

Chemical Analysis Report

SE-DIST-2020-06-05-01

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

Event Description: **SMP- L-63/Popash**
Request ID: **RQ-2020-06-01-49**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 23-JUN-2020 09:42

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: L-63 @ SE 59th Blvd

Collection Date/Time: 06/04/2020 10:45

Field ID: G1SE0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174979	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P382863	
	EPA 300.0 Rev. 2.1	Chloride	80		mg Cl/L	P383135	
		Sulfate	45		mg SO4/L	P383138	
		Color (true)	130		PCU	P382867	
	SM 2320 B-2011	Total Alkalinity	86		mg CaCO3/L	P382962	
	SM 2540 C-2011	TDS	298		mg/L	P383271	
	SM 2540 D-2011	TSS	4	I	mg/L	P383238	
2174980	SM 4500 F-C-2011	Fluoride	0.13		mg F/L	P382963	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P382885	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P383072	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P382902	
	EPA 365.1 Rev. 2.0	Total-P	0.50		mg P/L	P383012	
2174981	SM 5310 B-2011	Organic Carbon	20		mg C/L	P382944	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.43		mg P/L	P382869	
2174989	EPA 200.7 Rev. 4.4	Barium	23.8		ug/L	P382927	
		Calcium	44.0		mg/L	P382927	
		Iron	230		ug/L	P382927	
		Magnesium	9.99		mg/L	P382927	
		Potassium	10.1		mg/L	P382927	
		Sodium	43.8		mg/L	P382927	
		Zinc	5.0	U	ug/L	P382927	
	EPA 200.8 Rev. 5.4	Aluminum	128		ug/L	P382927	
		Antimony	0.086	I	ug/L	P382927	
		Arsenic	1.01		ug/L	P382927	
		Boron**	57.1		ug/L	P382927	
		Cadmium	0.020	U	ug/L	P382927	
		Chromium	0.52	I	ug/L	P382927	
		Copper	0.93		ug/L	P382927	
		Lead	0.20	U	ug/L	P382927	
		Nickel	0.50	U	ug/L	P382927	
		Selenium	0.20	U	ug/L	P382927	
		Silver	0.010	U	ug/L	P382927	
		Thallium	0.10	U	ug/L	P382927	
		Hardness	151		mg/L	P382927	

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: Popash Slough @ 67th Dr

Collection Date/Time: 06/04/2020 11:15

Field ID: G1SE0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174982	EPA 180.1 Rev. 2.0	Turbidity	7.3		NTU	P382863	
	EPA 300.0 Rev. 2.1	Chloride	320		mg Cl/L	P383135	
		Sulfate	84		mg SO4/L	P383138	
	SM 2120 B-2011	Color (true)	130		PCU	P382867	
	SM 2320 B-2011	Total Alkalinity	35		mg CaCO3/L	P382962	
	SM 2540 C-2011	TDS	688		mg/L	P383271	
	SM 2540 D-2011	TSS	7	I	mg/L	P383238	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P382963	
2174983	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P382885	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P383072	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P382902	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P383012	
	SM 5310 B-2011	Organic Carbon	23		mg C/L	P382944	
2174984	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P382870	

Ref. Method and Comment:

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: P382863

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382927

Component	Result	Code	Units
Barium	1.0	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: P382927

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383135

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383138

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382885

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383072

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382902

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383012

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382869

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382870

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

Reference Method: SM 2120 B-2011
Batch ID: P382867

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P382962

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

Reference Method: SM 2540 C-2011
Batch ID: P383271

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P383238

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P382963

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P382944

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: P382927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	95.2		P	85 - 115
Calcium	102		P	85 - 115
Iron	101		P	85 - 115
Magnesium	100		P	85 - 115
Potassium	95.9		P	85 - 115
Sodium	99.5		P	85 - 115
Zinc	96.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	105		P	85 - 115
Arsenic	100		P	85 - 115
Boron	104		P	85 - 115
Cadmium	106		P	85 - 115
Chromium	109		P	85 - 115
Copper	102		P	85 - 115
Lead	100		P	85 - 115
Nickel	100		P	85 - 115
Selenium	96.4		P	85 - 115
Silver	105		P	85 - 115
Thallium	95.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383135

