

Chemical Analysis Report

WAS-SECT-2021-06-28-01

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

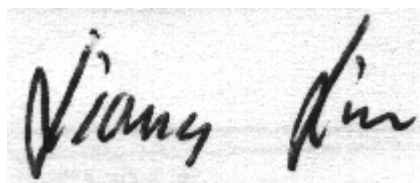
Event Description: **Alligator Creek**
Request ID: **RQ-2021-05-24-02**
Customer: **WAS-SECT**
Project ID: **SMP**

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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 21-JUL-2021 10:07

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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 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: Minnow Creek at Lovewood Rd

Collection Date/Time: 06/28/2021 10:14

Field ID: G3WA0008

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257431	EPA 180.1 Rev. 2.0	Turbidity	13	A	NTU	P400353	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P400553	
		Sulfate	0.70		mg SO4/L	P400558	
		Color (true)	84		PCU	P400350	
	SM 2120 B-2011	Total Alkalinity	13		mg CaCO3/L	P400706	
	SM 2540 C-2011	TDS	50		mg/L	P400761	
	SM 2540 D-2011	TSS	4	I	mg/L	P400669	
	SM 4500 F-C-2011	Fluoride	0.038	I	mg F/L	P400709	
2257437	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P400690	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P400520	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.051		mg N/L	P400307	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P400436	
	SM 5310 B-2011	Organic Carbon	7.4		mg C/L	P400567	
2257443	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P400347	
2257461	EPA 200.7 Rev. 4.4	Calcium	5.22		mg/L	P400316	
		Iron	1.37E+03		ug/L	P400316	
		Magnesium	1.42		mg/L	P400316	
		Potassium	1.3		mg/L	P400316	
		Sodium	1.6	I	mg/L	P400316	
		Strontium	11.5		ug/L	P400316	
		Tin	3.0	U	ug/L	P400316	
		Titanium	3.3		ug/L	P400316	
		Vanadium	2.0	U	ug/L	P400316	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P400316	
		Aluminum	429		ug/L	P400316	
		Antimony	0.050	U	ug/L	P400316	
		Arsenic	0.85		ug/L	P400316	
		Barium	17.6		ug/L	P400316	
		Beryllium	0.010	U	ug/L	P400316	
		Boron**	14.3		ug/L	P400316	
		Cadmium	0.020	U	ug/L	P400316	
		Chromium	0.51	I	ug/L	P400316	
		Cobalt	0.114		ug/L	P400316	
		Copper	0.54	I	ug/L	P400316	
		Lead	0.48		ug/L	P400316	
		Manganese	54.6		ug/L	P400316	
		Molybdenum	0.15	U	ug/L	P400316	
		Nickel	0.50	U	ug/L	P400316	
		Selenium	0.20	U	ug/L	P400316	
		Silver	0.010	U	ug/L	P400316	
		Thallium	0.10	U	ug/L	P400316	
	SM 2340B	Hardness	18.9		mg/L	P400316	

Field ID: G3WA0008

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
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.

Sample Location: Alligator Creek Upstream of SR 273

Collection Date/Time: 06/28/2021 10:54

Field ID: G3WA0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257432	EPA 180.1 Rev. 2.0	Turbidity	26		NTU	P400353	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P400553	
		Sulfate	1.4		mg SO4/L	P400558	
		Color (true)	140	J	PCU	P400350	
	SM 2320 B-2011	Total Alkalinity	11		mg CaCO3/L	P400706	
	SM 2540 C-2011	TDS	61		mg/L	P400761	
	SM 2540 D-2011	TSS	13		mg/L	P400669	
	SM 4500 F-C-2011	Fluoride	0.049	I	mg F/L	P400709	
2257438	EPA 350.1 Rev. 2.0	Ammonia-N	0.055		mg N/L	P400690	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P400520	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.37		mg N/L	P400307	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P400436	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P400567	
2257444	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P400347	
2257462	EPA 200.7 Rev. 4.4	Calcium	5.27		mg/L	P400316	
		Iron	1.73E+03		ug/L	P400316	
		Magnesium	1.68		mg/L	P400316	
		Potassium	2.2		mg/L	P400316	
		Sodium	1.7	I	mg/L	P400316	
		Strontium	12.4		ug/L	P400316	
		Tin	3.0	U	ug/L	P400316	
		Titanium	5.7		ug/L	P400316	
	EPA 200.8 Rev. 5.4	Vanadium	4.0	I	ug/L	P400316	
		Zinc	6.1	I	ug/L	P400316	
		Aluminum	1.11E+03		ug/L	P400316	
		Antimony	0.066	I	ug/L	P400316	
		Arsenic	0.94		ug/L	P400316	
		Barium	21.0		ug/L	P400316	
		Beryllium	0.037	I	ug/L	P400316	
		Boron**	17.2		ug/L	P400316	
		Cadmium	0.020	U	ug/L	P400316	
		Chromium	0.92	I	ug/L	P400316	
		Cobalt	0.289		ug/L	P400316	
		Copper	1.59		ug/L	P400316	
		Lead	1.15		ug/L	P400316	
		Manganese	108		ug/L	P400316	
		Molybdenum	0.15	U	ug/L	P400316	
		Nickel	0.70	I	ug/L	P400316	
		Selenium	0.20	U	ug/L	P400316	
		Silver	0.010	U	ug/L	P400316	
		Thallium	0.10	U	ug/L	P400316	
	SM 2340B	Hardness	20.1		mg/L	P400316	

