

Chemical Analysis Report

WQAP-2017-03-30-10

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

Event Description: **pesticide template kit: C**
Request ID: **RQ-2017-03-27-41**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
Attn: Mike Eckles

For additional information please contact
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Certified by: Colin Wright, Program Administrator

Date Certified: 21-APR-2017 11:13

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored 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 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 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: Steinhatchee River @ 40m N of SE Yearling Rd Collection Date/Time: 03/30/2017 12:00

Field ID: G1TLHR0065-2017-01

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884941	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P322545	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P323118	
		Sulfate	10		mg SO4/L	P323121	
	SM 2120 B	Color (true)	71	A	PCU	P322525	
	SM 2320 B-97	Total Alkalinity	253		mg CaCO3/L	P323004	
	SM 2540 C-97	TDS	300		mg/L	P323101	
	SM 2540 D-97	TSS	2	I	mg/L	P322878	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P323007	
1884944	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P322605	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P322633	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.071		mg N/L	P322721	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P323239	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P322612	
1884947	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.069		mg P/L	P322609	
1884953	EPA 200.7 Rev. 4.4	Calcium	91.7		mg/L	P322663	
		Iron	390		ug/L	P322663	
		Magnesium	11.1		mg/L	P322663	
		Potassium	0.37	I	mg/L	P322663	
		Sodium	5.4		mg/L	P322663	
		Zinc	5.0	U	ug/L	P322663	
	EPA 200.8 Rev. 5.4	Arsenic	0.27		ug/L	P322663	
		Cadmium	0.020	U	ug/L	P322663	
		Chromium	0.40	U	ug/L	P322663	
		Copper	0.20	U	ug/L	P322663	
		Lead	0.050	U	ug/L	P322663	
		Nickel	0.20	U	ug/L	P322663	
		Silver	0.010	U	ug/L	P322663	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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: Steinhatchee River @ 40m N of SE Yearling Rd Collection Date/Time: 03/30/2017 12:00 dup

Field ID: G1TLHR0065-2017-01 dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884942	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P322545	
	EPA 300.0 Rev. 2.1	Chloride	9.8		mg Cl/L	P323118	
		Sulfate	10		mg SO4/L	P323121	
	SM 2120 B	Color (true)	71		PCU	P322525	
	SM 2320 B-97	Total Alkalinity	251		mg CaCO3/L	P323004	
	SM 2540 C-97	TDS	306		mg/L	P323101	
	SM 2540 D-97	TSS	2	I	mg/L	P322878	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P323007	

Field ID: G1TLHR0065-2017-01 dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884945	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P322605	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P322633	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.071		mg N/L	P322721	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P322705	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P322612	
1884948	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.070		mg P/L	P322609	
1884954	EPA 200.7 Rev. 4.4	Calcium	91.8		mg/L	P322663	
		Iron	390		ug/L	P322663	
		Magnesium	11.2		mg/L	P322663	
		Potassium	0.34	I	mg/L	P322663	
		Sodium	5.3		mg/L	P322663	
		Zinc	5.0	U	ug/L	P322663	
	EPA 200.8 Rev. 5.4	Arsenic	0.25		ug/L	P322663	
		Cadmium	0.020	U	ug/L	P322663	
		Chromium	0.40	U	ug/L	P322663	
		Copper	0.20	U	ug/L	P322663	
		Lead	0.050	U	ug/L	P322663	
		Nickel	0.20	U	ug/L	P322663	
		Silver	0.010	U	ug/L	P322663	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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: Field Blank # 1

Collection Date/Time: 03/30/2017 12:20

Field ID: Field Blank # 1

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884943	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P322546	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P323118	
		Sulfate	0.20	U	mg SO4/L	P323121	
	SM 2120 B	Color (true)	2.5	U	PCU	P322525	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P323167	
	SM 2540 C-97	TDS	15	U	mg/L	P323101	
	SM 2540 D-97	TSS	2	U	mg/L	P322878	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P323007	
1884946	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P322605	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P322633	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322720	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P322706	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P322612	
1884949	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P322609	
1884955	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P322663	
		Iron	30	U	ug/L	P322663	
		Magnesium	0.040	U	mg/L	P322663	
		Potassium	0.30	U	mg/L	P322663	

