Chemical Analysis Report

SO-DIST-2016-06-21-01

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

Event Description: **SMP: Shell Joshua Hog Bay**
Request ID: **RQ-2016-06-13-38**
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
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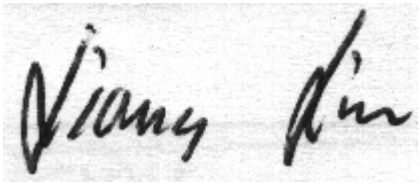
Certified by: Liang Lin, Environmental Administrator

Date Certified: 13-JUL-2016 16:38



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: JOSHUA CR-1.2 MI N OF RT 760A **Collection Date/Time: 06/20/2016 10:30**

Field ID: G3SD06202016-3 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809624	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P306571	
	EPA 300.0 Rev. 2.1	Chloride	89		mg Cl/L	P307114	
		Sulfate	72		mg SO4/L	P307112	
	SM 2120 B	Color (true)	190		PCU	P306574	
	SM 2320 B-97	Total Alkalinity	122		mg CaCO3/L	P307277	
	SM 2540 C-97	TDS	462		mg/L	P307013	
	SM 2540 D-97	TSS	22		mg/L	P306991	
	SM 4500 F-C-97	Fluoride	0.34		mg F/L	P307284	
1809628	EPA 350.1 Rev. 2.0	Ammonia-N	0.069		mg N/L	P306896	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P306605	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.74		mg N/L	P306938	MS
	EPA 365.1 Rev. 2.0	Total-P	0.43		mg P/L	P306692	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P307066	
1809632	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.31		mg P/L	P306560	

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.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: HOG BAY @ CR 763 **Collection Date/Time: 06/20/2016 09:55**

Field ID: G3SD06202016-4 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809625	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P306571	
	EPA 300.0 Rev. 2.1	Chloride	78		mg Cl/L	P307114	
		Sulfate	80		mg SO4/L	P307112	
	SM 2120 B	Color (true)	220		PCU	P306574	
	SM 2320 B-97	Total Alkalinity	113		mg CaCO3/L	P307277	
	SM 2540 C-97	TDS	416		mg/L	P307013	
	SM 2540 D-97	TSS	6	I	mg/L	P306991	
	SM 4500 F-C-97	Fluoride	0.32		mg F/L	P307284	
1809629	EPA 350.1 Rev. 2.0	Ammonia-N	0.095		mg N/L	P306896	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P306605	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.44		mg N/L	P306938	MS
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P306692	
	SM 5310 B-00	Organic Carbon	28		mg C/L	P307066	
1809633	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P306560	

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.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Shell Cr. @ SR 31 **Collection Date/Time: 06/20/2016 09:00**

Field ID: G3SD06202016-5 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes

Field ID: G3SD06202016-5 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809626	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P306571	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P307109	
		Sulfate	79		mg SO4/L	P307110	
	SM 2120 B	Color (true)	160		PCU	P306574	
	SM 2320 B-97	Total Alkalinity	131		mg CaCO3/L	P307277	
	SM 2540 C-97	TDS	564	A	mg/L	P307013	
	SM 2540 D-97	TSS	4	I	mg/L	P306991	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P307284	
1809630	EPA 350.1 Rev. 2.0	Ammonia-N	0.075		mg N/L	P306896	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P306605	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P306938	MS
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P306692	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P307066	
1809634	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.085		mg P/L	P306560	

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.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Shell Cr. @ SR 31 Duplicate **Collection Date/Time: 06/20/2016 09:05**

Field ID: G3SD06202016-6 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809627	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P306571	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P307109	
		Sulfate	80		mg SO4/L	P307110	
	SM 2120 B	Color (true)	160		PCU	P306575	
	SM 2320 B-97	Total Alkalinity	132		mg CaCO3/L	P307277	
	SM 2540 C-97	TDS	563		mg/L	P307013	
	SM 2540 D-97	TSS	6	I	mg/L	P306991	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P307284	
1809631	EPA 350.1 Rev. 2.0	Ammonia-N	0.075		mg N/L	P306896	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P306605	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P306938	MS
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P306692	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P307066	
1809635	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.078		mg P/L	P306561	