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383138

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382885

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383072

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382902

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383012

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: P382869

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382870

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

Reference Method: SM 2120 B-2011
Batch ID: P382867

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

Reference Method: SM 2320 B-2011
Batch ID: P382962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.9		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P382963

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P382944

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174678	Barium	95.0	95.2	P/P	80 - 120
2174678	Calcium	102		P	80 - 120
2174678	Iron	104	106	P/P	80 - 120
2174678	Magnesium	101		P	80 - 120
2174678	Potassium	96.8		P	80 - 120
2174678	Sodium	98.6		P	80 - 120
2174678	Zinc	99.7	100	P/P	80 - 120
2174928	Barium	94.4		P	80 - 120
2174928	Calcium	103		P	80 - 120
2174928	Iron	100		P	80 - 120
2174928	Magnesium	103		P	80 - 120
2174928	Potassium	88.2		P	80 - 120
2174928	Sodium	99.7		P	80 - 120
2174928	Zinc	99.7		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174678	Aluminum	100	99.5	P/P	80 - 120
2174678	Antimony	110	107	P/P	80 - 120
2174678	Arsenic	99.4	98.1	P/P	80 - 120
2174678	Boron	101	103	P/P	80 - 120
2174678	Cadmium	105	103	P/P	80 - 120
2174678	Chromium	107	107	P/P	80 - 120
2174678	Copper	102	102	P/P	80 - 120
2174678	Lead	106	104	P/P	80 - 120
2174678	Nickel	101	101	P/P	80 - 120
2174678	Selenium	103	103	P/P	80 - 120
2174678	Silver	99.7	99.2	P/P	80 - 120
2174678	Thallium	105	106	P/P	80 - 120
2174928	Aluminum	101		P	80 - 120
2174928	Antimony	108		P	80 - 120
2174928	Arsenic	100		P	80 - 120
2174928	Boron	105		P	80 - 120
2174928	Cadmium	106		P	80 - 120
2174928	Chromium	107		P	80 - 120
2174928	Copper	101		P	80 - 120
2174928	Lead	106		P	80 - 120
2174928	Nickel	102		P	80 - 120
2174928	Selenium	100		P	80 - 120
2174928	Silver	101		P	80 - 120
2174928	Thallium	110		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174945	Chloride	103		P	90 - 110
2175082	Chloride	104		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174945	Sulfate	105		P	90 - 110
2175082	Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174949	Ammonia-N	95.0	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383072

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174943	Kjeldahl Nitrogen	99.5	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174980	NO2NO3-N	95.2	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174896	Total-P	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174892	O-Phosphate-P	94.6	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174984	O-Phosphate-P	94.7	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P382963

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174911	Fluoride	97.0	97.5	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P382944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174896	Organic Carbon	99.0	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P382863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174942	Turbidity	2.45	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174678	Barium	0.186	Spike	P	0 - 20
2174678	Calcium	2.69	Spike	P	0 - 20
2174678	Iron	2.24	Spike	P	0 - 20
2174678	Magnesium	2.45	Spike	P	0 - 20
2174678	Potassium	1.26	Spike	P	0 - 20
2174678	Sodium	3.54	Spike	P	0 - 20
2174678	Zinc	0.692	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174678	Aluminum	0.459	Spike	P	0 - 20
2174678	Antimony	2.64	Spike	P	0 - 20
2174678	Arsenic	1.21	Spike	P	0 - 20
2174678	Boron	1.27	Spike	P	0 - 20
2174678	Cadmium	1.37	Spike	P	0 - 20
2174678	Chromium	0.634	Spike	P	0 - 20
2174678	Copper	0.363	Spike	P	0 - 20
2174678	Lead	1.49	Spike	P	0 - 20
2174678	Nickel	0.337	Spike	P	0 - 20
2174678	Selenium	0.0585	Spike	P	0 - 20
2174678	Silver	0.588	Spike	P	0 - 20
2174678	Thallium	0.911	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175082	Chloride	0.750	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175082	Sulfate	0.719	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174949	Ammonia-N	6.91	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174943	Kjeldahl Nitrogen	4.94	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174980	NO2NO3-N	0.877	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174896	Total-P	0.448	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174892	O-Phosphate-P	0.100	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174984	O-Phosphate-P	1.80	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P382867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174948	Color (true)	0.806	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P382962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174911	Total Alkalinity	1.43	Sample	P	0 - 8.1

