Chemical Analysis Report

NW-DIST-2016-07-12-02

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

Event Description: **WBID 797 1004 462A 784 ENRA**
Request ID: **RQ-2016-07-11-29**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 05-AUG-2016 14:09

NON-CONFORMANCE REPORT INCLUDED

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: Perdidio River Above Hurst Landing **Collection Date/Time: 07/11/2016 12:45**

Field ID: G5NW0016 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815118	EPA 180.1 Rev. 2.0	Turbidity	2.4	A	NTU	P307794	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P308094	
	SM 2540 D-97	TSS	4	I	mg/L	P308397	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P308099	
1815120	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P308065	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P308567	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P307932	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P307918	
	SM 5310 B-00	Organic Carbon	4.1		mg C/L	P308409	
1815122	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307756	
1815126	EPA 200.7 Rev. 4.4	Iron	280		ug/L	P308231	
		Zinc	5.0	U	ug/L	P308231	
	EPA 200.8 Rev. 5.4	Arsenic	0.60		ug/L	P308231	
		Cadmium	0.060	U	ug/L	P308231	
		Chromium	0.17	I	ug/L	P308231	
		Copper	0.37	I	ug/L	P308231	
		Lead	0.15	U	ug/L	P308231	
		Nickel	0.43	I	ug/L	P308231	
		Silver	0.015	U	ug/L	P308231	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Perdidio River @ Mouth **Collection Date/Time: 07/11/2016 13:00**

Field ID: G5NW0018 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815119	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P307794	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P308094	
	SM 2540 D-97	TSS	3	I	mg/L	P308397	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P308099	
1815121	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P308059	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P307870	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.073		mg N/L	P308724	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P307925	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P308409	
1815123	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307757	
1815127	EPA 200.7 Rev. 4.4	Iron	200		ug/L	P308231	
		Zinc	5.0	U	ug/L	P308231	
	EPA 200.8 Rev. 5.4	Arsenic	0.72		ug/L	P308231	
		Cadmium	0.060	U	ug/L	P308231	
		Chromium	0.15	I	ug/L	P308231	
		Copper	0.37	I	ug/L	P308231	
		Lead	0.15	U	ug/L	P308231	

Field ID: G5NW0018 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815127	EPA 200.8 Rev. 5.4	Nickel	0.40	I	ug/L	P308231	
		Silver	0.015	U	ug/L	P308231	

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

Non-Conformance Report

NCR ID: 5937

Event(s)	Job(s)	Sample(s)	Test(s)
NW-DIST-2016-07-12-02			

NCR Type: SHIPPING/RECEIVING **NCR Category: Receiving**

Observation: One cooler received with samples for RQ-2016-07-11-29; sample submittal forms indicates that two coolers were shipped. Samples for the following Field IDs were not received:
G5NW0121
G5NW0119
G5NW0035

Resolution: Samples that were received were logged in. Customers (Michael King/Frank Butera) were notified about missing cooler.

Second cooler was received on 7/13/2016 containing the missing samples listed above. Samples were received within temp. range (<6 degrees C) and short holds were logged in prior to expiration.

Authorised by/Date: Kathryn Holland 7/19/2016

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Tim Fitzpatrick (850) 245-8085
Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307794

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308231

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308231

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308231

Component	Result	Code	Units
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308059

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308065

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307870

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308567

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307932

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308724

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307918

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307925

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: P307756

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307757

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

Reference Method: SM 2320 B-97
Batch ID: P308094

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

Reference Method: SM 2540 D-97
Batch ID: P308397

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P308409

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: P308231

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	106		P	85 - 115
Zinc	98.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308231

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	94.3		P	85 - 115
Cadmium	92.2		P	85 - 115
Chromium	94.4		P	85 - 115
Copper	92.0		P	85 - 115
Lead	92.3		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308231

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Nickel	93.7		P	85 - 115
Silver	93.2		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308059

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308065

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307870

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308567

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307932

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308724

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307918

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307925

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.7		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307756

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307757

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

Reference Method: SM 2320 B-97
Batch ID: P308094

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

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P308409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308231

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815126	Iron	103	107	P/P	70 - 130
1815126	Zinc	102	99.7	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308231

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815126	Arsenic	99.1	101	P/P	70 - 130
1815126	Cadmium	87.1	90.6	P/P	70 - 130
1815126	Chromium	85.8	87.5	P/P	70 - 130
1815126	Copper	90.4	92.3	P/P	70 - 130
1815126	Lead	94.1	95.8	P/P	70 - 130
1815126	Nickel	92.5	93.6	P/P	70 - 130
1815126	Silver	87.4	89.8	P/P	70 - 130

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815532	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814260	Kjeldahl Nitrogen	95.9	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815275	Kjeldahl Nitrogen	95.3	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307932

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815085	NO2NO3-N	106	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308724

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816846	NO2NO3-N	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307918

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815084	Total-P	98.5	93.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815121	Total-P	98.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815188	O-Phosphate-P	98.0	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307757

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815123	O-Phosphate-P	99.6	98.7	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814878	Fluoride	98.1	98.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P308409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815004	Organic Carbon	97.3	97.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815118	Turbidity	2.52	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308231

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815126	Iron	2.95	Spike	P	0 - 20
1815126	Zinc	1.87	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308231

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815126	Arsenic	1.95	Spike	P	0 - 20
1815126	Cadmium	3.89	Spike	P	0 - 20
1815126	Chromium	1.94	Spike	P	0 - 20
1815126	Copper	2.05	Spike	P	0 - 20
1815126	Lead	1.80	Spike	P	0 - 20
1815126	Nickel	1.09	Spike	P	0 - 20
1815126	Silver	2.73	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815532	Ammonia-N	0.355	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815132	Ammonia-N	0.252	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814260	Kjeldahl Nitrogen	4.90	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815275	Kjeldahl Nitrogen	1.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307932

