

Chemical Analysis Report

SO-DIST-2016-12-02-01

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

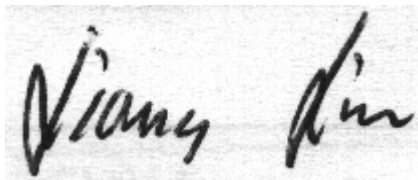
Event Description: **SMP: Florida Keys**
Request ID: **RQ-2016-11-07-15**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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

Certified by: Liang Lin, Environmental Administrator

Date Certified: 30-DEC-2016 09:33

A handwritten signature in black ink, appearing to read "Liang Lin", 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 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: 8079-ENRG6 Out by reef

Collection Date/Time: 12/01/2016 10:45

Field ID: G5SD0068

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854180	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P316109	
	SM 2320 B-97	Total Alkalinity	123		mg CaCO3/L	P316632	
	SM 2540 D-97	TSS	3	U	mg/L	P316685	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P316636	
1854182	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P316474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P316459	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316220	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P316342	
	SM 5310 B-00	Organic Carbon	1.2	I	mg C/L	P316152	
1854184	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316111	
1854193	EPA 200.7 Rev. 4.4	Iron	150	U	ug/L	P316348	
	EPA 200.8 Rev. 5.4	Arsenic	2.15		ug/L	P316348	
		Cadmium	0.060	U	ug/L	P316348	
		Chromium	0.15	U	ug/L	P316348	
		Copper	0.30	U	ug/L	P316348	
		Lead	0.25	U	ug/L	P316348	
		Nickel	0.17	I	ug/L	P316348	
		Silver	0.015	U	ug/L	P316348	
		Zinc	3.0	U	ug/L	P316348	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: 8079-ENRG3 South of Stock Island

Collection Date/Time: 12/01/2016 11:05

Field ID: G5SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854181	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P316109	
	SM 2320 B-97	Total Alkalinity	123		mg CaCO3/L	P316632	
	SM 2540 D-97	TSS	3	U	mg/L	P316685	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P316636	
1854183	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P316474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P316459	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316220	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P316342	
	SM 5310 B-00	Organic Carbon	1.6	I	mg C/L	P316152	
1854185	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316111	
1854194	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P316348	
	EPA 200.8 Rev. 5.4	Arsenic	1.89		ug/L	P316348	
		Cadmium	0.060	U	ug/L	P316348	
		Chromium	0.15	U	ug/L	P316348	
		Copper	0.30	U	ug/L	P316348	
		Lead	0.25	U	ug/L	P316348	
		Nickel	0.18	I	ug/L	P316348	
		Silver	0.015	U	ug/L	P316348	

Field ID: G5SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854194	EPA 200.8 Rev. 5.4	Zinc	3.0	U	ug/L	P316348	

Ref. Method and Comment:

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: P316109

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P316348

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P316348

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
Zinc	1.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P316474

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P316459

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P316220

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

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P316342

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: P316111

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

Reference Method: SM 2320 B-97
Batch ID: P316632

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

Reference Method: SM 2540 D-97
Batch ID: P316685

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P316636

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P316152

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: P316348

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316348

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.1		P	85 - 115
Cadmium	97.6		P	85 - 115
Chromium	94.5		P	85 - 115
Copper	94.0		P	85 - 115
Lead	96.8		P	85 - 115
Nickel	96.8		P	85 - 115
Silver	101		P	85 - 115
Zinc	99.3		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316459

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: P316220

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316342

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316111

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

Reference Method: SM 2320 B-97
Batch ID: P316632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.7		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P316636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P316152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316348

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854983	Iron	100		P	70 - 130
1855137	Iron	97.4	95.1	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854983	Arsenic	103		P	70 - 130
1854983	Cadmium	89.6		P	70 - 130
1854983	Chromium	80.9		P	70 - 130
1854983	Copper	90.5		P	70 - 130
1854983	Lead	100		P	70 - 130
1854983	Nickel	96.4		P	70 - 130
1854983	Silver	89.9		P	70 - 130
1854983	Zinc	93.2		P	70 - 130
1855137	Arsenic	108	107	P/P	70 - 130
1855137	Cadmium	92.0	94.5	P/P	70 - 130
1855137	Chromium	83.6	83.9	P/P	70 - 130
1855137	Copper	91.3	92.4	P/P	70 - 130
1855137	Lead	104	106	P/P	70 - 130
1855137	Nickel	99.3	101	P/P	70 - 130
1855137	Silver	92.8	94.0	P/P	70 - 130
1855137	Zinc	95.0	95.6	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853069	Ammonia-N	100	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854163	Kjeldahl Nitrogen	97.8	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316220

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854138	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854163	Total-P	105	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316111

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854167	O-Phosphate-P	99.1	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P316636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854159	Fluoride	99.9	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853636	Organic Carbon	95.2	95.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854159	Turbidity	12.5	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855137	Iron	2.38	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855137	Arsenic	0.476	Spike	P	0 - 20
1855137	Cadmium	2.61	Spike	P	0 - 20
1855137	Chromium	0.380	Spike	P	0 - 20
1855137	Copper	1.09	Spike	P	0 - 20
1855137	Lead	1.51	Spike	P	0 - 20
1855137	Nickel	1.97	Spike	P	0 - 20
1855137	Silver	1.25	Spike	P	0 - 20
1855137	Zinc	0.550	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853069	Ammonia-N	0.958	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854163	Kjeldahl Nitrogen	1.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316220

