Chemical Analysis Report

SE-DIST-2016-06-17-01

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

Event Description: **SMP-IRL Run**
Request ID: **RQ-2016-06-13-37**
Customer: **SE-DIST**
Project ID: **SMP**

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

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 08-JUL-2016 15:04

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: North Canal @ US1 **Collection Date/Time: 06/16/2016 10:50**

Field ID: G4SE0043 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809365	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P306481	
	EPA 300.0 Rev. 2.1	Chloride	200		mg Cl/L	P307109	
		Sulfate	65		mg SO4/L	P307110	
	SM 2120 B	Color (true)	77		PCU	P306732	
	SM 2320 B-97	Total Alkalinity	166		mg CaCO3/L	P306822	
	SM 2540 C-97	TDS	645		mg/L	P307011	
	SM 2540 D-97	TSS	6	I	mg/L	P306989	
	SM 4500 F-C-97	Fluoride	0.34		mg F/L	P306902	
1809366	EPA 350.1 Rev. 2.0	Ammonia-N	0.067		mg N/L	P306893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P306501	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P306728	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P306650	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P306809	
1809367	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.099		mg P/L	P306408	
1809374	EPA 200.7 Rev. 4.4	Calcium	77.9		mg/L	P306469	
		Iron	730		ug/L	P306469	
		Magnesium	21.4		mg/L	P306469	
		Potassium	6.3		mg/L	P306469	
		Sodium	97.7		mg/L	P306469	
		Zinc	5.0	U	ug/L	P306469	
	EPA 200.8 Rev. 5.4	Arsenic	1.32		ug/L	P306469	
		Cadmium	0.020	U	ug/L	P306469	
		Chromium	0.81		ug/L	P306469	
		Copper	2.03		ug/L	P306469	
		Lead	0.25		ug/L	P306469	
		Nickel	0.47	I	ug/L	P306469	
		Silver	0.0050	U	ug/L	P306469	

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

Sample Location: Sebaston River @ Sebastan Blvd **Collection Date/Time: 06/16/2016 12:05**

Field ID: G4SE0042 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809362	EPA 180.1 Rev. 2.0	Turbidity	6.4		NTU	P306481	
	EPA 300.0 Rev. 2.1	Chloride	210		mg Cl/L	P307109	
		Sulfate	54		mg SO4/L	P307110	
	SM 2120 B	Color (true)	130		PCU	P306732	
	SM 2320 B-97	Total Alkalinity	146		mg CaCO3/L	P306822	
	SM 2540 C-97	TDS	600	A	mg/L	P307011	
	SM 2540 D-97	TSS	8	I	mg/L	P306989	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P306902	
1809363	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P306893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P306501	

Field ID: G4SE0042 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809363	EPA 353.2 Rev. 2.0	NO2NO3-N	0.081		mg N/L	P306728	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P306650	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P306809	
1809364	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.079		mg P/L	P306408	

Ref. Method and Comment:
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: P306481

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P306469

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: P306469

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	0.25	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307109

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307110

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306893

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306650

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

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

Reference Method: SM 2120 B
Batch ID: P306732

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P306822

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

Reference Method: SM 2540 C-97
Batch ID: P307011

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P306989

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P306902

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306809

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: P306469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	103		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	99.6		P	85 - 115
Sodium	103		P	85 - 115
Zinc	98.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P306469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.8		P	85 - 115
Cadmium	99.2		P	85 - 115
Chromium	98.8		P	85 - 115
Copper	97.9		P	85 - 115
Lead	100		P	85 - 115
Nickel	103		P	85 - 115
Silver	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307109

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307110

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

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: P306650

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

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

Reference Method: SM 2320 B-97
Batch ID: P306822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P306902