Field ID: Field Blank # 1

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884955	EPA 200.7 Rev. 4.4	Sodium	0.50	U	mg/L	P322663	
		Zinc	5.0	U	ug/L	P322663	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P322663	
		Cadmium	0.020	U	ug/L	P322663	
		Chromium	0.40	U	ug/L	P322663	
		Copper	0.20	U	ug/L	P322663	
		Lead	0.050	U	ug/L	P322663	
		Nickel	0.20	U	ug/L	P322663	
		Silver	0.010	U	ug/L	P322663	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P322545

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P322546

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P322663

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P322663

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323118

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323121

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322605

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322633

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322720

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322721

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322705

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322706

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323239

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322609

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

Reference Method: SM 2120 B
Batch ID: P322525

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P323004

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

Reference Method: SM 2320 B-97
Batch ID: P323167

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

Reference Method: SM 2540 C-97
Batch ID: P323101

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P322878

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P323007

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P322612

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: P322663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	104		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	102		P	85 - 115
Sodium	102		P	85 - 115
Zinc	99.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	96.9		P	85 - 115
Cadmium	93.7		P	85 - 115
Chromium	96.6		P	85 - 115
Copper	95.4		P	85 - 115
Lead	99.2		P	85 - 115
Nickel	97.6		P	85 - 115
Silver	98.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323118

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322605

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322633

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: P322720

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322721

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322705

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322706

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323239

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322609

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

Reference Method: SM 2320 B-97
Batch ID: P323004

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P323167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P323007

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P322612

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884303	Calcium	100		P	80 - 120
1884303	Iron	104		P	80 - 120
1884303	Magnesium	101		P	80 - 120
1884303	Potassium	101		P	80 - 120
1884303	Sodium	102		P	80 - 120
1884303	Zinc	98.8		P	80 - 120
1884721	Calcium	99.5		P	80 - 120
1884721	Iron	103	104	P/P	80 - 120
1884721	Magnesium	98.4		P	80 - 120
1884721	Potassium	103	103	P/P	80 - 120
1884721	Sodium	101		P	80 - 120
1884721	Zinc	96.8	98.0	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884303	Arsenic	96.6		P	80 - 120
1884303	Cadmium	92.5		P	80 - 120
1884303	Chromium	95.1		P	80 - 120
1884303	Copper	92.2		P	80 - 120
1884303	Lead	97.9		P	80 - 120
1884303	Nickel	93.6		P	80 - 120
1884303	Silver	98.1		P	80 - 120
1884721	Arsenic	98.8	97.2	P/P	80 - 120
1884721	Cadmium	96.3	95.2	P/P	80 - 120
1884721	Chromium	98.1	96.7	P/P	80 - 120
1884721	Copper	92.9	92.5	P/P	80 - 120
1884721	Lead	98.3	98.3	P/P	80 - 120
1884721	Nickel	95.4	94.0	P/P	80 - 120
1884721	Silver	99.2	98.8	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885051	Chloride	98.7		P	90 - 110
1885069	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885051	Sulfate	95.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884944	Ammonia-N	103	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884960	Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884822	NO2NO3-N	98.0	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884980	NO2NO3-N	99.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884885	Total-P	97.6	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885054	Total-P	108	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1886777	Total-P	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884981	O-Phosphate-P	97.0	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P323007

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885134	Fluoride	98.9	98.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P322612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884821	Organic Carbon	94.8	95.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P322545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884815	Turbidity	0.388	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P322546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884881	Turbidity	2.52	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884721	Calcium	0.503	Spike	P	0 - 20
1884721	Iron	1.04	Spike	P	0 - 20
1884721	Magnesium	0.507	Spike	P	0 - 20
1884721	Potassium	0.382	Spike	P	0 - 20
1884721	Sodium	1.06	Spike	P	0 - 20
1884721	Zinc	1.24	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884721	Arsenic	1.61	Spike	P	0 - 20
1884721	Cadmium	1.16	Spike	P	0 - 20
1884721	Chromium	1.34	Spike	P	0 - 20
1884721	Copper	0.431	Spike	P	0 - 20
1884721	Lead	0.0289	Spike	P	0 - 20
1884721	Nickel	1.40	Spike	P	0 - 20
1884721	Silver	0.429	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885069	Chloride	0.223	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885069	Sulfate	0.119	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884944	Ammonia-N	0.0489	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884960	Kjeldahl Nitrogen	0.241	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884822	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884980	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884885	Total-P	10.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885054	Total-P	4.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1886777	Total-P	2.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884981	O-Phosphate-P	1.43	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P322525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884941	Color (true)	1.65	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P323004

