

Batch ID: P414802

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330698	TDS	2.14	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011

Batch ID: P414800

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330291	Fluoride	0.489	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011

Batch ID: P415111

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330857	Fluoride	0.492	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011

Batch ID: P414683

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330379	Organic Carbon	0.862	Spike	P	0 - 20

Quality Assurance Report Precision

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A112551

Included Lab Sample IDs: 2330733, 2330734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	98.3	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A112553

Included Lab Sample IDs: 2330729, 2330730

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	105	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A112555

Included Lab Sample IDs: 2330729, 2330730

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A112580

Included Lab Sample IDs: 2330737, 2330738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.0	98.5	P/P	90 - 110
Antimony	98.3	99.7	P/P	90 - 110
Arsenic	97.0	95.7	P/P	90 - 110
Barium	98.4	98.6	P/P	90 - 110
Beryllium	95.5	95.5	P/P	90 - 110
Boron	96.3	95.9	P/P	90 - 110
Cadmium	96.9	97.5	P/P	90 - 110
Chromium	97.0	97.9	P/P	90 - 110
Cobalt	97.6	96.0	P/P	90 - 110
Copper	96.1	94.7	P/P	90 - 110
Lead	95.9	95.5	P/P	90 - 110
Manganese	96.9	97.0	P/P	90 - 110
Molybdenum	97.0	96.4	P/P	90 - 110
Nickel	96.6	95.5	P/P	90 - 110
Selenium	96.5	96.4	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Thallium	94.7	94.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A112583

Included Lab Sample IDs: 2330731, 2330732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A112626

Included Lab Sample IDs: 2330731, 2330732

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A112626

Included Lab Sample IDs: 2330731, 2330732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	97.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A112633

Included Lab Sample IDs: 2330729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.5	97.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A112633

Included Lab Sample IDs: 2330729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A112640

Included Lab Sample IDs: 2330737, 2330738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.0	103	P/P	90 - 110
Iron	100	106	P/P	90 - 110
Magnesium	99.2	105	P/P	90 - 110
Potassium	100	106	P/P	90 - 110
Sodium	97.8	104	P/P	90 - 110
Strontium	99.2	101	P/P	90 - 110
Tin	99.2	98.3	P/P	90 - 110
Titanium	96.8	98.4	P/P	90 - 110
Vanadium	99.2	100	P/P	90 - 110
Zinc	97.6	96.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A112672

Included Lab Sample IDs: 2330732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A112707

Included Lab Sample IDs: 2330729, 2330730

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	99.7	P/P	90 - 110
Chloride	99.7	99.5	P/P	90 - 110
Sulfate	100	99.9	P/P	90 - 110
Sulfate	99.8	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A112751

Included Lab Sample IDs: 2330732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A112754

Included Lab Sample IDs: 2330732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.0	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A112761

Included Lab Sample IDs: 2330731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.0	99.6	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A112774

Included Lab Sample IDs: 2330730

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

Reference Method: SM 4500-F- C-2011

Run ID: A112774

Included Lab Sample IDs: 2330730

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A112865

Included Lab Sample IDs: 2330731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A112905

Included Lab Sample IDs: 2330731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.3	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 SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	105				13.2	
EPA 180.1 Rev. 2.0	Turbidity	97.4				2.89	
EPA 200.7 Rev. 4.4	Calcium	103	112	105			1.43
	Iron	105	111	107	110		2.11
	Magnesium	105	112	106	109		2.45
	Potassium	103	112	106	108		1.64
	Sodium	104	110	103	107		1.73
	Strontium	102	106	104	106		1.41
	Tin	103	104	103	105		1.44
	Titanium	104	107	104	107		2.73
	Vanadium	97.5	100	99.2	101		2.17
	Zinc	101	103	101	104		2.60
EPA 200.8 Rev. 5.4	Aluminum	98.7	99.8	103	98.3		2.13
	Antimony	99.5	100	100	102		0.0862
	Arsenic	96.8	96.9	98.6	98.3		1.73
	Barium	102	102	102	103		0.219
	Beryllium	95.6	95.2	96.3	99.5		1.14
	Boron	101	102	101	101		1.28
	Cadmium	97.5	98.6	98.3	98.5		0.291
	Chromium	97.0	97.6	97.4	99.6		0.210
	Cobalt	97.1	96.4	97.4	98.9		0.930
	Copper	94.2	94.4	95.5	94.7		1.25
	Lead	96.4	98.2	97.7	100		0.422
	Manganese	96.4	97.6	98.6	98.9		0.664
	Molybdenum	96.9	99.5	100	99.5		0.686
	Nickel	96.3	95.6	96.6	97.7		1.01
	Selenium	95.4	93.8	96.4	95.6		2.75
	Silver	99.3	101	101	101		0.179
	Thallium	97.4	99.8	99.3	101		0.577
EPA 300.0 Rev. 2.1	Chloride	98.7	96.5	95.2		0.292	
	Sulfate	97.4	92.8	96.2		0.316	
EPA 350.1 Rev. 2.0	Ammonia-N	97.4	96.4	97.0			0.562
	Ammonia-N	103	103	104			0.523
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107					0.584
	Kjeldahl Nitrogen	95.9	98.0	103			3.46
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
	NO2NO3-N	104	102	99.6			1.59
EPA 365.1 Rev. 2.0	Total-P	103	104	104			0.0219
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	98.4	99.7			1.31
SM 2320 B-2011	Total Alkalinity	98.3				0.629	
	Total Alkalinity	102				0.159	
SM 2540 C-2011	TDS					2.14	
SM 4500-F- C-2011	Fluoride	98.4	98.1	98.7			0.489
	Fluoride	98.3	98.0	98.6			0.492
SM 5310 B-2011	Organic Carbon	95.2	93.4	92.4			0.862