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

Reference Method: SM 5310 B-00
Batch ID: P306809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P306469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808522	Calcium	101		P	80 - 120
1808522	Iron	104	103	P/P	80 - 120
1808522	Magnesium	106	106	P/P	80 - 120
1808522	Potassium	101	101	P/P	80 - 120
1808522	Sodium	103	104	P/P	80 - 120
1808522	Zinc	99.1	99.8	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P306469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809060	Calcium	104		P	80 - 120
1809060	Iron	104		P	80 - 120
1809060	Magnesium	106		P	80 - 120
1809060	Potassium	106		P	80 - 120
1809060	Sodium	103		P	80 - 120
1809060	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P306469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808522	Arsenic	99.4	98.3	P/P	80 - 120
1808522	Cadmium	103	104	P/P	80 - 120
1808522	Chromium	98.7	99.2	P/P	80 - 120
1808522	Copper	94.1	94.0	P/P	80 - 120
1808522	Lead	100	99.3	P/P	80 - 120
1808522	Nickel	99.4	98.7	P/P	80 - 120
1808522	Silver	99.6	100	P/P	80 - 120
1809060	Arsenic	103		P	80 - 120
1809060	Cadmium	106		P	80 - 120
1809060	Chromium	103		P	80 - 120
1809060	Copper	96.8		P	80 - 120
1809060	Lead	103		P	80 - 120
1809060	Nickel	101		P	80 - 120
1809060	Silver	101		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809378	Chloride	96.6	97.6	P/P	90 - 110
1809379	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809378	Sulfate	98.2	98.4	P/P	90 - 110
1809379	Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809382	Ammonia-N	95.8	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809363	Kjeldahl Nitrogen	102	106	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809366	NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809347	Total-P	99.1	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809300	O-Phosphate-P	98.7	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P306902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809001	Fluoride	102	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P306809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809296	Organic Carbon	100	99.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809289	Turbidity	1.41	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P306469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808522	Calcium	1.59	Spike	P	0 - 20
1808522	Iron	0.376	Spike	P	0 - 20
1808522	Magnesium	0.158	Spike	P	0 - 20
1808522	Potassium	0.150	Spike	P	0 - 20
1808522	Sodium	0.278	Spike	P	0 - 20
1808522	Zinc	0.716	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P306469

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808522	Arsenic	1.07	Spike	P	0 - 20
1808522	Cadmium	1.48	Spike	P	0 - 20
1808522	Chromium	0.422	Spike	P	0 - 20
1808522	Copper	0.0975	Spike	P	0 - 20
1808522	Lead	0.736	Spike	P	0 - 20
1808522	Nickel	0.714	Spike	P	0 - 20
1808522	Silver	0.531	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307109

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809378	Chloride	0.660	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307110

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809378	Sulfate	0.149	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306893

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809382	Ammonia-N	0.632	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809363	Kjeldahl Nitrogen	2.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809366	NO2NO3-N	0.447	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306650

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809347	Total-P	1.12	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809300	O-Phosphate-P	0.761	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P306732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809400	Color (true)	1.37	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P306822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809001	Total Alkalinity	0.130	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P307011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809362	TDS	3.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P306902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809001	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809296	Organic Carbon	0.345	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: EPA 365.1 Rev. 2.0 dissolved
Run ID: A70107
Included Lab Sample IDs: 1809364, 1809367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.8	P/P	90 - 110
O-Phosphate-P	99.8	99.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70125
Included Lab Sample IDs: 1809362, 1809365

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A70161
Included Lab Sample IDs: 1809374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	101	P/P	90 - 110
Iron	101	99.9	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	100	98.9	P/P	90 - 110
Sodium	101	99.7	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70175
Included Lab Sample IDs: 1809363, 1809366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	105	P/P	90 - 110
Kjeldahl Nitrogen	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70181
Included Lab Sample IDs: 1809363, 1809366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70185
Included Lab Sample IDs: 1809363, 1809366

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

Reference Method: SM 2120 B
Run ID: A70187
Included Lab Sample IDs: 1809362, 1809365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.2	98.1	P/P	90 - 115

Reference Method: SM 5310 B-00
Run ID: A70211
Included Lab Sample IDs: 1809363, 1809366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A70215
Included Lab Sample IDs: 1809362, 1809365

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

Reference Method: SM 4500 F-C-97
Run ID: A70215
Included Lab Sample IDs: 1809362, 1809365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70237
Included Lab Sample IDs: 1809363, 1809366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.5	96.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A70238
Included Lab Sample IDs: 1809374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.6	96.7	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Chromium	102	102	P/P	90 - 110
Copper	96.6	95.3	P/P	90 - 110
Lead	98.2	98.5	P/P	90 - 110
Silver	98.2	98.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A70289
Included Lab Sample IDs: 1809374