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885134	Total Alkalinity	0.0234	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
 Batch ID: P323167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885134	Total Alkalinity	0.499	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
 Batch ID: P323101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884700	TDS	1.70	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P323007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885134	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P322612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884821	Organic Carbon	0.173	Spike	P	0 - 20

* 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 Calibration Verification

Reference Method: SM 2120 B
 Run ID: A75477
 Included Lab Sample IDs: 1884941, 1884942, 1884943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A75482

Included Lab Sample IDs: 1884941, 1884942, 1884943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75505

Included Lab Sample IDs: 1884944, 1884945, 1884946

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A75506

Included Lab Sample IDs: 1884947, 1884948, 1884949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	99.6	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A75508

Included Lab Sample IDs: 1884944, 1884945, 1884946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	96.3	P/P	90 - 110
Organic Carbon	96.4	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75553

Included Lab Sample IDs: 1884944, 1884945, 1884946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.0	94.5	P/P	90 - 110
NO2NO3-N	96.0	95.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75568

Included Lab Sample IDs: 1884944, 1884945, 1884946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75569

Included Lab Sample IDs: 1884953, 1884954, 1884955

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	95.5	95.4	P/P	90 - 110
Arsenic	99.0	98.7	P/P	90 - 110
Cadmium	94.5	93.4	P/P	90 - 110
Cadmium	95.6	95.2	P/P	90 - 110
Chromium	97.5	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75569

Included Lab Sample IDs: 1884953, 1884954, 1884955

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	98.6	98.3	P/P	90 - 110
Copper	96.0	96.0	P/P	90 - 110
Copper	99.6	99.3	P/P	90 - 110
Lead	97.8	97.0	P/P	90 - 110
Lead	99.1	98.7	P/P	90 - 110
Nickel	96.4	95.4	P/P	90 - 110
Nickel	99.2	99.3	P/P	90 - 110
Silver	95.0	94.9	P/P	90 - 110
Silver	98.2	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75582

Included Lab Sample IDs: 1884945

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75585

Included Lab Sample IDs: 1884946

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A75593

Included Lab Sample IDs: 1884953, 1884954, 1884955

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	100	P/P	90 - 110
Calcium	98.8	99.3	P/P	90 - 110
Calcium	99.8	98.8	P/P	90 - 110
Iron	100	97.7	P/P	90 - 110
Iron	100	98.9	P/P	90 - 110
Iron	98.6	100	P/P	90 - 110
Magnesium	101	99.3	P/P	90 - 110
Magnesium	98.6	99.8	P/P	90 - 110
Magnesium	99.8	97.5	P/P	90 - 110
Potassium	100	98.1	P/P	90 - 110
Potassium	101	99.2	P/P	90 - 110
Potassium	98.3	100	P/P	90 - 110
Sodium	101	99.0	P/P	90 - 110
Sodium	98.7	98.9	P/P	90 - 110
Sodium	98.9	98.1	P/P	90 - 110
Zinc	101	99.7	P/P	90 - 110
Zinc	103	99.5	P/P	90 - 110
Zinc	99.7	98.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A75665

Included Lab Sample IDs: 1884941, 1884942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	107	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A75665

Included Lab Sample IDs: 1884941, 1884942, 1884943

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75723

Included Lab Sample IDs: 1884941, 1884942, 1884943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	102	P/P	90 - 110
Sulfate	98.2	97.1	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75733

Included Lab Sample IDs: 1884943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75763

Included Lab Sample IDs: 1884944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	107	105	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				0.388	
	Turbidity				2.52	
EPA 200.7 Rev. 4.4	Calcium	102	100	99.5		0.503
	Iron	104	104	103	104	1.04
	Magnesium	103	101	98.4		0.507
	Potassium	102	101	103	103	0.382
	Sodium	102	102	101		1.06
	Zinc	99.7	98.8	96.8	98.0	1.24
EPA 200.8 Rev. 5.4	Arsenic	96.9	96.6	98.8	97.2	1.61
	Cadmium	93.7	92.5	96.3	95.2	1.16

