Chemical Analysis Report

SE-DIST-2016-05-26-01

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

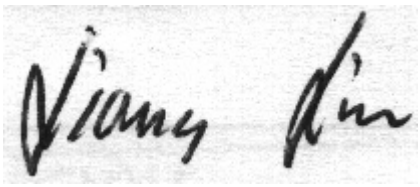
Event Description: **SMP- Bay Run**
Request ID: **RQ-2016-04-25-11**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-JUN-2016 15:06



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: OAK CREEK @ SR 68 **Collection Date/Time: 05/25/2016 15:25**

Field ID: G4SE0080 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802270	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P305148	
	EPA 300.0 Rev. 2.1	Chloride	7.7		mg Cl/L	P305566	
		Sulfate	1.1		mg SO4/L	P305569	
	SM 2120 B	Color (true)	340		PCU	P305122	
	SM 2320 B-97	Total Alkalinity	7.9		mg CaCO3/L	P305510	
	SM 2540 C-97	TDS	83		mg/L	P305890	
	SM 2540 D-97	TSS	2	U	mg/L	P305893	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P305512	
1802271	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P305659	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P305423	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305184	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P305716	
	SM 5310 B-00	Organic Carbon	28		mg C/L	P305853	
1802272	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P305118	
1802301	EPA 200.7 Rev. 4.4	Calcium	4.20		mg/L	P305303	
		Iron	670		ug/L	P305303	
		Magnesium	1.30		mg/L	P305303	
		Potassium	1.3		mg/L	P305303	
		Sodium	4.0		mg/L	P305303	
		Zinc	6.9	I	ug/L	P305303	
	EPA 200.8 Rev. 5.4	Arsenic	0.73		ug/L	P305303	
		Cadmium	0.020	U	ug/L	P305303	
		Chromium	0.39		ug/L	P305303	
		Copper	1.10		ug/L	P305303	
		Lead	0.17	I	ug/L	P305303	
		Nickel	0.22		ug/L	P305303	
		Silver	0.0050	U	ug/L	P305303	

Ref. Method and Comment:
SM 2540 C-97: The precision data is unavailable due to analytical difficulties.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305148

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305303

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305303

Component	Result	Code	Units
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: P305303

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: P305566

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305569

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305659

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305423

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305184

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305716

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: P305118

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

Reference Method: SM 2120 B
Batch ID: P305122

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305510

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

Reference Method: SM 2540 C-97
Batch ID: P305890

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305893

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P305853

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: P305303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	106		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	101		P	85 - 115
Sodium	104		P	85 - 115
Zinc	96.5		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P305303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.4		P	85 - 115
Cadmium	97.2		P	85 - 115
Chromium	97.2		P	85 - 115
Copper	93.7		P	85 - 115
Lead	94.6		P	85 - 115
Nickel	93.6		P	85 - 115
Silver	96.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305566

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305569

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305659

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305423

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305184

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: P305716

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: P305118

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P305510

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

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P305853

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802313	Calcium	104		P	80 - 120
1802313	Iron	106	108	P/P	80 - 120
1802313	Magnesium	104	106	P/P	80 - 120
1802313	Potassium	98.5	99.3	P/P	80 - 120
1802313	Sodium	97.9	98.4	P/P	80 - 120
1802313	Zinc	97.6	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P305303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802313	Arsenic	96.7	96.9	P/P	80 - 120
1802313	Cadmium	96.5	97.8	P/P	80 - 120
1802313	Chromium	97.5	99.5	P/P	80 - 120
1802313	Copper	93.0	94.0	P/P	80 - 120
1802313	Lead	94.1	95.7	P/P	80 - 120
1802313	Nickel	94.1	95.0	P/P	80 - 120
1802313	Silver	97.8	99.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802177	Chloride	99.1		P	90 - 110
1802329	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802177	Sulfate	97.2		P	90 - 110
1802329	Sulfate	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802290	Ammonia-N	100	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802182	Kjeldahl Nitrogen	98.0	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305184

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802271	NO2NO3-N	96.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802276	Total-P	101	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802280	O-Phosphate-P	98.2	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802519	Fluoride	94.7	95.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P305853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802189	Organic Carbon	98.2	97.6	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802175	Turbidity	6.36	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P305303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802313	Calcium	3.00	Spike	P	0 - 20
1802313	Iron	1.61	Spike	P	0 - 20
1802313	Magnesium	1.53	Spike	P	0 - 20
1802313	Potassium	0.719	Spike	P	0 - 20
1802313	Sodium	0.312	Spike	P	0 - 20
1802313	Zinc	4.19	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P305303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802313	Arsenic	0.168	Spike	P	0 - 20
1802313	Cadmium	1.29	Spike	P	0 - 20
1802313	Chromium	2.04	Spike	P	0 - 20
1802313	Copper	1.06	Spike	P	0 - 20
1802313	Lead	1.74	Spike	P	0 - 20
1802313	Nickel	0.877	Spike	P	0 - 20
1802313	Silver	1.58	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802177	Chloride	0.0158	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802177	Sulfate	0.999	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802290	Ammonia-N	1.34	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305423

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802182	Kjeldahl Nitrogen	4.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305184

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802271	NO2NO3-N	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305716

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802276	Total-P	5.91	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305118

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802280	O-Phosphate-P	0.953	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305122