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P383271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174911	TDS	2.30	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P382963

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174911	Fluoride	0.482	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P382944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174896	Organic Carbon	0.596	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A99188

Included Lab Sample IDs: 2174979, 2174982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A99189

Included Lab Sample IDs: 2174979, 2174982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A99190

Included Lab Sample IDs: 2174981, 2174984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.5	P/P	90 - 110
O-Phosphate-P	98.5	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A99193

Included Lab Sample IDs: 2174980, 2174983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A99201

Included Lab Sample IDs: 2174980, 2174983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A99217

Included Lab Sample IDs: 2174980, 2174983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	94.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A99225

Included Lab Sample IDs: 2174979, 2174982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.6	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A99225

Included Lab Sample IDs: 2174979, 2174982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	97.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A99231

Included Lab Sample IDs: 2174989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	97.3	98.7	P/P	90 - 110
Calcium	102	107	P/P	90 - 110
Iron	102	106	P/P	90 - 110
Magnesium	102	105	P/P	90 - 110
Potassium	97.4	101	P/P	90 - 110
Sodium	99.2	103	P/P	90 - 110
Zinc	98.8	99.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99234

Included Lab Sample IDs: 2174989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	101	P/P	90 - 110
Antimony	104	105	P/P	90 - 110
Boron	97.9	101	P/P	90 - 110
Chromium	103	105	P/P	90 - 110
Copper	99.1	99.0	P/P	90 - 110
Lead	101	99.8	P/P	90 - 110
Nickel	99.4	100	P/P	90 - 110
Selenium	104	104	P/P	90 - 110
Thallium	97.2	96.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99247

Included Lab Sample IDs: 2174989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	92.4	94.2	P/P	90 - 110
Cadmium	98.4	100	P/P	90 - 110
Silver	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A99256

Included Lab Sample IDs: 2174980, 2174983

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A99295

Included Lab Sample IDs: 2174979, 2174982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	101	P/P	90 - 110
Sulfate	102	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A99330

Included Lab Sample IDs: 2174980, 2174983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	103	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				
EPA 180.1 Rev. 2.0	Turbidity					2.45	
EPA 200.7 Rev. 4.4	Barium	95.2	95.0	95.2	94.4		0.186
	Calcium	102	102	103			2.69
	Iron	101	104	106	100		2.24
	Magnesium	100	101	103			2.45
	Potassium	95.9	96.8	88.2			1.26
	Sodium	99.5	98.6	99.7			3.54
	Zinc	96.7	99.7	100	99.7		0.692
EPA 200.8 Rev. 5.4	Aluminum	100	100	99.5	101		0.459
	Antimony	105	110	107	108		2.64
	Arsenic	100	99.4	98.1	100		1.21
	Boron	104	101	103	105		1.27
	Cadmium	106	105	103	106		1.37
	Chromium	109	107	107	107		0.634
	Copper	102	102	102	101		0.363
	Lead	100	106	104	106		1.49
	Nickel	100	101	101	102		0.337
	Selenium	96.4	103	103	100		0.0585
	Silver	105	99.7	99.2	101		0.588
	Thallium	95.7	105	106	110		0.911
EPA 300.0 Rev. 2.1	Chloride	102	104	103		0.750	
	Sulfate	104	106	105		0.719	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	95.0	103			6.91
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6	99.5	108			4.94
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	95.2	96.2			0.877
EPA 365.1 Rev. 2.0	Total-P	104	105	104			0.448
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	94.6	94.5			0.100
	O-Phosphate-P	103	94.7	97.1			1.80
SM 2120 B-2011	Color (true)	102				0.806	
SM 2320 B-2011	Total Alkalinity	97.9				1.43	
SM 2540 C-2011	TDS					2.30	
SM 4500 F-C-2011	Fluoride	99.3	97.0	97.5			0.482
SM 5310 B-2011	Organic Carbon	100	99.0	98.2			0.596