Field ID: G3WA0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

SM 2120 B-2011: The result may be biased high because of matrix interference.

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.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/02/2021.

Sample Location: Scurlock Creek at Pilgrim Rd

Collection Date/Time: 06/28/2021 11:44

Field ID: G3WA0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257433	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P400353	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P400553	
		Sulfate	0.24	I	mg SO4/L	P400558	
		Color (true)	150		PCU	P400350	
	SM 2120 B-2011	Total Alkalinity	3.7		mg CaCO3/L	P400781	
	SM 2540 C-2011	TDS	47		mg/L	P400761	
	SM 2540 D-2011	TSS	4	I	mg/L	P400669	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P400709	
2257439	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P400690	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P400520	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P400307	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P400436	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P400567	
2257445	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P400347	
2257463	EPA 200.7 Rev. 4.4	Calcium	2.92		mg/L	P400316	
		Iron	1.25E+03		ug/L	P400316	
		Magnesium	0.69		mg/L	P400316	
		Potassium	0.67	I	mg/L	P400316	
		Sodium	1.3	I	mg/L	P400316	
		Strontium	6.7	I	ug/L	P400316	
		Tin	3.0	U	ug/L	P400316	
		Titanium	2.8	I	ug/L	P400316	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P400316	
		Zinc	8.5	I	ug/L	P400316	
		Aluminum	416		ug/L	P400316	
		Antimony	0.059	I	ug/L	P400316	
		Arsenic	0.73		ug/L	P400316	
		Barium	15.8		ug/L	P400316	
		Beryllium	0.024	I	ug/L	P400316	
		Boron**	13.1		ug/L	P400316	
		Cadmium	0.020	U	ug/L	P400316	
		Chromium	0.51	I	ug/L	P400316	
		Cobalt	0.443		ug/L	P400316	
		Copper	0.81		ug/L	P400316	
		Lead	0.57		ug/L	P400316	
		Manganese	180		ug/L	P400316	
		Molybdenum	0.15	U	ug/L	P400316	
		Nickel	0.63	I	ug/L	P400316	
		Selenium	0.20	U	ug/L	P400316	
		Silver	0.010	U	ug/L	P400316	
		Thallium	0.10	U	ug/L	P400316	
	SM 2340B	Hardness	10.1		mg/L	P400316	

Field ID: G3WA0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/02/2021.

Sample Location: Unnamed Creek at Woodrest Rd

Collection Date/Time: 06/28/2021 12:38

Field ID: G3WA0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257434	EPA 180.1 Rev. 2.0	Turbidity	75		NTU	P400353	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P400626	
		Sulfate	1.5		mg SO4/L	P400627	
		Color (true)	240	J	PCU	P400350	
	SM 2320 B-2011	Total Alkalinity	7.6		mg CaCO3/L	P400706	
	SM 2540 C-2011	TDS	87		mg/L	P400762	
	SM 2540 D-2011	TSS	47		mg/L	P400670	
	SM 4500 F-C-2011	Fluoride	0.047	I	mg F/L	P400709	
2257440	EPA 350.1 Rev. 2.0	Ammonia-N	0.073		mg N/L	P400690	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P400520	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P400308	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P400436	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P400567	
2257446	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P400347	
2257464	EPA 200.7 Rev. 4.4	Calcium	3.98		mg/L	P400316	
		Iron	1.83E+03		ug/L	P400316	
		Magnesium	1.53		mg/L	P400316	
		Potassium	1.9		mg/L	P400316	
		Sodium	1.6	I	mg/L	P400316	
		Strontium	10.2		ug/L	P400316	
		Tin	3.0	U	ug/L	P400316	
		Titanium	15.7		ug/L	P400316	
	EPA 200.8 Rev. 5.4	Vanadium	5.0	I	ug/L	P400316	
		Zinc	11	I	ug/L	P400316	
		Aluminum	1.76E+03		ug/L	P400316	
		Antimony	0.082	I	ug/L	P400316	
		Arsenic	1.15		ug/L	P400316	
		Barium	21.7		ug/L	P400316	
		Beryllium	0.043		ug/L	P400316	
		Boron**	17.5		ug/L	P400316	
		Cadmium	0.025	I	ug/L	P400316	
		Chromium	1.3	I	ug/L	P400316	
		Cobalt	0.457		ug/L	P400316	
		Copper	1.81		ug/L	P400316	
		Lead	2.26		ug/L	P400316	
		Manganese	178		ug/L	P400316	
		Molybdenum	0.15	U	ug/L	P400316	
		Nickel	0.76	I	ug/L	P400316	
		Selenium	0.20	U	ug/L	P400316	
		Silver	0.010	U	ug/L	P400316	
		Thallium	0.10	U	ug/L	P400316	
	SM 2340B	Hardness	16.2		mg/L	P400316	

Field ID: G3WA0010

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 2120 B-2011: The result may be biased high because of matrix interference.