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802175	Color (true)	2.30	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305510

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802519	Total Alkalinity	0.261	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802519	Fluoride	0.536	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P305853

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802189	Organic Carbon	0.491	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: A69721
Included Lab Sample IDs: 1802272

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

Reference Method: SM 2120 B
Run ID: A69723
Included Lab Sample IDs: 1802270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69730
Included Lab Sample IDs: 1802270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A69735
Included Lab Sample IDs: 1802271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	92.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A69794
Included Lab Sample IDs: 1802301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.3	100	P/P	90 - 110
Iron	102	98.8	P/P	90 - 110
Magnesium	102	99.4	P/P	90 - 110
Potassium	100	99.7	P/P	90 - 110
Sodium	99.8	102	P/P	90 - 110
Zinc	98.8	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A69799
Included Lab Sample IDs: 1802301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.0	96.5	P/P	90 - 110
Cadmium	96.5	96.8	P/P	90 - 110
Chromium	98.4	98.2	P/P	90 - 110
Copper	95.4	95.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A69799
Included Lab Sample IDs: 1802301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	93.5	93.4	P/P	90 - 110
Nickel	95.4	95.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A69814
Included Lab Sample IDs: 1802270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	99.7	96.4	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A69825
Included Lab Sample IDs: 1802270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A69825
Included Lab Sample IDs: 1802270

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A69846
Included Lab Sample IDs: 1802271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.2	94.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A69862
Included Lab Sample IDs: 1802271

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A69879
Included Lab Sample IDs: 1802301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	96.1	96.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A69933
Included Lab Sample IDs: 1802271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A69933
Included Lab Sample IDs: 1802271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69951
Included Lab Sample IDs: 1802271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	102	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		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					6.36	
EPA 200.7 Rev. 4.4	Calcium	103	104				3.00
	Iron	106	106	108			1.61
	Magnesium	107	104	106			1.53
	Potassium	101	98.5	99.3			0.719
	Sodium	104	97.9	98.4			0.312
	Zinc	96.5	97.6	102			4.19
EPA 200.8 Rev. 5.4	Arsenic	95.4	96.7	96.9			0.168
	Cadmium	97.2	96.5	97.8			1.29
	Chromium	97.2	97.5	99.5			2.04
	Copper	93.7	93.0	94.0			1.06
	Lead	94.6	94.1	95.7			1.74
	Nickel	93.6	94.1	95.0			0.877
	Silver	96.1	97.8	99.4			1.58
EPA 300.0 Rev. 2.1	Chloride	100	99.1	99.7		0.0158	
	Sulfate	97.9	97.2	98.4		0.999	
EPA 350.1 Rev. 2.0	Ammonia-N	100	100	98.5			1.34
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.0	105			4.67
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	96.0	97.0			1.04
EPA 365.1 Rev. 2.0	Total-P	102	101	107			5.91
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.2	99.2			0.953
SM 2120 B	Color (true)					2.30	
SM 2320 B-97	Total Alkalinity	101				0.261	
SM 4500 F-C-97	Fluoride	98.2	94.7	95.3			0.536
SM 5310 B-00	Organic Carbon	101	98.2	97.6			0.491

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1802270

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1802301
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1802301
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1802270
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1802270
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1802271
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1802271
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1802271
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1802271
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1802272
SM 2120 B / E31780	True Color measured at 450 nm	1802270
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1802270
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1802270
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1802270
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1802270
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1802271

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	05/26/2016			05/26/2016 16:42	Blanca Fach	1802270
EPA 200.7 Rev. 4.4	05/26/2016	05/31/2016	Elliott D. Healy	06/01/2016	Joshua Ayres	1802301
EPA 200.8 Rev. 5.4	05/26/2016	05/31/2016	Elliott D. Healy	06/01/2016	Charles J. Peterson	1802301
	05/26/2016	05/31/2016	Elliott D. Healy	06/03/2016	Charles J. Peterson	1802301
EPA 300.0 Rev. 2.1	05/26/2016			06/02/2016	Elisa J Lutz	1802270
EPA 350.1 Rev. 2.0	05/26/2016			06/06/2016	Diana M. Turner	1802271
EPA 351.2 Rev. 2.0	05/26/2016	06/02/2016	Sofia Elnemr	06/03/2016	Christopher Armour	1802271
EPA 353.2 Rev. 2.0	05/26/2016			05/27/2016	Peter D. Kaus	1802271
EPA 365.1 Rev. 2.0	05/26/2016	06/07/2016	Vijayalakshmi Reddy	06/09/2016	Rochelle Y Jackson	1802271
EPA 365.1 Rev. 2.0 dissolved	05/26/2016			05/26/2016 14:53	Julia Storbeck	1802272
SM 2120 B	05/26/2016			05/26/2016 17:17	Chrisoulla Rakowski	1802270
SM 2320 B-97	05/26/2016			06/02/2016	Dale L. Simmons	1802270
SM 2540 C-97	05/26/2016			05/31/2016	Blanca Fach	1802270
SM 2540 D-97	05/26/2016			05/31/2016	Blanca Fach	1802270
SM 4500 F-C-97	05/26/2016			06/02/2016	Dale L. Simmons	1802270
SM 5310 B-00	05/26/2016			06/07/2016	Diana M. Turner	1802271