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
						LCS	SMP
EPA 200.8 Rev. 5.4	Chromium	96.6	95.1	98.1	96.7		1.34
	Copper	95.4	92.2	92.9	92.5		0.431
	Lead	99.2	97.9	98.3	98.3		0.0289
	Nickel	97.6	93.6	95.4	94.0		1.40
	Silver	98.1	98.1	99.2	98.8		0.429
EPA 300.0 Rev. 2.1	Chloride	101	99.0	98.7			0.223
	Sulfate	97.3	95.6				0.119
EPA 350.1 Rev. 2.0	Ammonia-N	102	103	103			0.0489
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	103	103			0.241
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.0	98.5			0.499
	NO2NO3-N	98.5	99.5	98.5			1.01
EPA 365.1 Rev. 2.0	Total-P	110	97.6	110			10.0
	Total-P	107	108	102			4.65
	Total-P	102	101	104			2.19
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	97.0	98.4			1.43
SM 2120 B	Color (true)						1.65
SM 2320 B-97	Total Alkalinity	105					0.0234
	Total Alkalinity	104					0.499
SM 2540 C-97	TDS						1.70
SM 4500 F-C-97	Fluoride	97.4	98.9	98.9			0.0
SM 5310 B-00	Organic Carbon	94.9	94.8	95.2			0.173

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1884941, 1884942, 1884943
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1884953, 1884954, 1884955
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1884953, 1884954, 1884955
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1884941, 1884942, 1884943
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1884941, 1884942, 1884943
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1884944, 1884945, 1884946
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1884944, 1884945, 1884946
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1884944, 1884945, 1884946
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1884944, 1884945, 1884946
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1884947, 1884948, 1884949
SM 2120 B / E31780	True Color measured at 450 nm	1884941, 1884942, 1884943
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1884941, 1884942, 1884943
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1884941, 1884942, 1884943
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1884941, 1884942, 1884943
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1884941, 1884942, 1884943
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1884944, 1884945, 1884946

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	03/30/2017			03/30/2017 15:54	Blanca Fach	1884941, 1884942, 1884943
EPA 200.7 Rev. 4.4	03/30/2017	04/03/2017	Elliott D. Healy	04/05/2017	Martin Acosta	1884953, 1884954, 1884955
EPA 200.8 Rev. 5.4	03/30/2017	04/03/2017	Elliott D. Healy	04/04/2017	Betina Topolski	1884953, 1884954, 1884955
EPA 300.0 Rev. 2.1	03/30/2017			04/11/2017	Ping Hua	1884941, 1884942, 1884943
EPA 350.1 Rev. 2.0	03/30/2017			03/31/2017	Julie Michelle Frank	1884944, 1884945, 1884946
EPA 351.2 Rev. 2.0	03/30/2017	04/03/2017	Adrian Shelby	04/04/2017	Joseph Suarez	1884944, 1884945, 1884946
EPA 353.2 Rev. 2.0	03/30/2017			04/04/2017	Beverly Y. Sanders	1884944, 1884945, 1884946
EPA 365.1 Rev. 2.0	03/30/2017	04/04/2017	Adrian Shelby	04/05/2017	Lipi Saha	1884945, 1884946
	03/30/2017	04/12/2017	Vijayalakshmi Reddy	04/13/2017	Lipi Saha	1884944
EPA 365.1 Rev. 2.0 dissolved	03/30/2017			03/31/2017 15:23	Anthony C. Onicha	1884949
	03/30/2017			03/31/2017 15:54	Anthony C. Onicha	1884947
	03/30/2017			03/31/2017 15:55	Anthony C. Onicha	1884948
SM 2120 B	03/30/2017			03/30/2017 19:47	Julie Michelle Frank	1884941, 1884942
	03/30/2017			03/30/2017 19:48	Julie Michelle Frank	1884943
SM 2320 B-97	03/30/2017			04/07/2017	Dale L. Simmons	1884941, 1884942
	03/30/2017			04/11/2017	Dale L. Simmons	1884943
SM 2540 C-97	03/30/2017			04/03/2017	Sima Feizi	1884941, 1884942, 1884943
SM 2540 D-97	03/30/2017			04/03/2017	Sima Feizi	1884941, 1884942, 1884943
SM 4500 F-C-97	03/30/2017			04/07/2017	Dale L. Simmons	1884941, 1884942, 1884943
SM 5310 B-00	03/30/2017			03/31/2017	Christopher Armour	1884944, 1884945, 1884946