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815085	NO2NO3-N	1.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308724

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816846	NO2NO3-N	1.13	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307918

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815084	Total-P	5.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815121	Total-P	2.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815188	O-Phosphate-P	0.512	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815123	O-Phosphate-P	0.908	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814878	Total Alkalinity	0.511	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814878	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P308409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815004	Organic Carbon	0.0848	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: A70508
Included Lab Sample IDs: 1815122, 1815123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	98.1	P/P	90 - 110
O-Phosphate-P	99.1	99.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70517
Included Lab Sample IDs: 1815118, 1815119

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: A70551
Included Lab Sample IDs: 1815120

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70574
Included Lab Sample IDs: 1815121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70575
Included Lab Sample IDs: 1815120, 1815121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	97.5	P/P	90 - 110
Total-P	97.5	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70586
Included Lab Sample IDs: 1815120, 1815121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	100	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A70594
Included Lab Sample IDs: 1815118, 1815119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A70594
Included Lab Sample IDs: 1815118, 1815119

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

Reference Method: SM 5310 B-00
Run ID: A70692
Included Lab Sample IDs: 1815120, 1815121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.9	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A70742
Included Lab Sample IDs: 1815126, 1815127

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.8	95.6	P/P	90 - 110
Cadmium	93.2	91.4	P/P	90 - 110
Chromium	94.5	92.2	P/P	90 - 110
Copper	94.0	96.1	P/P	90 - 110
Lead	91.8	91.6	P/P	90 - 110
Nickel	94.7	96.5	P/P	90 - 110
Silver	93.0	92.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A70747
Included Lab Sample IDs: 1815126, 1815127

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	103	P/P	90 - 110
Iron	103	102	P/P	90 - 110
Zinc	101	99.7	P/P	90 - 110
Zinc	99.7	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70755
Included Lab Sample IDs: 1815120

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70792
Included Lab Sample IDs: 1815121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	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					2.52	
EPA 200.7 Rev. 4.4	Iron	106	103	107			2.95
	Zinc	98.8	102	99.7			1.87
EPA 200.8 Rev. 5.4	Arsenic	94.3	99.1	101			1.95
	Cadmium	92.2	87.1	90.6			3.89
	Chromium	94.4	85.8	87.5			1.94
	Copper	92.0	90.4	92.3			2.05
	Lead	92.3	94.1	95.8			1.80
	Nickel	93.7	92.5	93.6			1.09
	Silver	93.2	87.4	89.8			2.73
EPA 350.1 Rev. 2.0	Ammonia-N	97.1	101	101			0.355
	Ammonia-N	99.9					0.252
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.3	95.9	102			4.90
	Kjeldahl Nitrogen	104	95.3	97.0			1.05
EPA 353.2 Rev. 2.0	NO2NO3-N	108	106	107			1.41
	NO2NO3-N	104	103	105			1.13
EPA 365.1 Rev. 2.0	Total-P	98.6	98.5	93.6			5.06
	Total-P	94.7	98.3	101			2.32
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.0	97.5			0.512
	O-Phosphate-P	101	99.6	98.7			0.908
SM 2320 B-97	Total Alkalinity	104				0.511	
SM 4500 F-C-97	Fluoride	99.4	98.1	98.1			0.0

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
SM 5310 B-00	Organic Carbon	98.0	97.3	97.4			0.0848

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1815118, 1815119
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1815126, 1815127
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1815126, 1815127
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1815120, 1815121
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1815120, 1815121
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1815120, 1815121
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1815120, 1815121
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1815122, 1815123
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1815118, 1815119
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1815118, 1815119
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1815118, 1815119
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1815120, 1815121

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	07/12/2016			07/12/2016 15:57	Blanca Fach	1815118, 1815119
EPA 200.7 Rev. 4.4	07/12/2016	07/19/2016	Elliott D. Healy	07/23/2016	Joshua Ayres	1815126, 1815127
EPA 200.8 Rev. 5.4	07/12/2016	07/19/2016	Elliott D. Healy	07/23/2016	Charles J. Peterson	1815126, 1815127
EPA 350.1 Rev. 2.0	07/12/2016			07/15/2016	Diana M. Turner	1815120, 1815121
EPA 351.2 Rev. 2.0	07/12/2016	07/14/2016	Sofia Elnemr	07/15/2016	Christopher Armour	1815121
	07/12/2016	07/25/2016	Martin Acosta	07/26/2016	Christopher Armour	1815120
EPA 353.2 Rev. 2.0	07/12/2016			07/14/2016	Beverly Y. Sanders	1815120
	07/12/2016			07/27/2016	Peter D. Kaus	1815121
EPA 365.1 Rev. 2.0	07/12/2016	07/14/2016	Vijayalakshmi Reddy	07/15/2016	Lipi Saha	1815120, 1815121
EPA 365.1 Rev. 2.0 dissolved	07/12/2016			07/12/2016 14:59	Julia Storbeck	1815123
	07/12/2016			07/12/2016 15:55	Julia Storbeck	1815122
SM 2320 B-97	07/12/2016			07/16/2016	Dale L. Simmons	1815118, 1815119
SM 2540 D-97	07/12/2016			07/15/2016	Yijie Li	1815118, 1815119
SM 4500 F-C-97	07/12/2016			07/16/2016	Dale L. Simmons	1815118, 1815119
SM 5310 B-00	07/12/2016			07/20/2016	Sofia Elnemr	1815120, 1815121