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.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/02/2021.

Sample Location: Unnamed Creek at Palmview Rd

Collection Date/Time: 06/28/2021 13:16

Field ID: G3WA0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257435	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P400353	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P400626	
		Sulfate	1.7		mg SO4/L	P400627	
		Color (true)	130		PCU	P400350	
	SM 2120 B-2011	Total Alkalinity	8.4		mg CaCO3/L	P400706	
	SM 2540 C-2011	TDS	68		mg/L	P400762	
	SM 2540 D-2011	TSS	5	I	mg/L	P400670	
	SM 4500 F-C-2011	Fluoride	0.043	I	mg F/L	P400709	
2257441	EPA 350.1 Rev. 2.0	Ammonia-N	0.053		mg N/L	P400690	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P400520	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.043		mg N/L	P400308	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P400436	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P400567	
2257447	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P400347	
2257465	EPA 200.7 Rev. 4.4	Calcium	4.14		mg/L	P400316	
		Iron	1.88E+03		ug/L	P400316	
		Magnesium	1.41		mg/L	P400316	
		Potassium	1.9		mg/L	P400316	
		Sodium	1.7	I	mg/L	P400316	
		Strontium	11.8		ug/L	P400316	
		Tin	3.0	U	ug/L	P400316	
		Titanium	4.3		ug/L	P400316	
		Vanadium	2.3	I	ug/L	P400316	
	EPA 200.8 Rev. 5.4	Zinc	7.5	I	ug/L	P400316	
		Aluminum	495		ug/L	P400316	
		Antimony	0.091	I	ug/L	P400316	
		Arsenic	1.35		ug/L	P400316	
		Barium	22.6		ug/L	P400316	
		Beryllium	0.020	I	ug/L	P400316	
		Boron**	16.2		ug/L	P400316	
		Cadmium	0.020	U	ug/L	P400316	
		Chromium	0.59	I	ug/L	P400316	
		Cobalt	0.482		ug/L	P400316	
		Copper	1.05		ug/L	P400316	
		Lead	0.83		ug/L	P400316	
		Manganese	258		ug/L	P400316	
		Molybdenum	0.15	U	ug/L	P400316	
		Nickel	0.53	I	ug/L	P400316	
		Selenium	0.20	U	ug/L	P400316	
		Silver	0.010	U	ug/L	P400316	
		Thallium	0.10	U	ug/L	P400316	
	SM 2340B	Hardness	16.2		mg/L	P400316	

Field ID: G3WA0013

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.
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/02/2021.

Sample Location: Pinebarn Creek at Woodrest Rd

Collection Date/Time: 06/28/2021 12:14

Field ID: G3WA0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257436	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P400353	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P400626	
		Sulfate	3.9		mg SO4/L	P400627	
		Color (true)	130	J	PCU	P400350	
	SM 2320 B-2011	Total Alkalinity	10		mg CaCO3/L	P400706	
	SM 2540 C-2011	TDS	73		mg/L	P400762	
	SM 2540 D-2011	TSS	9	I	mg/L	P400670	
	SM 4500 F-C-2011	Fluoride	0.058	I	mg F/L	P400709	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P400690	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P400521	
2257442	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P400308	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P400436	
	SM 5310 B-2011	Organic Carbon	9.4		mg C/L	P400567	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P400347	
	EPA 200.7 Rev. 4.4	Calcium	3.96		mg/L	P400316	
2257466	EPA 200.7 Rev. 4.4	Iron	1.76E+03		ug/L	P400316	
		Magnesium	1.49		mg/L	P400316	
		Potassium	2.4		mg/L	P400316	
		Sodium	0.86	I	mg/L	P400316	
		Strontium	8.6		ug/L	P400316	
		Tin	3.0	U	ug/L	P400316	
		Titanium	9.5		ug/L	P400316	
		Vanadium	2.9	I	ug/L	P400316	
		Zinc	8.3	I	ug/L	P400316	
		Aluminum	957		ug/L	P400316	
		Antimony	0.097	I	ug/L	P400316	
		Arsenic	1.13		ug/L	P400316	
		Barium	18.1		ug/L	P400316	
		Beryllium	0.016	I	ug/L	P400316	
		Boron**	16.0		ug/L	P400316	
	EPA 200.8 Rev. 5.4	Cadmium	0.020	U	ug/L	P400316	
		Chromium	0.74	I	ug/L	P400316	
		Cobalt	0.519		ug/L	P400316	
		Copper	0.81		ug/L	P400316	
		Lead	0.48		ug/L	P400316	
		Manganese	351		ug/L	P400316	
		Molybdenum	0.15	U	ug/L	P400316	
		Nickel	0.50	U	ug/L	P400316	
		Selenium	0.20	U	ug/L	P400316	
		Silver	0.010	U	ug/L	P400316	
		Thallium	0.10	U	ug/L	P400316	
		Hardness	16.0		mg/L	P400316	
	SM 2340B						

