Chemical Analysis Report

NW-DIST-2016-10-20-01

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

Event Description: **WBID 782 49A 789 722**
Request ID: **RQ-2016-10-17-21**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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160 W Government St
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 16-NOV-2016 12:55

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 group are included in this report: 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: Rocky Bayou 1/2 mile east of bridge **Collection Date/Time: 10/19/2016 10:55**

Field ID: G3NW0033 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842620	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P313584	
	SM 2320 B-97	Total Alkalinity	54		mg CaCO3/L	P313685	
	SM 2540 D-97	TSS	9	I	mg/L	P314027	
	SM 4500 F-C-97	Fluoride	0.51		mg F/L	P313687	
1842625	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P314647	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P314680	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P313900	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P314300	
	SM 5310 B-00	Organic Carbon	2.1		mg C/L	P313763	
1842630	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P313597	

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: Basin Bayou at Inlet **Collection Date/Time: 10/19/2016 11:45**

Field ID: G3NW0101 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842621	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P313584	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P313684	
	SM 2540 D-97	TSS	5	I	mg/L	P314025	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P313686	
1842626	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P314647	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P314680	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P313900	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P314300	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P313763	
1842631	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P313597	

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: Field Blank **Collection Date/Time: 10/19/2016 11:50**

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842614	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P313584	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P314615	
		Sulfate	0.20	U	mg SO4/L	P314617	
	SM 2120 B	Color (true)	2.5	U	PCU	P313601	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P313684	
	SM 2540 C-97	TDS	15	U	mg/L	P314590	
	SM 2540 D-97	TSS	2	U	mg/L	P314023	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P313686	
1842616	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P314644	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P314566	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P313801	

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842616	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P314297	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P313762	
1842618	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P313594	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 353.2 Rev. 2.0: NO2NO3-N: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Basin Bayou North End **Collection Date/Time: 10/19/2016 12:00**

Field ID: G3NW0102 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842622	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P313584	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P313684	
	SM 2540 D-97	TSS	5	I	mg/L	P314025	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P313686	
1842627	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P314647	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P314759	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P313900	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P314300	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P313763	
1842632	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P313598	

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: Basin Bayou North End **Collection Date/Time: 10/19/2016 12:05**

Field ID: G3NW0102DUPLICATE Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842623	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P313584	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P313684	
	SM 2540 D-97	TSS	5	I	mg/L	P314025	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P313686	
1842628	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P314647	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P314759	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P313900	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P314300	
	SM 5310 B-00	Organic Carbon	2.4		mg C/L	P313763	
1842633	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P313598	

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: La Grange Bayou Middle **Collection Date/Time: 10/19/2016 12:50**

Field ID: G3NW0036 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842624	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P313584	
	SM 2320 B-97	Total Alkalinity	69		mg CaCO3/L	P313685	

Field ID: G3NW0036 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842624	SM 2540 D-97	TSS	9	I	mg/L	P314027	
	SM 4500 F-C-97	Fluoride	0.61		mg F/L	P313687	
1842629	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P314647	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P314759	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P313900	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P314300	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P313763	
1842634	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P313598	

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: Choctawhatchee River abv Smokehouse Lake Collection Date/Time: 10/19/2016 14:05

Field ID: G3NW0073 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842615	EPA 180.1 Rev. 2.0	Turbidity	6.5	A	NTU	P313584	
	EPA 300.0 Rev. 2.1	Chloride	6.6	A	mg Cl/L	P314615	
		Sulfate	2.5	A	mg SO4/L	P314617	
	SM 2120 B	Color (true)	13		PCU	P313601	
	SM 2320 B-97	Total Alkalinity	70		mg CaCO3/L	P313684	
	SM 2540 C-97	TDS	103		mg/L	P314590	
	SM 2540 D-97	TSS	8	I	mg/L	P314023	
	SM 4500 F-C-97	Fluoride	0.055	I	mg F/L	P313686	
1842617	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P314644	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P314566	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.54		mg N/L	P313801	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P314297	
	SM 5310 B-00	Organic Carbon	1.4		mg C/L	P313762	
1842619	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P313594	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 353.2 Rev. 2.0: NO2NO3-N: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P313584