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.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306571

Component	Result	Code	Units
Turbidity	0.10	U	NTU

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307112

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306896

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306605

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306938

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306692

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: P306560

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306561

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

Reference Method: SM 2120 B
Batch ID: P306574

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P306575

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P307277

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

Reference Method: SM 2540 C-97
Batch ID: P307013

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P306991

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P307284

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P307066

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: 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 300.0 Rev. 2.1
Batch ID: P307112

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306605

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306938

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306692

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306560

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306561

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

Reference Method: SM 2320 B-97
Batch ID: P307277

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

Reference Method: SM 4500 F-C-97
Batch ID: P307284

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P307066

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

Quality Assurance Report
Matrix Spike Accuracy

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 300.0 Rev. 2.1
Batch ID: P307112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809380	Sulfate	101		P	90 - 110
1809401	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809380	Chloride	102		P	90 - 110
1809401	Chloride	102		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809650	NO2NO3-N	110	111	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809610	Total-P	100	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809533	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306561

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809654	O-Phosphate-P	98.4	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P307284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1810672	Fluoride	98.7	98.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P307066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809649	Organic Carbon	96.4	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809576	Turbidity	0.866	Sample	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

Quality Assurance Report
Precision

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 300.0 Rev. 2.1
Batch ID: P307112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809380	Sulfate	1.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809380	Chloride	0.0617	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809649	Ammonia-N	0.110	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809628	Kjeldahl Nitrogen	4.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809650	NO2NO3-N	0.823	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809610	Total-P	2.97	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809533	O-Phosphate-P	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809654	O-Phosphate-P	0.446	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P306574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809530	Color (true)	0.982	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P306575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809644	Color (true)	0.612	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P307277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1810672	Total Alkalinity	0.317	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P307013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809626	TDS	2.66	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P307284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1810672	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P307066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809649	Organic Carbon	2.95	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 365.1 Rev. 2.0 dissolved
Run ID: A70146
Included Lab Sample IDs: 1809632, 1809633, 1809634, 1809635

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70148
Included Lab Sample IDs: 1809624, 1809625, 1809626, 1809627

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

Reference Method: SM 2120 B
Run ID: A70149
Included Lab Sample IDs: 1809624, 1809625, 1809626, 1809627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.6	96.4	P/P	90 - 115

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70202
Included Lab Sample IDs: 1809628, 1809629, 1809630, 1809631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	102	P/P	90 - 110
Kjeldahl Nitrogen	108	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70208
Included Lab Sample IDs: 1809628, 1809629, 1809630, 1809631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70237
Included Lab Sample IDs: 1809628, 1809629, 1809630, 1809631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.4	95.8	P/P	90 - 110
Ammonia-N	95.8	95.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70249
Included Lab Sample IDs: 1809628, 1809629, 1809630, 1809631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A70300
Included Lab Sample IDs: 1809628, 1809629, 1809630, 1809631

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A70300
Included Lab Sample IDs: 1809628, 1809629, 1809630, 1809631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	103	107	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70313
Included Lab Sample IDs: 1809624, 1809625, 1809626, 1809627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	99.5	101	P/P	90 - 110
Sulfate	96.3	101	P/P	90 - 110
Sulfate	96.3	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A70372
Included Lab Sample IDs: 1809624, 1809625, 1809626, 1809627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A70372
Included Lab Sample IDs: 1809624, 1809625, 1809626, 1809627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	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						0.866	
EPA 300.0 Rev. 2.1	Chloride	97.7	96.6	97.6	98.4			0.660
	Chloride	103	102	102			0.0617	
	Sulfate	98.0	98.2	98.4	99.6			0.149
	Sulfate	102	101	101			1.33	
EPA 350.1 Rev. 2.0	Ammonia-N	93.0						0.110
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.0						4.75
EPA 353.2 Rev. 2.0	NO2NO3-N	97.0	110	111				0.823
EPA 365.1 Rev. 2.0	Total-P	96.4	100	104				2.97
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	102	102				0.0
	O-Phosphate-P	102	98.4	98.9				0.446
SM 2120 B	Color (true)						0.982	
	Color (true)						0.612	
SM 2320 B-97	Total Alkalinity	103					0.317	
SM 2540 C-97	TDS						2.66	