Matrix: W-SURF-FRH

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P400353

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P400316

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: P400316

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: P400553

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400558

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400626

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400627

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400690

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400520

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400521

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400307

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400308

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400436

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400347

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B-2011
Batch ID: P400350

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P400706

Component	Result	Code	Units
Total Alkalinity	0.69	I	mg CaCO ₃ /L

Reference Method: SM 2320 B-2011
Batch ID: P400781

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

Reference Method: SM 2540 C-2011
Batch ID: P400761

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P400762

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P400669

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P400670

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P400709

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P400567

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: P400316

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	106		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	104		P	85 - 115
Sodium	100		P	85 - 115
Strontium	98.1		P	85 - 115
Tin	94.9		P	85 - 115
Titanium	98.1		P	85 - 115
Vanadium	100		P	85 - 115
Zinc	97.0		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400316

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	110		P	85 - 115
Antimony	110		P	85 - 115
Arsenic	106		P	85 - 115
Barium	110		P	85 - 115
Beryllium	105		P	85 - 115
Boron	111		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	102		P	85 - 115
Cobalt	106		P	85 - 115
Copper	109		P	85 - 115
Lead	105		P	85 - 115
Manganese	106		P	85 - 115
Molybdenum	104		P	85 - 115
Nickel	108		P	85 - 115
Selenium	107		P	85 - 115
Silver	102		P	85 - 115
Thallium	109		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400553

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400558

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400626

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400627

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400690

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400520

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400521

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: P400307

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400308

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400436

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400347

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

Reference Method: SM 2120 B-2011
Batch ID: P400350

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P400706

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

Reference Method: SM 2320 B-2011
Batch ID: P400781

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P400709

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P400567

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

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P400316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257559	Calcium	117		P	80 - 120
2257559	Iron	108		P	80 - 120
2257559	Magnesium	113		P	80 - 120
2257559	Potassium	104		P	80 - 120
2257559	Sodium	102		P	80 - 120
2257559	Strontium	98.6		P	80 - 120
2257559	Tin	95.0		P	80 - 120
2257559	Titanium	93.7		P	80 - 120
2257559	Vanadium	102		P	80 - 120
2257559	Zinc	98.7		P	80 - 120
2257627	Calcium	102		P	80 - 120
2257627	Iron	106	108	P/P	80 - 120
2257627	Magnesium	107	110	P/P	80 - 120
2257627	Potassium	103	106	P/P	80 - 120
2257627	Sodium	102		P	80 - 120
2257627	Strontium	98.2	100	P/P	80 - 120
2257627	Tin	96.0	97.9	P/P	80 - 120
2257627	Titanium	99.8	102	P/P	80 - 120
2257627	Vanadium	103	104	P/P	80 - 120
2257627	Zinc	100	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P400316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257559	Aluminum	106		P	80 - 120
2257559	Antimony	107		P	80 - 120
2257559	Arsenic	102		P	80 - 120
2257559	Barium	108		P	80 - 120
2257559	Beryllium	103		P	80 - 120
2257559	Boron	113		P	80 - 120
2257559	Cadmium	102		P	80 - 120
2257559	Chromium	99.5		P	80 - 120
2257559	Cobalt	101		P	80 - 120
2257559	Copper	101		P	80 - 120
2257559	Lead	102		P	80 - 120
2257559	Manganese	104		P	80 - 120
2257559	Molybdenum	102		P	80 - 120
2257559	Nickel	102		P	80 - 120
2257559	Selenium	102		P	80 - 120
2257559	Silver	99.6		P	80 - 120
2257559	Thallium	107		P	80 - 120
2257627	Aluminum	108	110	P/P	80 - 120
2257627	Antimony	109	111	P/P	80 - 120
2257627	Arsenic	103	105	P/P	80 - 120
2257627	Barium	107	109	P/P	80 - 120
2257627	Beryllium	102	106	P/P	80 - 120
2257627	Boron	111	112	P/P	80 - 120
2257627	Cadmium	101	106	P/P	80 - 120
2257627	Chromium	101	102	P/P	80 - 120
2257627	Cobalt	102	104	P/P	80 - 120
2257627	Copper	103	106	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257627	Lead	102	104	P/P	80 - 120
2257627	Manganese	104	106	P/P	80 - 120
2257627	Molybdenum	103	105	P/P	80 - 120
2257627	Nickel	104	106	P/P	80 - 120
2257627	Selenium	103	104	P/P	80 - 120
2257627	Silver	101	101	P/P	80 - 120
2257627	Thallium	108	109	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256981	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256981	Sulfate	100		P	90 - 110
2257258	Sulfate	94.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257434	Chloride	101		P	90 - 110
2257572	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257434	Sulfate	101		P	90 - 110
2257572	Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400690