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2174979, 2174982
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2174989
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2174989
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2174979, 2174982
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2174979, 2174982
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2174980, 2174983
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2174980, 2174983
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2174980, 2174983
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2174980, 2174983
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2174981, 2174984
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2174979, 2174982
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2174979, 2174982
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2174989

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2174979, 2174982
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2174979, 2174982
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2174979, 2174982
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2174980, 2174983

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	06/05/2020			06/05/2020 15:30	Yen Ta	2174979, 2174982
EPA 200.7 Rev. 4.4	06/05/2020	06/08/2020 14:40	Elliott D. Healy	06/09/2020 17:10	Betina Topolski	2174989
EPA 200.8 Rev. 5.4	06/05/2020	06/08/2020 14:40	Elliott D. Healy	06/10/2020 00:20	Justin Cutchin	2174989
	06/05/2020	06/08/2020 14:40	Elliott D. Healy	06/10/2020 15:24	Justin Cutchin	2174989
EPA 300.0 Rev. 2.1	06/05/2020			06/11/2020 11:17	Elliott Rodriguez	2174979
	06/05/2020			06/11/2020 11:30	Elliott Rodriguez	2174982
EPA 350.1 Rev. 2.0	06/05/2020			06/07/2020 12:10	Ping Hua	2174980
	06/05/2020			06/07/2020 12:12	Ping Hua	2174983
EPA 351.2 Rev. 2.0	06/05/2020	06/11/2020 09:27	Sima Feizi	06/15/2020 12:32	Jhamieka S. Greenwood	2174980
	06/05/2020	06/11/2020 09:27	Sima Feizi	06/15/2020 12:34	Jhamieka S. Greenwood	2174983
EPA 353.2 Rev. 2.0	06/05/2020			06/08/2020 10:07	Beverly Y. Sanders	2174980
	06/05/2020			06/08/2020 10:19	Beverly Y. Sanders	2174983
EPA 365.1 Rev. 2.0	06/05/2020	06/10/2020 13:08	Yen Ta	06/11/2020 08:04	Lipi Saha	2174980
	06/05/2020	06/10/2020 13:08	Yen Ta	06/11/2020 08:05	Lipi Saha	2174983
EPA 365.1 Rev. 2.0 dissolved	06/05/2020			06/05/2020 16:49	Carlos Miranda	2174984
	06/05/2020			06/05/2020 17:01	Carlos Miranda	2174981
SM 2120 B-2011	06/05/2020			06/05/2020 16:37	Samantha Davila	2174979
	06/05/2020			06/05/2020 16:38	Samantha Davila	2174982
SM 2320 B-2011	06/05/2020			06/08/2020 17:54	Dale L. Simmons	2174979
	06/05/2020			06/08/2020 18:06	Dale L. Simmons	2174982
SM 2340B	06/05/2020			06/09/2020 17:10	Betina Topolski	2174989
SM 2540 C-2011	06/05/2020			06/09/2020 12:54	Yijie Li	2174979, 2174982
SM 2540 D-2011	06/05/2020			06/09/2020 12:54	Yijie Li	2174979, 2174982
SM 4500 F-C-2011	06/05/2020			06/08/2020 17:54	Dale L. Simmons	2174979
	06/05/2020			06/08/2020 18:06	Dale L. Simmons	2174982
SM 5310 B-2011	06/05/2020			06/08/2020 18:26	David Boose	2174980
	06/05/2020			06/08/2020 18:38	David Boose	2174983