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854138	NO2NO3-N	0.957	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854163	Total-P	2.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854167	O-Phosphate-P	0.503	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P316632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854159	Total Alkalinity	0.382	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P316636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854159	Fluoride	0.993	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P316152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853636	Organic Carbon	0.233	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A73146

Included Lab Sample IDs: 1854180, 1854181

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A73147

Included Lab Sample IDs: 1854184, 1854185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	97.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A73154

Included Lab Sample IDs: 1854182, 1854183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.9	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73189

Included Lab Sample IDs: 1854182, 1854183

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73263

Included Lab Sample IDs: 1854182, 1854183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73275

Included Lab Sample IDs: 1854182, 1854183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A73287

Included Lab Sample IDs: 1854194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	104	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A73300

Included Lab Sample IDs: 1854193, 1854194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.3	101	P/P	90 - 110
Cadmium	96.6	96.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73300
Included Lab Sample IDs: 1854193, 1854194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	95.2	91.6	P/P	90 - 110
Nickel	98.7	101	P/P	90 - 110
Zinc	99.3	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73301
Included Lab Sample IDs: 1854182, 1854183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73305
Included Lab Sample IDs: 1854193, 1854194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	93.7	95.7	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A73323
Included Lab Sample IDs: 1854180, 1854181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A73323
Included Lab Sample IDs: 1854180, 1854181

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A73351
Included Lab Sample IDs: 1854193

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	103	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73629
Included Lab Sample IDs: 1854193, 1854194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	91.4	91.5	P/P	90 - 110
Silver	98.9	99.9	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					12.5	
EPA 200.7 Rev. 4.4	Iron	107	100	97.4	95.1		2.38
EPA 200.8 Rev. 5.4	Arsenic	98.1	103	108	107		0.476
	Cadmium	97.6	89.6	92.0	94.5		2.61
	Chromium	94.5	80.9	83.6	83.9		0.380
	Copper	94.0	90.5	91.3	92.4		1.09
	Lead	96.8	100	104	106		1.51
	Nickel	96.8	96.4	99.3	101		1.97
	Silver	101	89.9	92.8	94.0		1.25
	Zinc	99.3	93.2	95.0	95.6		0.550
EPA 350.1 Rev. 2.0	Ammonia-N	103	100	99.4			0.958
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	97.8	96.2			1.51
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	103	102			0.957
EPA 365.1 Rev. 2.0	Total-P	105	105	108			2.17
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.1	99.6			0.503
SM 2320 B-97	Total Alkalinity	99.7				0.382	
SM 4500 F-C-97	Fluoride	99.3	99.9	101			0.993
SM 5310 B-00	Organic Carbon	96.1	95.2	95.5			0.233

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1854180, 1854181
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1854193, 1854194
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1854193, 1854194
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1854182, 1854183
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1854182, 1854183
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1854182, 1854183
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1854182, 1854183
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1854184, 1854185
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1854180, 1854181
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1854180, 1854181
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1854180, 1854181
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1854182, 1854183

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	12/02/2016			12/02/2016 14:41	Sima Feizi	1854180, 1854181
EPA 200.7 Rev. 4.4	12/02/2016	12/07/2016	Elliott D. Healy	12/09/2016	Joshua Ayres	1854194
	12/02/2016	12/07/2016	Elliott D. Healy	12/13/2016	Joshua Ayres	1854193
EPA 200.8 Rev. 5.4	12/02/2016	12/07/2016	Elliott D. Healy	12/10/2016	Charles J. Peterson	1854193, 1854194
	12/02/2016	12/07/2016	Elliott D. Healy	12/29/2016	Charles J. Peterson	1854193, 1854194
EPA 350.1 Rev. 2.0	12/02/2016			12/08/2016	Sofia Elnemr	1854182, 1854183
EPA 351.2 Rev. 2.0	12/02/2016	12/09/2016	Martin Acosta	12/12/2016	Joseph Suarez	1854182, 1854183
EPA 353.2 Rev. 2.0	12/02/2016			12/06/2016	Beverly Y. Sanders	1854182, 1854183
EPA 365.1 Rev. 2.0	12/02/2016	12/07/2016	Vijayalakshmi Reddy	12/09/2016	Lipi Saha	1854182, 1854183
EPA 365.1 Rev. 2.0 dissolved	12/02/2016			12/02/2016 15:55	Julia Storbeck	1854184
	12/02/2016			12/02/2016 15:56	Julia Storbeck	1854185
SM 2320 B-97	12/02/2016			12/09/2016	Dale L. Simmons	1854180, 1854181
SM 2540 D-97	12/02/2016			12/07/2016	Yijie Li	1854180, 1854181
SM 4500 F-C-97	12/02/2016			12/09/2016	Dale L. Simmons	1854180, 1854181
SM 5310 B-00	12/02/2016			12/03/2016	Julie Michelle Frank	1854182, 1854183