

Chemical Analysis Report

NE-DIST-2017-05-04-02

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

Event Description: **Kit C-WBID 2213R/2592**

Request ID: **RQ-2017-05-01-89**

Customer: **NE-DIST**

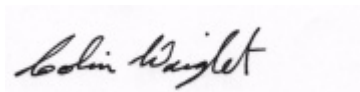
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 01-JUN-2017 18:01

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular background.

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 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: Unnamed Crk @ SR 13 E OF McCullough Crk **Collection Date/Time: 05/03/2017 14:15**

Field ID: G2NE0563 05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896451	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P324690	
	EPA 300.0 Rev. 2.1	Chloride	480		mg Cl/L	P325109	
		Sulfate	700		mg SO4/L	P325112	
	SM 2120 B	Color (true)	21		PCU	P324633	
	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P325401	
	SM 2540 C-97	TDS	1.99E+03		mg/L	P325501	
	SM 2540 D-97	TSS	4	I	mg/L	P325304	
	SM 4500 F-C-97	Fluoride	0.66		mg F/L	P325404	RPD
1896453	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P324642	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P324986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P324973	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P324809	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P324770	
1896455	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P324712	
1896465	EPA 200.7 Rev. 4.4	Boron	93		ug/L	P324943	
		Calcium	245		mg/L	P324943	
		Iron	210		ug/L	P324943	
		Magnesium	120		mg/L	P324943	
		Potassium	8.4		mg/L	P324943	
		Sodium	256		mg/L	P324943	
		Zinc	5.0	U	ug/L	P324943	
	EPA 200.8 Rev. 5.4	Arsenic	0.54		ug/L	P324943	
		Cadmium	0.020	U	ug/L	P324943	
		Chromium	0.40	U	ug/L	P324943	
		Copper	0.36	I	ug/L	P324943	
		Lead	0.050	U	ug/L	P324943	
		Nickel	0.20	U	ug/L	P324943	
		Silver	0.010	U	ug/L	P324943	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Mill Branch @ McCormick Rd

Collection Date/Time: 05/03/2017 12:15

Field ID: G2NE0585 05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896452	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P324690	
	EPA 300.0 Rev. 2.1	Chloride	990		mg Cl/L	P325109	
		Sulfate	380		mg SO4/L	P325112	
	SM 2120 B	Color (true)	18		PCU	P324633	
	SM 2320 B-97	Total Alkalinity	106		mg CaCO3/L	P325400	
	SM 2540 C-97	TDS	2.32E+03		mg/L	P325501	
	SM 2540 D-97	TSS	4	I	mg/L	P325304	
	SM 4500 F-C-97	Fluoride	0.38		mg F/L	P325739	RPD

Field ID: G2NE0585 05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896454	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P324642	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P324986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.061		mg N/L	P324974	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P324809	
	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P324770	
1896456	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P324712	
1896466	EPA 200.7 Rev. 4.4	Boron	73		ug/L	P324943	
		Calcium	202		mg/L	P324943	
		Iron	520		ug/L	P324943	
		Magnesium	108		mg/L	P324943	
		Potassium	9.0		mg/L	P324943	
		Sodium	478		mg/L	P324943	
		Zinc	5.0	U	ug/L	P324943	
	EPA 200.8 Rev. 5.4	Arsenic	0.68		ug/L	P324943	
		Cadmium	0.022	I	ug/L	P324943	
		Chromium	0.40	U	ug/L	P324943	
		Copper	0.37	I	ug/L	P324943	
		Lead	0.050	U	ug/L	P324943	
		Nickel	0.29	I	ug/L	P324943	
		Silver	0.010	U	ug/L	P324943	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Unnamed Crk @ SR 13 E OF McCullough Crk Collection Date/Time: 05/03/2017 14:15

Field ID: G2NE0563 05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896463	EPA 8321B	Sucralose**	0.010	U	ug/L	P324480	
	USGS O-2060-01	2,4-D	8.0E-04	U	ug/L	P324481	
		Diuron	8.0E-04	U	ug/L	P324481	
		Fenuron	0.0040	U	ug/L	P324481	
		Imidacloprid	0.049		ug/L	P324481	MS
		Bentazon	8.0E-04	U	ug/L	P324481	
		Linuron	0.0040	U	ug/L	P324481	
		Acetaminophen**	0.0080	U	ug/L	P324481	
		MCP	8.0E-04	U	ug/L	P324481	
		Carbamazepine**	4.0E-04	U	ug/L	P324481	
		Triclopyr**	0.0040	U	ug/L	P324481	
		Primidone**	0.0040	U	ug/L	P324481	
		Fluridone**	4.0E-04	U	ug/L	P324481	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy and precision for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

USGS O-2060-01: Methomyl = 0.14 ug/L.

