

Chemical Analysis Report

CEN-DIST-2016-05-03-01

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

Event Description: **Lk Mary Jane+LVI**
Request ID: **RQ-2016-05-02-72**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 27-MAY-2016 17:43

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured 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: Lake Mary Jane

Collection Date/Time: 05/02/2016 12:25

Field ID: G4CE0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794965	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P303585	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P304062	
		Sulfate	2.9		mg SO4/L	P304063	
	SM 2120 B	Color (true)	370		PCU	P303437	
	SM 2320 B-97	Total Alkalinity	2.2	I	mg CaCO3/L	P304111	
	SM 2540 C-97	TDS	66		mg/L	P303939	
	SM 2540 D-97	TSS	3	I	mg/L	P303899	
1794966	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P304118	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P304024	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P304362	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.094		mg N/L	P304048	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P304348	
1794967	SM 5310 B-00	Organic Carbon	25		mg C/L	P304744	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303432	
1794969	EPA 200.7 Rev. 4.4	Calcium	4.41		mg/L	P303544	
		Iron	1.05E+03		ug/L	P303544	
		Magnesium	1.60		mg/L	P303544	
		Potassium	0.66	I	mg/L	P303544	
		Sodium	8.5		mg/L	P303544	
		Zinc	5.0	U	ug/L	P303544	
	EPA 200.8 Rev. 5.4	Arsenic	0.67		ug/L	P303544	
		Cadmium	0.020	U	ug/L	P303544	
		Chromium	0.70		ug/L	P303544	
		Copper	0.56		ug/L	P303544	
		Lead	0.55		ug/L	P303544	
		Nickel	0.46		ug/L	P303544	
		Silver	0.0050	U	ug/L	P303544	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: The calcium matrix spike recoveries are unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P303585

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P303544

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P303544

Component	Result	Code	Units
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: P303544

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304062

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

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: P303432

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

Reference Method: SM 2120 B
Batch ID: P303437

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P304111

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

Reference Method: SM 2540 C-97
Batch ID: P303939

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303899

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P304118

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P304744

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: P303544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	102		P	85 - 115
Sodium	103		P	85 - 115
Zinc	97.8		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P303544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.6		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	99.7		P	85 - 115
Copper	97.6		P	85 - 115
Lead	98.7		P	85 - 115
Nickel	99.2		P	85 - 115
Silver	95.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304062

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303432

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.9		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
 Batch ID: P304111

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

Reference Method: SM 4500 F-C-97
 Batch ID: P304118

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P304744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P303544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794072	Iron	108	105	P/P	80 - 120
1794072	Magnesium	106		P	80 - 120
1794072	Potassium	105	98.5	P/P	80 - 120
1794072	Sodium	104		P	80 - 120
1794072	Zinc	102	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P303544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794072	Arsenic	103	102	P/P	80 - 120
1794072	Cadmium	101	101	P/P	80 - 120
1794072	Chromium	101	99.6	P/P	80 - 120
1794072	Copper	96.5	96.2	P/P	80 - 120
1794072	Lead	101	100	P/P	80 - 120
1794072	Nickel	98.7	98.5	P/P	80 - 120
1794072	Silver	96.5	96.6	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P304062

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794891	Chloride	95.4		P	90 - 110
1794971	Chloride	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P304063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794891	Sulfate	93.4		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794971	Sulfate	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794929	Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794927	Kjeldahl Nitrogen	100	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794972	NO2NO3-N	93.0	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794930	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303432

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794973	O-Phosphate-P	96.9	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P304118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795018	Fluoride	98.2	97.6	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794917	Turbidity	5.55	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P303544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794072	Calcium	3.87	Spike	P	0 - 20
1794072	Iron	2.19	Spike	P	0 - 20
1794072	Magnesium	2.72	Spike	P	0 - 20
1794072	Potassium	4.20	Spike	P	0 - 20
1794072	Sodium	5.33	Spike	P	0 - 20
1794072	Zinc	1.58	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P303544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794072	Arsenic	1.38	Spike	P	0 - 20
1794072	Cadmium	0.337	Spike	P	0 - 20
1794072	Chromium	1.00	Spike	P	0 - 20
1794072	Copper	0.226	Spike	P	0 - 20
1794072	Lead	0.905	Spike	P	0 - 20
1794072	Nickel	0.122	Spike	P	0 - 20
1794072	Silver	0.103	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794971	Chloride	0.0809	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794971	Sulfate	1.46	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794929	Ammonia-N	0.980	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304362

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794927	Kjeldahl Nitrogen	0.0940	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794972	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794930	Total-P	2.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794973	O-Phosphate-P	0.561	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794977	Color (true)	2.33	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P304111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795018	Total Alkalinity	0.462	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794978	TDS	4.32	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P304118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795018	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P304744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794893	Organic Carbon	0.789	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: EPA 365.1 Rev. 2.0 dissolved