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314644

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314647

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314566

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314680

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314759

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313801

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313900

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314297

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
Batch ID: P314300

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313594

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313597

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313598

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

Reference Method: SM 2120 B
Batch ID: P313601

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P313684

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

Reference Method: SM 2320 B-97
Batch ID: P313685

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

Reference Method: SM 2540 C-97
Batch ID: P314590

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314023

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P314025

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314027

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P313762

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P313763

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314644

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314644

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314647

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314680

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314759

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313801

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313900

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: P314297

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: P314300

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313594

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313597

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313598

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

Reference Method: SM 2320 B-97
Batch ID: P313684

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P313685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P313687

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

Reference Method: SM 5310 B-00
Batch ID: P313762

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

Reference Method: SM 5310 B-00
Batch ID: P313763

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842506	Chloride	99.9		P	90 - 110
1842615	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842506	Sulfate	96.5		P	90 - 110
1842615	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842591	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842534	Ammonia-N	109	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842702	Kjeldahl Nitrogen	93.0	91.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842539	Kjeldahl Nitrogen	96.8	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314759

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1843134	Kjeldahl Nitrogen	105	113	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842625	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842523	Total-P	100	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842625	Total-P	99.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842619	O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313597

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842542	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313598

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842634	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842589	Fluoride	96.0	96.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842529	Fluoride	95.6	97.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P313762

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842590	Organic Carbon	95.5	97.3	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P313763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842031	Organic Carbon	96.9	94.3	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P313584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842615	Turbidity	1.85	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842615	Chloride	1.21	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842615	Sulfate	1.06	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842591	Ammonia-N	0.515	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842534	Ammonia-N	0.562	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842702	Kjeldahl Nitrogen	1.36	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842539	Kjeldahl Nitrogen	0.997	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1843134	Kjeldahl Nitrogen	6.66	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842617	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842625	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842523	Total-P	0.147	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842625	Total-P	1.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842619	O-Phosphate-P	0.447	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842542	O-Phosphate-P	0.780	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313598

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842634	O-Phosphate-P	1.56	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P313601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842649	Color (true)	11.5	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P313684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842589	Total Alkalinity	0.121	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P313685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842529	Total Alkalinity	0.284	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P314590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842587	TDS	0.866	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842589	Fluoride	0.487	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842529	Fluoride	0.959	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P313762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842590	Organic Carbon	1.76	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P313763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842031	Organic Carbon	2.30	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: A72346
Included Lab Sample IDs: 1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72349
Included Lab Sample IDs: 1842618, 1842619, 1842630, 1842631, 1842632, 1842633, 1842634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	102	99.5	P/P	90 - 110
O-Phosphate-P	102	99.8	P/P	90 - 110
O-Phosphate-P	102	103	P/P	90 - 110
O-Phosphate-P	103	102	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A72350
Included Lab Sample IDs: 1842614, 1842615

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Reference Method: SM 2320 B-97
Run ID: A72377
Included Lab Sample IDs: 1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	102	P/P	90 - 110
Total Alkalinity	105	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A72377
Included Lab Sample IDs: 1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624

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

Reference Method: SM 5310 B-00
Run ID: A72401
Included Lab Sample IDs: 1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72410
Included Lab Sample IDs: 1842616, 1842617

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72436
Included Lab Sample IDs: 1842625, 1842626, 1842627, 1842628, 1842629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	95.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A72589
Included Lab Sample IDs: 1842614, 1842615

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	98.8	98.5	P/P	90 - 110
Sulfate	99.5	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72596
Included Lab Sample IDs: 1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.0	P/P	90 - 110
Total-P	100	100	P/P	90 - 110
Total-P	99.0	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72636
Included Lab Sample IDs: 1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.4	97.4	P/P	90 - 110
Ammonia-N	97.5	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72694
Included Lab Sample IDs: 1842616, 1842617