Sample Location: Mill Branch @ McCormick Rd

Collection Date/Time: 05/03/2017 12:15

Field ID: G2NE0585 05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896464	EPA 8321B	Sucralose**	0.010	U	ug/L	P324480	
	USGS O-2060-01	2,4-D	8.0E-04	U	ug/L	P324481	
		Diuron	8.0E-04	U	ug/L	P324481	
		Fenuron	0.0040	U	ug/L	P324481	
		Imidacloprid	0.038		ug/L	P324481	MS
		Bentazon	0.0015	I	ug/L	P324481	
		Linuron	0.0040	U	ug/L	P324481	
		Acetaminophen**	0.0080	U	ug/L	P324481	
		MCP	8.0E-04	U	ug/L	P324481	
		Carbamazepine**	4.0E-04	U	ug/L	P324481	
		Triclopyr**	0.0040	U	ug/L	P324481	
		Primidone**	0.0040	U	ug/L	P324481	
		Fluridone**	4.0E-04	U	ug/L	P324481	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy and precision for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P324690

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P324943

Component	Result	Code	Units
Boron	15	U	ug/L
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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P324943

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P325109

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325109

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325112

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324642

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324986

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324973

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324974

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324809

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324712

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

Reference Method: EPA 8321B
Batch ID: P324480

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P324633

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P325400

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

Reference Method: SM 2320 B-97
Batch ID: P325401

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

Reference Method: SM 2540 C-97
Batch ID: P325501

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P325304

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P324770

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

Reference Method: USGS O-2060-01
Batch ID: P324481

Component	Result	Code	Units
2,4-D	8.0E-04	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
Batch ID: P324481

Component	Result	Code	Units
Diuron	8.0E-04	U	ug/L
Fenuron	0.0040	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	8.0E-04	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P324943

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Boron	109		P	85 - 115
Calcium	101		P	85 - 115
Iron	107		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	100		P	85 - 115
Sodium	102		P	85 - 115
Zinc	99.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P324943

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	103		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	100		P	85 - 115
Copper	98.9		P	85 - 115
Lead	100		P	85 - 115
Nickel	101		P	85 - 115
Silver	97.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325109

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325112

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.5		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324642

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324986

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: P324973

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324974

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324809

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324712

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

Reference Method: EPA 8321B
Batch ID: P324480

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	107		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P325400

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P325401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.3		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P324770

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

Reference Method: USGS O-2060-01
Batch ID: P324481

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	72.6		P	40 - 140
Acetaminophen	97.6		P	40 - 140
Bentazon	73.0		P	40 - 140
Carbamazepine	99.2		P	40 - 140
Diuron	105		P	40 - 140
Fenuron	105		P	40 - 140
Fluridone	90.9		P	40 - 140
Imidacloprid	109		P	40 - 160
Linuron	89.8		P	40 - 140
MCP	70.0		P	40 - 140
Primidone	110		P	40 - 140
Triclopyr	63.2		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P324943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896164	Boron	112		P	80 - 120
1896164	Calcium	101		P	80 - 120
1896164	Iron	106		P	80 - 120
1896164	Magnesium	103		P	80 - 120
1896164	Potassium	101		P	80 - 120
1896164	Sodium	104		P	80 - 120
1896164	Zinc	96.8		P	80 - 120
1896381	Boron	111	111	P/P	80 - 120
1896381	Calcium	104		P	80 - 120
1896381	Iron	104	105	P/P	80 - 120
1896381	Magnesium	105		P	80 - 120
1896381	Potassium	99.0	96.6	P/P	80 - 120
1896381	Sodium	103		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P324943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896381	Zinc	98.7	98.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P324943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896164	Arsenic	104		P	80 - 120
1896164	Cadmium	105		P	80 - 120
1896164	Chromium	97.6		P	80 - 120
1896164	Copper	96.6		P	80 - 120
1896164	Lead	100		P	80 - 120
1896164	Nickel	98.5		P	80 - 120
1896164	Silver	97.0		P	80 - 120
1896381	Arsenic	105	106	P/P	80 - 120
1896381	Cadmium	106	105	P/P	80 - 120
1896381	Chromium	96.2	95.9	P/P	80 - 120
1896381	Copper	94.8	96.2	P/P	80 - 120
1896381	Lead	101	102	P/P	80 - 120
1896381	Nickel	96.1	96.8	P/P	80 - 120
1896381	Silver	95.1	96.2	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896394	Chloride	105		P	90 - 110
1896473	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896394	Sulfate	99.2		P	90 - 110
1896473	Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896444	Ammonia-N	107	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896482	Kjeldahl Nitrogen	96.9	94.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896420	NO2NO3-N	101	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324974