Run ID: A69241

Included Lab Sample IDs: 1794967

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

Reference Method: SM 2120 B

Run ID: A69244

Included Lab Sample IDs: 1794965

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69290

Included Lab Sample IDs: 1794965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A69309

Included Lab Sample IDs: 1794969

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	102	P/P	90 - 110
Cadmium	99.8	99.6	P/P	90 - 110
Chromium	101	102	P/P	90 - 110
Copper	101	100	P/P	90 - 110
Lead	99.0	98.5	P/P	90 - 110
Nickel	101	100	P/P	90 - 110
Silver	99.5	98.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A69330

Included Lab Sample IDs: 1794969

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Iron	99.8	100	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	99.0	99.1	P/P	90 - 110
Sodium	99.6	100	P/P	90 - 110
Zinc	97.5	94.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69388

Included Lab Sample IDs: 1794966

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69415

Included Lab Sample IDs: 1794966

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69423

Included Lab Sample IDs: 1794965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	98.7	P/P	90 - 110
Sulfate	96.2	97.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69434

Included Lab Sample IDs: 1794965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69434

Included Lab Sample IDs: 1794965

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69513

Included Lab Sample IDs: 1794966

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69562

Included Lab Sample IDs: 1794966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	90.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69609

Included Lab Sample IDs: 1794966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.2	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

* 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					5.55	
EPA 200.7 Rev. 4.4	Calcium	106					3.87
	Iron	105	108	105			2.19
	Magnesium	104	106				2.72
	Potassium	102	105	98.5			4.20
	Sodium	103	104				5.33
	Zinc	97.8	102	100			1.58
EPA 200.8 Rev. 5.4	Arsenic	99.6	103	102			1.38
	Cadmium	100	101	101			0.337
	Chromium	99.7	101	99.6			1.00
	Copper	97.6	96.5	96.2			0.226
	Lead	98.7	101	100			0.905
	Nickel	99.2	98.7	98.5			0.122
	Silver	95.6	96.5	96.6			0.103
EPA 300.0 Rev. 2.1	Chloride	99.3	97.4	95.4		0.0809	
	Sulfate	96.5	94.2	93.4		1.46	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	100			0.980
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	100	100			0.0940
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	97.5	93.0	93.0			0.0
EPA 365.1 Rev. 2.0	Total-P	95.7	104	102			2.01
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	96.9	97.8			0.561
SM 2120 B	Color (true)					2.33	
SM 2320 B-97	Total Alkalinity	101				0.462	
SM 2540 C-97	TDS					4.32	
SM 4500 F-C-97	Fluoride	97.1	98.2	97.6			0.477
SM 5310 B-00	Organic Carbon	97.4					0.789

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1794965
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1794969
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1794969
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1794965
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1794965
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1794966
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1794966
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1794966

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1794966
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1794967
SM 2120 B / E31780	True Color measured at 450 nm	1794965
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1794965
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1794965
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1794965
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1794965
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1794966

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/03/2016			05/04/2016 10:06	Rochelle Y Jackson	1794965
EPA 200.7 Rev. 4.4	05/03/2016	05/04/2016	Elliott D. Healy	05/06/2016	Joshua Ayres	1794969
EPA 200.8 Rev. 5.4	05/03/2016	05/04/2016	Elliott D. Healy	05/05/2016	Charles J. Peterson	1794969
EPA 300.0 Rev. 2.1	05/03/2016			05/10/2016	Elisa J Lutz	1794965
EPA 350.1 Rev. 2.0	05/03/2016			05/10/2016	Diana M. Turner	1794966
EPA 351.2 Rev. 2.0	05/03/2016	05/16/2016	Sofia Elnemr	05/18/2016	Christopher Armour	1794966
EPA 353.2 Rev. 2.0	05/03/2016			05/11/2016	Peter D. Kaus	1794966
EPA 365.1 Rev. 2.0	05/03/2016	05/16/2016	Vijayalakshmi Reddy	05/17/2016	Lipi Saha	1794966
EPA 365.1 Rev. 2.0 dissolved	05/03/2016			05/03/2016 16:07	Julia Storbeck	1794967
SM 2120 B	05/03/2016			05/03/2016 17:28	Chrisoulla Rakowski	1794965
SM 2320 B-97	05/03/2016			05/10/2016	Dale L. Simmons	1794965
SM 2540 C-97	05/03/2016			05/04/2016	Yijie Li	1794965
SM 2540 D-97	05/03/2016			05/04/2016	Yijie Li	1794965
SM 4500 F-C-97	05/03/2016			05/10/2016	Dale L. Simmons	1794965
SM 5310 B-00	05/03/2016			05/21/2016	Ping Hua	1794966