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257437	Ammonia-N	97.2	94.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257442	Kjeldahl Nitrogen	104	90.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257415	NO2NO3-N	98.6	98.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257440	NO2NO3-N	93.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257415	Total-P	105	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257425	O-Phosphate-P	97.9	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P400709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257423	Fluoride	97.7	98.3	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P400567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257543	Organic Carbon	95.9	96.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P400353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257431	Turbidity	0.760	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P400316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257627	Calcium	1.28	Spike	P	0 - 20
2257627	Iron	1.31	Spike	P	0 - 20
2257627	Magnesium	1.34	Spike	P	0 - 20
2257627	Potassium	1.59	Spike	P	0 - 20
2257627	Sodium	1.64	Spike	P	0 - 20
2257627	Strontium	2.09	Spike	P	0 - 20
2257627	Tin	1.99	Spike	P	0 - 20
2257627	Titanium	1.80	Spike	P	0 - 20
2257627	Vanadium	1.48	Spike	P	0 - 20
2257627	Zinc	1.02	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257627	Aluminum	2.11	Spike	P	0 - 20
2257627	Antimony	1.45	Spike	P	0 - 20
2257627	Arsenic	1.92	Spike	P	0 - 20
2257627	Barium	2.12	Spike	P	0 - 20
2257627	Beryllium	3.93	Spike	P	0 - 20
2257627	Boron	0.922	Spike	P	0 - 20
2257627	Cadmium	4.27	Spike	P	0 - 20
2257627	Chromium	0.833	Spike	P	0 - 20
2257627	Cobalt	2.07	Spike	P	0 - 20
2257627	Copper	2.73	Spike	P	0 - 20
2257627	Lead	1.90	Spike	P	0 - 20
2257627	Manganese	1.82	Spike	P	0 - 20
2257627	Molybdenum	1.88	Spike	P	0 - 20
2257627	Nickel	2.64	Spike	P	0 - 20
2257627	Selenium	0.910	Spike	P	0 - 20
2257627	Silver	0.120	Spike	P	0 - 20
2257627	Thallium	0.271	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257258	Chloride	0.503	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257258	Sulfate	1.23	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257572	Chloride	0.510	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257572	Sulfate	0.616	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257437	Ammonia-N	1.68	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257318	Kjeldahl Nitrogen	2.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257442	Kjeldahl Nitrogen	7.73	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257415	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257440	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257415	Total-P	1.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257425	O-Phosphate-P	1.24	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P400350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257508	Color (true)	2.07	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P400706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257423	Total Alkalinity	0.0357	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P400781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259724	Total Alkalinity	0.135	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P400761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257423	TDS	6.21	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P400762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257511	TDS	5.44	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P400709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257423	Fluoride	0.457	Spike	P	0 - 2.1

Quality Assurance Report

Precision

Reference Method: SM 5310 B-2011
Batch ID: P400567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257543	Organic Carbon	0.252	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A106337

Included Lab Sample IDs: 2257437, 2257438, 2257439, 2257440, 2257441, 2257442

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A106351

Included Lab Sample IDs: 2257443, 2257444, 2257445, 2257446, 2257447, 2257448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110
O-Phosphate-P	99.6	99.4	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A106352

Included Lab Sample IDs: 2257431, 2257432, 2257433, 2257434, 2257435, 2257436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	101	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A106353

Included Lab Sample IDs: 2257431, 2257432, 2257433, 2257434, 2257435, 2257436

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: A106408

Included Lab Sample IDs: 2257461, 2257462, 2257463, 2257464, 2257465, 2257466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	105	P/P	90 - 110
Aluminum	105	104	P/P	90 - 110
Antimony	105	105	P/P	90 - 110
Antimony	105	106	P/P	90 - 110
Arsenic	100	99.7	P/P	90 - 110
Arsenic	99.7	99.8	P/P	90 - 110
Barium	101	102	P/P	90 - 110
Barium	102	102	P/P	90 - 110
Beryllium	94.9	95.8	P/P	90 - 110
Beryllium	95.1	94.9	P/P	90 - 110
Boron	101	104	P/P	90 - 110
Boron	104	104	P/P	90 - 110
Cadmium	101	99.8	P/P	90 - 110
Cadmium	99.8	100	P/P	90 - 110
Chromium	100	97.4	P/P	90 - 110
Chromium	97.4	97.9	P/P	90 - 110
Cobalt	100	99.4	P/P	90 - 110
Cobalt	99.4	98.3	P/P	90 - 110
Copper	101	99.5	P/P	90 - 110
Copper	101	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106408