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70313
Included Lab Sample IDs: 1809362, 1809365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.5	P/P	90 - 110
Sulfate	101	96.3	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						1.41	
EPA 200.7 Rev. 4.4	Calcium	101	101	104				1.59
	Iron	103	104	103	104			0.376
	Magnesium	108	106	106	106			0.158
	Potassium	99.6	101	101	106			0.150
	Sodium	103	103	104	103			0.278
	Zinc	98.2	99.1	99.8	102			0.716
EPA 200.8 Rev. 5.4	Arsenic	98.8	99.4	98.3	103			1.07
	Cadmium	99.2	103	104	106			1.48
	Chromium	98.8	98.7	99.2	103			0.422
	Copper	97.9	94.1	94.0	96.8			0.0975
	Lead	100	100	99.3	103			0.736
	Nickel	103	99.4	98.7	101			0.714
	Silver	100	99.6	100	101			0.531
EPA 300.0 Rev. 2.1	Chloride	97.7	96.6	97.6	98.4			0.660
	Sulfate	98.0	98.2	98.4	99.6			0.149
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	95.8	96.4				0.632
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.0	102	106				2.36
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	98.0					0.447
EPA 365.1 Rev. 2.0	Total-P	101	99.1	101				1.12
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	98.7	99.6				0.761
SM 2120 B	Color (true)						1.37	
SM 2320 B-97	Total Alkalinity	102					0.130	
SM 2540 C-97	TDS						3.67	
SM 4500 F-C-97	Fluoride	103	102	103				0.473
SM 5310 B-00	Organic Carbon	99.1	100	99.9				0.345

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1809362, 1809365
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1809374
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1809374
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1809362, 1809365
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1809362, 1809365
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1809363, 1809366
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1809363, 1809366
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1809363, 1809366
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1809363, 1809366
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1809364, 1809367
SM 2120 B / E31780	True Color measured at 450 nm	1809362, 1809365
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1809362, 1809365
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1809362, 1809365
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1809362, 1809365
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1809362, 1809365

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1809363, 1809366

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	06/17/2016			06/17/2016 15:32	Blanca Fach	1809362, 1809365
EPA 200.7 Rev. 4.4	06/17/2016	06/20/2016	Elliott D. Healy	06/21/2016	Joshua Ayres	1809374
EPA 200.8 Rev. 5.4	06/17/2016	06/20/2016	Elliott D. Healy	06/24/2016	Charles J. Peterson	1809374
	06/17/2016	06/20/2016	Elliott D. Healy	06/28/2016	Robert K Palmer	1809374
EPA 300.0 Rev. 2.1	06/17/2016			06/28/2016	Ping Hua	1809362, 1809365
EPA 350.1 Rev. 2.0	06/17/2016			06/24/2016	Diana M. Turner	1809363, 1809366
EPA 351.2 Rev. 2.0	06/17/2016	06/21/2016	Sofia Elnemr	06/23/2016	Christopher Armour	1809363, 1809366
EPA 353.2 Rev. 2.0	06/17/2016			06/23/2016	Beverly Y. Sanders	1809363, 1809366
EPA 365.1 Rev. 2.0	06/17/2016	06/22/2016	Vijayalakshmi Reddy	06/23/2016	Lipi Saha	1809363, 1809366
EPA 365.1 Rev. 2.0 dissolved	06/17/2016			06/17/2016 14:48	Virginia P. Brown	1809364
	06/17/2016			06/17/2016 14:53	Virginia P. Brown	1809367
SM 2120 B	06/17/2016			06/17/2016 17:08	Chrisoulla Rakowski	1809362, 1809365
SM 2320 B-97	06/17/2016			06/23/2016	Rochelle Y Jackson	1809362, 1809365
SM 2540 C-97	06/17/2016			06/22/2016	Yijie Li	1809362, 1809365
SM 2540 D-97	06/17/2016			06/22/2016	Yijie Li	1809362, 1809365
SM 4500 F-C-97	06/17/2016			06/23/2016	Rochelle Y Jackson	1809362, 1809365
SM 5310 B-00	06/17/2016			06/24/2016	Diana M. Turner	1809363, 1809366