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896484	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896480	Total-P	101	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896487	O-Phosphate-P	98.1	98.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P324480

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896109	Sucralose	118	95.0	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896397	Fluoride	97.0	101	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896078	Fluoride	99.7	104	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P324770

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896168	Organic Carbon	100	100	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P324481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1895708	2,4-D	67.9	68.7	P/P	40 - 140
1895708	Acetaminophen	92.2	101	P/P	40 - 140
1895708	Carbamazepine	85.4	79.5	P/P	40 - 140
1895708	Diuron	73.5	70.2	P/P	40 - 140
1895708	Fenuron	64.6	69.4	P/P	40 - 140
1895708	Fluridone	38.4	27.6	F/F	40 - 140
1895708	Imidacloprid	151	162	P/F	40 - 160
1895708	Linuron	75.5	67.2	P/P	40 - 140
1895708	MCP	56.3	58.6	P/P	40 - 140
1895708	Primidone	84.5	90.3	P/P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P324481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1895708	Triclopyr	52.1	53.3	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P324690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896426	Turbidity	0.324	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P324943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896381	Boron	0.0249	Spike	P	0 - 20
1896381	Calcium	2.34	Spike	P	0 - 20
1896381	Iron	0.798	Spike	P	0 - 20
1896381	Magnesium	0.858	Spike	P	0 - 20
1896381	Potassium	1.39	Spike	P	0 - 20
1896381	Sodium	1.72	Spike	P	0 - 20
1896381	Zinc	0.126	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P324943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896381	Arsenic	0.754	Spike	P	0 - 20
1896381	Cadmium	0.292	Spike	P	0 - 20
1896381	Chromium	0.332	Spike	P	0 - 20
1896381	Copper	1.42	Spike	P	0 - 20
1896381	Lead	0.920	Spike	P	0 - 20
1896381	Nickel	0.674	Spike	P	0 - 20
1896381	Silver	1.13	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P325109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896394	Chloride	0.356	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P324642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896444	Ammonia-N	0.566	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P324986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896482	Kjeldahl Nitrogen	1.54	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P324973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896420	NO2NO3-N	1.47	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P324974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896484	NO2NO3-N	0.340	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P324809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896480	Total-P	1.41	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P324712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896487	O-Phosphate-P	0.508	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P324480

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896109	Sucralose	21.0	Spike	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P324633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896475	Color (true)	1.26	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P325400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896144	Total Alkalinity	0.0829	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P325401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896397	Total Alkalinity	0.451	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P325501

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896345	TDS	2.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896397	Fluoride	3.56	Spike	F	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P325739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896078	Fluoride	3.49	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P324770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896168	Organic Carbon	0.0255	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P324481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895708	2,4-D	0.954	Spike	P	0 - 30
1895708	Acetaminophen	9.39	Spike	P	0 - 30
1895708	Carbamazepine	7.18	Spike	P	0 - 30
1895708	Diuron	4.45	Spike	P	0 - 30
1895708	Fenuron	7.28	Spike	P	0 - 30
1895708	Fluridone	29.6	Spike	P	0 - 30
1895708	Imidacloprid	5.93	Spike	P	0 - 30
1895708	Linuron	11.6	Spike	P	0 - 30
1895708	MCPP	3.78	Spike	P	0 - 30
1895708	Primidone	6.68	Spike	P	0 - 30
1895708	Triclopyr	2.35	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1896463
Field Sample ID: G2NE0563 05032017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	75.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	68.6	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	100	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	113	P	30 - 160
USGS O-2060-01	Diuron-d6	107	P	30 - 150
USGS O-2060-01	Primidone-d5	109	P	30 - 150