Included Lab Sample IDs: 2257461, 2257462, 2257463, 2257464, 2257465, 2257466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	97.2	98.1	P/P	90 - 110
Lead	98.3	97.2	P/P	90 - 110
Manganese	100	101	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Molybdenum	98.7	98.4	P/P	90 - 110
Molybdenum	99.6	98.7	P/P	90 - 110
Nickel	101	99.7	P/P	90 - 110
Nickel	102	101	P/P	90 - 110
Selenium	98.3	99.4	P/P	90 - 110
Selenium	99.4	100	P/P	90 - 110
Silver	97.2	97.4	P/P	90 - 110
Silver	98.9	97.2	P/P	90 - 110
Thallium	97.8	98.6	P/P	90 - 110
Thallium	98.6	97.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A106418

Included Lab Sample IDs: 2257461, 2257462, 2257463, 2257464, 2257465, 2257466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	98.8	P/P	90 - 110
Calcium	98.8	100	P/P	90 - 110
Iron	101	99.4	P/P	90 - 110
Iron	99.4	101	P/P	90 - 110
Magnesium	100	98.8	P/P	90 - 110
Magnesium	98.8	100	P/P	90 - 110
Potassium	101	102	P/P	90 - 110
Potassium	102	101	P/P	90 - 110
Sodium	99.0	101	P/P	90 - 110
Sodium	99.9	99.0	P/P	90 - 110
Tin	93.1	93.9	P/P	90 - 110
Tin	93.9	95.0	P/P	90 - 110
Titanium	96.4	96.7	P/P	90 - 110
Titanium	96.7	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106420

Included Lab Sample IDs: 2257438, 2257440, 2257441, 2257442

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A106423

Included Lab Sample IDs: 2257431, 2257432, 2257433

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106425

Included Lab Sample IDs: 2257437, 2257439

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A106441

Included Lab Sample IDs: 2257461, 2257462, 2257463, 2257464, 2257465, 2257466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Strontium	100	103	P/P	95 - 105
Strontium	103	102	P/P	90 - 110
Vanadium	101	101	P/P	90 - 110
Vanadium	99.2	101	P/P	95 - 105
Zinc	100	103	P/P	90 - 110
Zinc	98.4	100	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A106454

Included Lab Sample IDs: 2257437, 2257438, 2257439, 2257440, 2257441, 2257442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.3	P/P	90 - 110
Organic Carbon	96.6	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106466

Included Lab Sample IDs: 2257437, 2257438, 2257439, 2257440, 2257441, 2257442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.2	98.8	P/P	90 - 110
Kjeldahl Nitrogen	98.8	96.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A106481

Included Lab Sample IDs: 2257434, 2257435, 2257436

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A106506

Included Lab Sample IDs: 2257437, 2257438, 2257439, 2257440, 2257441, 2257442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	98.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A106513