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.9	97.2	P/P	90 - 110
Kjeldahl Nitrogen	97.2	93.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72704
Included Lab Sample IDs: 1842625, 1842626, 1842627, 1842628, 1842629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.4	101	P/P	90 - 110
Kjeldahl Nitrogen	99.5	105	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					1.85	
EPA 300.0 Rev. 2.1	Chloride	98.4	99.4	99.9		1.21	
	Sulfate	96.0	96.5	96.5		1.06	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	102			0.515
	Ammonia-N	101	109	108			0.562
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.4	93.0	91.0			1.36
	Kjeldahl Nitrogen	101	96.8	98.0			0.997
	Kjeldahl Nitrogen	99.1	105	113			6.66
EPA 353.2 Rev. 2.0	NO2NO3-N	105					0.0
	NO2NO3-N	102	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	98.6	100	100			0.147
	Total-P	98.2	99.3	101			1.43
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	99.9	100			0.447
	O-Phosphate-P	103	102	103			0.780
	O-Phosphate-P	105	102	103			1.56
SM 2120 B	Color (true)					11.5	
SM 2320 B-97	Total Alkalinity	103				0.121	
	Total Alkalinity	105				0.284	
SM 2540 C-97	TDS					0.866	
SM 4500 F-C-97	Fluoride	97.6	96.0	96.5			0.487
	Fluoride	97.1	95.6	97.1			0.959
SM 5310 B-00	Organic Carbon	101	95.5	97.3			1.76
	Organic Carbon	100	96.9	94.3			2.30

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1842614, 1842615
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1842614, 1842615
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1842618, 1842619, 1842630, 1842631, 1842632, 1842633, 1842634
SM 2120 B / E31780	True Color measured at 450 nm	1842614, 1842615
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1842614, 1842615
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629

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	10/20/2016			10/20/2016 15:29	Sima Feizi	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
EPA 300.0 Rev. 2.1	10/20/2016			11/03/2016	Elisa J Lutz	1842614, 1842615
EPA 350.1 Rev. 2.0	10/20/2016			11/04/2016	Sofia Elnemr	1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629
EPA 351.2 Rev. 2.0	10/20/2016	11/04/2016	Adrian Shelby	11/08/2016	Joseph Suarez	1842616, 1842617
	10/20/2016	11/07/2016	Adrian Shelby	11/08/2016	Joseph Suarez	1842625, 1842626
	10/20/2016	11/08/2016	Adrian Shelby	11/08/2016	Joseph Suarez	1842627, 1842628, 1842629
EPA 353.2 Rev. 2.0	10/20/2016			10/25/2016	Beverly Y. Sanders	1842616, 1842617
	10/20/2016			10/26/2016	Beverly Y. Sanders	1842625, 1842626, 1842627, 1842628, 1842629
EPA 365.1 Rev. 2.0	10/20/2016	11/01/2016	Vijayalakshmi Reddy	11/03/2016	Lipi Saha	1842616, 1842617, 1842625, 1842626, 1842627, 1842628, 1842629
EPA 365.1 Rev. 2.0 dissolved	10/20/2016			10/20/2016 15:06	Julia Storbeck	1842619
	10/20/2016			10/20/2016 15:31	Julia Storbeck	1842634
	10/20/2016			10/20/2016 15:39	Julia Storbeck	1842618
	10/20/2016			10/20/2016 15:51	Julia Storbeck	1842632
	10/20/2016			10/20/2016 15:52	Julia Storbeck	1842633
	10/20/2016			10/20/2016 16:22	Julia Storbeck	1842630
	10/20/2016			10/20/2016 16:23	Julia Storbeck	1842631
SM 2120 B	10/20/2016			10/20/2016 16:20	Julie Michelle Frank	1842614, 1842615
SM 2320 B-97	10/20/2016			10/22/2016	Dale L. Simmons	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
SM 2540 C-97	10/20/2016			10/24/2016	Sima Feizi	1842614, 1842615
SM 2540 D-97	10/20/2016			10/24/2016	Sima Feizi	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
SM 4500 F-C-97	10/20/2016			10/22/2016	Dale L. Simmons	1842614, 1842615, 1842620, 1842621, 1842622, 1842623, 1842624
SM 5310 B-00	10/20/2016			10/24/2016	Julie Michelle Frank	1842616, 1842617
	10/20/2016			10/25/2016	Julie Michelle Frank	1842625, 1842626, 1842627, 1842628, 1842629