Lab Sample ID: 1896464
Field Sample ID: G2NE0585 05032017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	104	P	40 - 150
USGS O-2060-01	2,4-D-d3	71.3	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	101	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	115	P	30 - 160
USGS O-2060-01	Diuron-d6	108	P	30 - 150
USGS O-2060-01	Primidone-d5	113	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A76192
Included Lab Sample IDs: 1896451, 1896452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.7	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A76193
Included Lab Sample IDs: 1896453, 1896454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	106	105	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76202
Included Lab Sample IDs: 1896451, 1896452

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76210
Included Lab Sample IDs: 1896455, 1896456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	98.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A76231

Included Lab Sample IDs: 1896453, 1896454

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76259

Included Lab Sample IDs: 1896453, 1896454

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A76269

Included Lab Sample IDs: 1896451, 1896452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Sulfate	96.5	93.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76313

Included Lab Sample IDs: 1896453, 1896454

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A76365

Included Lab Sample IDs: 1896465, 1896466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.2	97.5	P/P	90 - 110
Cadmium	99.3	99.4	P/P	90 - 110
Chromium	95.1	96.4	P/P	90 - 110
Copper	98.0	97.3	P/P	90 - 110
Lead	98.4	97.4	P/P	90 - 110
Nickel	96.3	95.2	P/P	90 - 110
Silver	98.4	97.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A76431

Included Lab Sample IDs: 1896465, 1896466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Magnesium	102	103	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	101	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76434

Included Lab Sample IDs: 1896453, 1896454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	102	P/P	90 - 110
Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76469

Included Lab Sample IDs: 1896451, 1896452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	102	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76469

Included Lab Sample IDs: 1896451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.3	98.4	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A76477

Included Lab Sample IDs: 1896463, 1896464

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	105	89.6	P/P	50 - 150
Acetaminophen	114	110	P/P	60 - 150
Bentazon	91.0	108	P/P	50 - 150
Carbamazepine	107	118	P/P	60 - 150
Diuron	116	129	P/P	60 - 150
Fenuron	101	105	P/P	60 - 150
Fluridone	116	105	P/P	60 - 150
Imidacloprid	96.0	116	P/P	60 - 150
Linuron	112	109	P/P	60 - 150
MCPP	98.0	93.2	P/P	50 - 150
Primidone	87.6	100	P/P	60 - 150
Triclopyr	103	97.6	P/P	50 - 150

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A76497

Included Lab Sample IDs: 1896465, 1896466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	98.5	98.3	P/P	90 - 110
Zinc	99.2	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A76559

Included Lab Sample IDs: 1896463, 1896464

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	65.2	73.0	P/P	60 - 150
Sucralose	73.0	78.0	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A76633

Included Lab Sample IDs: 1896452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	104	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A76793

Included Lab Sample IDs: 1896465, 1896466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	100	99.4	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						0.324	
EPA 200.7 Rev. 4.4	Boron	109	111	111	112			0.0249
	Calcium	101	101	104				2.34
	Iron	107	106	104	105			0.798
	Magnesium	104	103	105				0.858
	Potassium	100	101	99.0	96.6			1.39
	Sodium	102	104	103				1.72
	Zinc	99.4	96.8	98.7	98.9			0.126
EPA 200.8 Rev. 5.4	Arsenic	103	104	105	106			0.754
	Cadmium	103	105	106	105			0.292
	Chromium	100	97.6	96.2	95.9			0.332
	Copper	98.9	96.6	94.8	96.2			1.42
	Lead	100	100	101	102			0.920
	Nickel	101	98.5	96.1	96.8			0.674
	Silver	97.5	97.0	95.1	96.2			1.13
EPA 300.0 Rev. 2.1	Chloride	106	105	105			0.356	
	Sulfate	98.5	99.2	98.7				
EPA 350.1 Rev. 2.0	Ammonia-N	107	107	108				0.566
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	96.9	94.9				1.54
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	101	102				1.47
	NO ₂ NO ₃ -N	103	101	102				0.340
EPA 365.1 Rev. 2.0	Total-P	101	101	99.3				1.41
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	98.1	98.6				0.508
EPA 8321B	Sucralose	107	118	95.0				21.0
SM 2120 B	Color (true)						1.26	
SM 2320 B-97	Total Alkalinity	103					0.0829	
	Total Alkalinity	103					0.451	
SM 2540 C-97	TDS						2.16	
SM 4500 F-C-97	Fluoride	94.3	97.0	101				3.56
	Fluoride	101	99.7	104				3.49
SM 5310 B-00	Organic Carbon	101	100	100				0.0255
USGS O-2060-01	2,4-D	72.6	67.9	68.7				0.954