Included Lab Sample IDs: 2257431, 2257432, 2257434, 2257435, 2257436

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A106513

Included Lab Sample IDs: 2257431, 2257432, 2257434, 2257435, 2257436

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

Reference Method: SM 4500 F-C-2011

Run ID: A106513

Included Lab Sample IDs: 2257431, 2257432, 2257433, 2257434, 2257435, 2257436

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

Reference Method: SM 2320 B-2011

Run ID: A106546

Included Lab Sample IDs: 2257433

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	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						0.760	
EPA 200.7 Rev. 4.4	Calcium	101	117	102				1.28
	Iron	106	108	106	108			1.31
	Magnesium	108	113	107	110			1.34
	Potassium	104	104	103	106			1.59
	Sodium	100	102	102				1.64
	Strontium	98.1	98.6	98.2	100			2.09
	Tin	94.9	95.0	96.0	97.9			1.99
	Titanium	98.1	93.7	99.8	102			1.80
	Vanadium	100	102	103	104			1.48
	Zinc	97.0	98.7	100	101			1.02
EPA 200.8 Rev. 5.4	Aluminum	110	108	110	106			2.11
	Antimony	110	109	111	107			1.45
	Arsenic	106	103	105	102			1.92
	Barium	110	107	109	108			2.12
	Beryllium	105	102	106	103			3.93
	Boron	111	111	112	113			0.922
	Cadmium	104	101	106	102			4.27
	Chromium	102	101	102	99.5			0.833
	Cobalt	106	102	104	101			2.07
	Copper	109	103	106	101			2.73
	Lead	105	102	104	102			1.90
	Manganese	106	104	106	104			1.82
	Molybdenum	104	103	105	102			1.88
	Nickel	108	104	106	102			2.64
	Selenium	107	103	104	102			0.910
	Silver	102	101	101	99.6			0.120
	Thallium	109	108	109	107			0.271
EPA 300.0 Rev. 2.1	Chloride	103	101				0.503	
	Chloride	101	100	101			0.510	
	Sulfate	102	94.2	100			1.23	
	Sulfate	101	98.9	101			0.616	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	97.2	94.8				1.68
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100						2.59
	Kjeldahl Nitrogen	101	104	90.8				7.73
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	98.6	98.6				0.0
	NO2NO3-N	100	93.5					0.0
EPA 365.1 Rev. 2.0	Total-P	104	105	107				1.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	97.9	99.7				1.24
SM 2120 B-2011	Color (true)	102					2.07	
SM 2320 B-2011	Total Alkalinity	102					0.0357	
	Total Alkalinity	103					0.135	
SM 2540 C-2011	TDS						6.21	
	TDS						5.44	
SM 4500 F-C-2011	Fluoride	99.9	97.7	98.3				0.457
SM 5310 B-2011	Organic Carbon	95.3	95.9	96.2				0.252

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2257431, 2257432, 2257433, 2257434, 2257435, 2257436

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2257461, 2257462, 2257463, 2257464, 2257465, 2257466
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2257461, 2257462, 2257463, 2257464, 2257465, 2257466
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2257437, 2257438, 2257439, 2257440, 2257441, 2257442
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2257437, 2257438, 2257439, 2257440, 2257441, 2257442
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2257437, 2257438, 2257439, 2257440, 2257441, 2257442
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2257437, 2257438, 2257439, 2257440, 2257441, 2257442
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2257443, 2257444, 2257445, 2257446, 2257447, 2257448
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2257461, 2257462, 2257463, 2257464, 2257465, 2257466
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2257437, 2257438, 2257439, 2257440, 2257441, 2257442

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	06/28/2021			06/29/2021 15:42	Sarah A Nixon	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
EPA 200.7 Rev. 4.4	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 16:55	Josef B Mick	2257461
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 17:02	Josef B Mick	2257462
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 17:10	Josef B Mick	2257463
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 17:16	Josef B Mick	2257464
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 17:22	Josef B Mick	2257465
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 17:57	Josef B Mick	2257466
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/02/2021 14:06	Betina Topolski	2257461
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/02/2021 14:11	Betina Topolski	2257462
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/02/2021 14:14	Betina Topolski	2257463
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/02/2021 14:18	Betina Topolski	2257464
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/02/2021 14:21	Betina Topolski	2257465
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/02/2021 14:39	Betina Topolski	2257466
EPA 200.8 Rev. 5.4	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 14:32	Alexander Thompson	2257461
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 15:39	Alexander Thompson	2257462
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 15:49	Alexander Thompson	2257463
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 15:58	Alexander Thompson	2257464
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 16:08	Alexander Thompson	2257465
	06/28/2021	06/29/2021 13:30	Elliott D. Healy	07/01/2021 16:17	Alexander Thompson	2257466
EPA 300.0 Rev. 2.1	06/28/2021			07/03/2021 06:41	Lipi Saha	2257431
	06/28/2021			07/03/2021 06:53	Lipi Saha	2257432
	06/28/2021			07/03/2021 07:05	Lipi Saha	2257433
	06/28/2021			07/07/2021 06:11	Lipi Saha	2257434
	06/28/2021			07/07/2021 07:23	Lipi Saha	2257435
	06/28/2021			07/07/2021 07:35	Lipi Saha	2257436
EPA 350.1 Rev. 2.0	06/28/2021			07/08/2021 11:27	Roberta Tatti	2257437
	06/28/2021			07/08/2021 11:31	Roberta Tatti	2257438
	06/28/2021			07/08/2021 11:32	Roberta Tatti	2257439
	06/28/2021			07/08/2021 11:33	Roberta Tatti	2257440
	06/28/2021			07/08/2021 11:35	Roberta Tatti	2257441
	06/28/2021			07/08/2021 11:36	Roberta Tatti	2257442
EPA 351.2 Rev. 2.0	06/28/2021	07/02/2021 12:58	Benjamin T. Nordmann	07/06/2021 14:20	Letuzia M De Oliveira	2257437
	06/28/2021	07/02/2021 12:58	Benjamin T. Nordmann	07/06/2021 14:22	Letuzia M De Oliveira	2257438
	06/28/2021	07/02/2021 12:58	Benjamin T. Nordmann	07/06/2021 14:23	Letuzia M De Oliveira	2257439
	06/28/2021	07/02/2021 12:58	Benjamin T. Nordmann	07/06/2021 14:25	Letuzia M De Oliveira	2257440
	06/28/2021	07/02/2021 12:58	Benjamin T. Nordmann	07/06/2021 14:27	Letuzia M De Oliveira	2257441
	06/28/2021	07/02/2021 12:58	Benjamin T. Nordmann	07/06/2021 14:35	Letuzia M De Oliveira	2257442
EPA 353.2 Rev. 2.0	06/28/2021			06/29/2021 08:33	Beverly Y. Sanders	2257438
	06/28/2021			06/29/2021 08:34	Beverly Y. Sanders	2257439