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2330729, 2330730
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2330729, 2330730
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2330737, 2330738

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2330737, 2330738
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2330729, 2330730
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2330729, 2330730
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2330731, 2330732
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2330731, 2330732
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2330731, 2330732
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2330731, 2330732
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2330733, 2330734
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2330729, 2330730
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2330737, 2330738
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2330729, 2330730
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2330729, 2330730
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2330729, 2330730
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2330731, 2330732

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	05/31/2022			06/01/2022 14:56	Samantha L Bates	2330729, 2330730
EPA 180.1 Rev. 2.0	05/31/2022			06/01/2022 13:44	Khloe J Berg	2330729
	05/31/2022			06/01/2022 13:46	Khloe J Berg	2330730
EPA 200.7 Rev. 4.4	05/31/2022	06/02/2022 10:10	Emily M Philpot	06/06/2022 18:26	McKinley C Carter	2330737
	05/31/2022	06/02/2022 10:10	Emily M Philpot	06/06/2022 18:31	McKinley C Carter	2330738
EPA 200.8 Rev. 5.4	05/31/2022	06/02/2022 10:10	Emily M Philpot	06/02/2022 18:00	Alexander Thompson	2330737
	05/31/2022	06/02/2022 10:10	Emily M Philpot	06/02/2022 18:10	Alexander Thompson	2330738
EPA 300.0 Rev. 2.1	05/31/2022			06/08/2022 12:17	Anna M. Plaviak	2330730
	05/31/2022			06/08/2022 14:42	Anna M. Plaviak	2330729
EPA 350.1 Rev. 2.0	05/31/2022			06/10/2022 15:40	Ping Hua	2330732
	05/31/2022			06/17/2022 13:56	Ping Hua	2330731
EPA 351.2 Rev. 2.0	05/31/2022	06/07/2022 09:42	Samantha L Bates	06/08/2022 12:02	Alexandra J Mattheus	2330732
	05/31/2022	06/09/2022 16:19	Samantha L Bates	06/10/2022 16:00	Alexandra J Mattheus	2330731
EPA 353.2 Rev. 2.0	05/31/2022			06/10/2022 17:41	Nathaniel J Jones	2330732
	05/31/2022			06/13/2022 18:27	Touraj Touran	2330731
EPA 365.1 Rev. 2.0	05/31/2022	06/03/2022 15:50	Adam P Silver	06/06/2022 13:50	James L Waggeberby	2330731
	05/31/2022	06/03/2022 15:50	Adam P Silver	06/06/2022 13:51	James L Waggeberby	2330732
EPA 365.1 Rev. 2.0 dissolved	05/31/2022			06/01/2022 14:06	James L Waggeberby	2330733, 2330734
SM 2320 B-2011	05/31/2022			06/03/2022 06:53	Dale L. Simmons	2330729
	05/31/2022			06/12/2022 19:21	Dale L. Simmons	2330730
SM 2340 B-2011	05/31/2022			06/06/2022 18:26	McKinley C Carter	2330737
	05/31/2022			06/06/2022 18:31	McKinley C Carter	2330738
SM 2540 C-2011	05/31/2022			06/03/2022 14:44	Ping Hua	2330729, 2330730
SM 2540 D-2011	05/31/2022			06/03/2022 14:44	Ping Hua	2330729, 2330730
SM 4500-F- C-2011	05/31/2022			06/03/2022 06:53	Dale L. Simmons	2330729
	05/31/2022			06/12/2022 19:21	Dale L. Simmons	2330730
SM 5310 B-2011	05/31/2022			06/03/2022 03:29	Judith K. Clark	2330731
	05/31/2022			06/03/2022 03:43	Judith K. Clark	2330732