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
USGS O-2060-01	Acetaminophen	97.6	92.2 101			9.39
	Bentazon	73.0				
	Carbamazepine	99.2	85.4 79.5			7.18
	Diuron	105	73.5 70.2			4.45
	Fenuron	105	64.6 69.4			7.28
	Fluridone	90.9	38.4 27.6			29.6
	Imidacloprid	109	151 162			5.93
	Linuron	89.8	75.5 67.2			11.6
	MCP	70.0	56.3 58.6			3.78
	Primidone	110	84.5 90.3			6.68
	Triclopyr	63.2	52.1 53.3			2.35

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1896451, 1896452
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1896465, 1896466
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1896465, 1896466
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1896451, 1896452
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1896451, 1896452
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1896453, 1896454
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1896453, 1896454
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1896453, 1896454
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1896453, 1896454
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1896455, 1896456
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1896463, 1896464
SM 2120 B / E31780	True Color measured at 450 nm	1896451, 1896452
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1896451, 1896452
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1896451, 1896452
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1896451, 1896452
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1896451, 1896452
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1896453, 1896454
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1896463, 1896464
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1896463, 1896464

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	05/04/2017			05/04/2017 17:05	Sima Feizi	1896451, 1896452
EPA 200.7 Rev. 4.4	05/04/2017	05/09/2017	Elliott D. Healy	05/15/2017	Martin Acosta	1896465, 1896466
	05/04/2017	05/09/2017	Elliott D. Healy	05/17/2017	Martin Acosta	1896465, 1896466
	05/04/2017	05/09/2017	Elliott D. Healy	05/31/2017	Betina Topolski	1896465, 1896466
EPA 200.8 Rev. 5.4	05/04/2017	05/09/2017	Elliott D. Healy	05/11/2017	Betina Topolski	1896465, 1896466
EPA 300.0 Rev. 2.1	05/04/2017			05/11/2017	Ping Hua	1896451, 1896452
EPA 350.1 Rev. 2.0	05/04/2017			05/04/2017	Julie Michelle Frank	1896453, 1896454
EPA 351.2 Rev. 2.0	05/04/2017	05/11/2017	Adrian Shelby	05/15/2017	Joseph Suarez	1896453, 1896454
EPA 353.2 Rev. 2.0	05/04/2017			05/09/2017	Beverly Y. Sanders	1896453, 1896454
EPA 365.1 Rev. 2.0	05/04/2017	05/08/2017	Vijayalakshmi Reddy	05/09/2017	Christopher Armour	1896453, 1896454
EPA 365.1 Rev. 2.0 dissolved	05/04/2017			05/04/2017 16:42	Anthony C. Onicha	1896455
	05/04/2017			05/04/2017 16:44	Anthony C. Onicha	1896456
EPA 8321B	05/04/2017	05/17/2017	Mohammad Ghaffari	05/19/2017	Mohammad Ghaffari	1896463, 1896464
SM 2120 B	05/04/2017			05/04/2017 15:58	Julia Storbeck	1896451, 1896452
SM 2320 B-97	05/04/2017			05/16/2017	Dale L. Simmons	1896451, 1896452
SM 2540 C-97	05/04/2017			05/08/2017	Sima Feizi	1896451, 1896452
SM 2540 D-97	05/04/2017			05/08/2017	Sima Feizi	1896451, 1896452
SM 4500 F-C-97	05/04/2017			05/16/2017	Dale L. Simmons	1896451
	05/04/2017			05/24/2017	Dale L. Simmons	1896452
SM 5310 B-00	05/04/2017			05/05/2017	Julie Michelle Frank	1896453, 1896454
USGS O-2060-01	05/04/2017	05/08/2017	Fe-Val Siddell	05/16/2017	Juyoung Kim	1896463, 1896464