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	06/28/2021			06/29/2021 08:41	Beverly Y. Sanders	2257440
	06/28/2021			06/29/2021 08:47	Beverly Y. Sanders	2257441
	06/28/2021			06/29/2021 08:48	Beverly Y. Sanders	2257442
	06/28/2021			06/29/2021 08:52	Beverly Y. Sanders	2257437
EPA 365.1 Rev. 2.0	06/28/2021	07/01/2021 10:00	Shengyu Ding	07/02/2021 10:03	Shengyu Ding	2257438
	06/28/2021	07/01/2021 10:00	Shengyu Ding	07/02/2021 10:05	Shengyu Ding	2257440
	06/28/2021	07/01/2021 10:00	Shengyu Ding	07/02/2021 10:06	Shengyu Ding	2257441
	06/28/2021	07/01/2021 10:00	Shengyu Ding	07/02/2021 10:07	Shengyu Ding	2257442
	06/28/2021	07/01/2021 10:00	Shengyu Ding	07/02/2021 10:49	Shengyu Ding	2257437
	06/28/2021	07/01/2021 10:00	Shengyu Ding	07/02/2021 10:50	Shengyu Ding	2257439
EPA 365.1 Rev. 2.0 dissolved	06/28/2021			06/29/2021 14:55	Ping Hua	2257443
	06/28/2021			06/29/2021 14:56	Ping Hua	2257444
	06/28/2021			06/29/2021 14:57	Ping Hua	2257445, 2257446
	06/28/2021			06/29/2021 14:58	Ping Hua	2257447
	06/28/2021			06/29/2021 15:03	Ping Hua	2257448
SM 2120 B-2011	06/28/2021			06/29/2021 16:17	Sarah A Nixon	2257431, 2257432
	06/28/2021			06/29/2021 16:18	Sarah A Nixon	2257433
	06/28/2021			06/29/2021 16:20	Sarah A Nixon	2257435, 2257436
	06/28/2021			06/29/2021 16:38	Sarah A Nixon	2257434
SM 2320 B-2011	06/28/2021			07/08/2021 18:56	Dale L. Simmons	2257431
	06/28/2021			07/08/2021 19:07	Dale L. Simmons	2257432
	06/28/2021			07/08/2021 19:29	Dale L. Simmons	2257434
	06/28/2021			07/08/2021 20:17	Dale L. Simmons	2257435
	06/28/2021			07/08/2021 20:28	Dale L. Simmons	2257436
	06/28/2021			07/10/2021 02:57	Dale L. Simmons	2257433
SM 2340B	06/28/2021			07/01/2021 16:55	Josef B Mick	2257461
	06/28/2021			07/01/2021 17:02	Josef B Mick	2257462
	06/28/2021			07/01/2021 17:10	Josef B Mick	2257463
	06/28/2021			07/01/2021 17:16	Josef B Mick	2257464
	06/28/2021			07/01/2021 17:22	Josef B Mick	2257465
	06/28/2021			07/01/2021 17:57	Josef B Mick	2257466
SM 2540 C-2011	06/28/2021			07/01/2021 15:22	Yijie Li	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
SM 2540 D-2011	06/28/2021			07/01/2021 15:22	Yijie Li	2257431, 2257432, 2257433, 2257434, 2257435, 2257436
SM 4500 F-C-2011	06/28/2021			07/08/2021 18:56	Dale L. Simmons	2257431
	06/28/2021			07/08/2021 19:07	Dale L. Simmons	2257432
	06/28/2021			07/08/2021 19:18	Dale L. Simmons	2257433
	06/28/2021			07/08/2021 19:29	Dale L. Simmons	2257434
	06/28/2021			07/08/2021 20:17	Dale L. Simmons	2257435

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	06/28/2021			07/08/2021 20:28	Dale L. Simmons	2257436
SM 5310 B-2011	06/28/2021			07/02/2021 20:48	Madeline Gruver	2257437
	06/28/2021			07/02/2021 21:29	Madeline Gruver	2257438
	06/28/2021			07/02/2021 21:42	Madeline Gruver	2257439
	06/28/2021			07/02/2021 21:55	Madeline Gruver	2257440
	06/28/2021			07/02/2021 22:08	Madeline Gruver	2257441
	06/28/2021			07/02/2021 22:21	Madeline Gruver	2257442