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
SM 4500 F-C-97	Fluoride	98.0	98.7	98.7			0.0
SM 5310 B-00	Organic Carbon	101	96.4	101			2.95

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1809624, 1809625, 1809626, 1809627
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1809624, 1809625, 1809626, 1809627
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1809624, 1809625, 1809626, 1809627
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1809628, 1809629, 1809630, 1809631
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1809628, 1809629, 1809630, 1809631
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1809628, 1809629, 1809630, 1809631
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1809628, 1809629, 1809630, 1809631
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1809632, 1809633, 1809634, 1809635
SM 2120 B / E31780	True Color measured at 450 nm	1809624, 1809625, 1809626, 1809627
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1809624, 1809625, 1809626, 1809627
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1809624, 1809625, 1809626, 1809627
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1809624, 1809625, 1809626, 1809627
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1809624, 1809625, 1809626, 1809627
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1809628, 1809629, 1809630, 1809631

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	06/21/2016			06/21/2016 15:30	Sima Feizi	1809624, 1809625, 1809626, 1809627
EPA 300.0 Rev. 2.1	06/21/2016			06/28/2016	Ping Hua	1809626, 1809627
	06/21/2016			06/29/2016	Ping Hua	1809624, 1809625
EPA 350.1 Rev. 2.0	06/21/2016			06/24/2016	Diana M. Turner	1809628, 1809629, 1809630, 1809631
EPA 351.2 Rev. 2.0	06/21/2016	06/22/2016	Sofia Elnemr	06/23/2016	Christopher Armour	1809628, 1809629, 1809630, 1809631
EPA 353.2 Rev. 2.0	06/21/2016			06/27/2016	Beverly Y. Sanders	1809628, 1809629, 1809630, 1809631
EPA 365.1 Rev. 2.0	06/21/2016	06/23/2016	Vijayalakshmi Reddy	06/24/2016	Lipi Saha	1809628, 1809629, 1809630, 1809631
EPA 365.1 Rev. 2.0 dissolved	06/21/2016			06/21/2016 14:38	Julia Storbeck	1809632
	06/21/2016			06/21/2016 14:41	Julia Storbeck	1809633, 1809634
	06/21/2016			06/21/2016 14:42	Julia Storbeck	1809635
SM 2120 B	06/21/2016			06/21/2016 16:22	Chrisoulla Rakowski	1809624
	06/21/2016			06/21/2016 16:23	Chrisoulla Rakowski	1809625, 1809626
	06/21/2016			06/21/2016 16:24	Chrisoulla Rakowski	1809627
SM 2320 B-97	06/21/2016			07/02/2016	Dale L. Simmons	1809624, 1809625, 1809626, 1809627
SM 2540 C-97	06/21/2016			06/22/2016	Yijie Li	1809624, 1809625, 1809626, 1809627
SM 2540 D-97	06/21/2016			06/22/2016	Yijie Li	1809624, 1809625, 1809626, 1809627
SM 4500 F-C-97	06/21/2016			07/02/2016	Dale L. Simmons	1809624, 1809625, 1809626, 1809627
SM 5310 B-00	06/21/2016			06/29/2016	Diana M. Turner	1809628, 1809629, 1809630, 1809631