Chemical Analysis Report

SO-DIST-2016-11-29-01

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

Event Description: **SMP: Bootheel HA & Lil Charlie Bowlegs**
Request ID: **RQ-2016-09-12-56**
Customer: **SO-DIST**
Project ID: **SMP**

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

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 20-DEC-2016 16:14

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: Yucca Pen Creek @ Burnt Store Rd. **Collection Date/Time: 11/28/2016 10:34**

Field ID: YUCCAPEN Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1852568	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P315861	
	EPA 300.0 Rev. 2.1	Chloride	88		mg Cl/L	P316502	
		Sulfate	8.2		mg SO4/L	P316500	
	SM 2120 B	Color (true)	19		PCU	P315865	
	SM 2320 B-97	Total Alkalinity	274		mg CaCO3/L	P315986	
	SM 2540 C-97	TDS	493	A	mg/L	P316604	
	SM 2540 D-97	TSS	3	I	mg/L	P316580	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P315988	
1852571	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P316195	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P316364	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P316398	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P316162	
	SM 5310 B-00	Organic Carbon	7.2		mg C/L	P315951	
1852574	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P315856	

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: Yucca Pen Marine @ N of Old Burnt Store **Collection Date/Time: 11/28/2016 10:00**

Field ID: G2SD0015 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1852569	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P315861	
	EPA 300.0 Rev. 2.1	Chloride	2.1E+03		mg Cl/L	P316502	
		Sulfate	280		mg SO4/L	P316500	
	SM 2120 B	Color (true)	39		PCU	P315865	
	SM 2320 B-97	Total Alkalinity	225		mg CaCO3/L	P315986	
	SM 2540 C-97	TDS	3.86E+03		mg/L	P316604	
	SM 2540 D-97	TSS	2	U	mg/L	P316580	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P315988	
1852572	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P316196	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P316292	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P316323	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P316162	
	SM 5310 B-00	Organic Carbon	9.2		mg C/L	P315951	
1852575	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P315858	

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: Yucca Pen Creek @ Burnt Store Rd. DUP **Collection Date/Time: 11/28/2016 10:40**

Field ID: YUCCAPEN-DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1852570	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P315861	
	EPA 300.0 Rev. 2.1	Chloride	88		mg Cl/L	P316502	
		Sulfate	8.4		mg SO4/L	P316500	

Field ID: YUCCAPEN-DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1852570	SM 2120 B	Color (true)	19		PCU	P315865	
	SM 2320 B-97	Total Alkalinity	271		mg CaCO3/L	P315986	
	SM 2540 C-97	TDS	476		mg/L	P316604	
	SM 2540 D-97	TSS	3	I	mg/L	P316580	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P315988	
1852573	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P316195	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P316364	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P316398	
	EPA 365.1 Rev. 2.0	Total-P	0.074		mg P/L	P316162	
	SM 5310 B-00	Organic Carbon	7.3		mg C/L	P315951	
1852576	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P315856	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P315861

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316500

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316502

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316195

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316196

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316292

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316364

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316323

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316398

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316162

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315856

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315858

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

Reference Method: SM 2120 B
Batch ID: P315865

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P315986

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

Reference Method: SM 2540 C-97
Batch ID: P316604

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P316580

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P315988

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P315951

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: P316500

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316502

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316196

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316292

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: P316364

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316364

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316323

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316398

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: P316162

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: P315856

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315858

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

Reference Method: SM 2320 B-97
Batch ID: P315986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P315988

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

Reference Method: SM 5310 B-00
Batch ID: P315951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316500

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1851549	Sulfate	97.9		P	90 - 110
1852522	Sulfate	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1851549	Chloride	102		P	90 - 110
1852522	Chloride	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852263	Ammonia-N	94.5	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852333	Ammonia-N	99.1	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852331	Kjeldahl Nitrogen	97.1	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852271	Kjeldahl Nitrogen	103	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853637	NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852591	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316162

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852594	Total-P	103	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852600	O-Phosphate-P	98.7	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852575	O-Phosphate-P	96.2	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P315988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852673	Fluoride	94.8	95.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P315951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852523	Organic Carbon	95.7	94.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P315861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852527	Turbidity	3.89	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851549	Sulfate	0.0122	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851549	Chloride	0.0432	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852263	Ammonia-N	2.45	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852333	Ammonia-N	0.925	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852331	Kjeldahl Nitrogen	2.98	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852271	Kjeldahl Nitrogen	3.19	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853637	NO2NO3-N	0.727	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852591	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852594	Total-P	0.816	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852600	O-Phosphate-P	0.202	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852575	O-Phosphate-P	0.611	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P315865

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852527	Color (true)	0.523	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P315986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852673	Total Alkalinity	0.0745	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P316604

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852568	TDS	2.43	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P315988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852673	Fluoride	0.498	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P315951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852523	Organic Carbon	0.773	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: A73057
Included Lab Sample IDs: 1852574, 1852575, 1852576

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73059
Included Lab Sample IDs: 1852568, 1852569, 1852570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A73060
Included Lab Sample IDs: 1852568, 1852569, 1852570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A73095
Included Lab Sample IDs: 1852571, 1852572, 1852573

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	96.3	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A73103
Included Lab Sample IDs: 1852568, 1852569, 1852570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.7	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A73103
Included Lab Sample IDs: 1852568, 1852569, 1852570

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73172
Included Lab Sample IDs: 1852571, 1852572, 1852573

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.4	P/P	90 - 110
Ammonia-N	100	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73193
Included Lab Sample IDs: 1852571, 1852572, 1852573

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	P/P	90 - 110
Total-P	103	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73219
Included Lab Sample IDs: 1852568, 1852569, 1852570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	99.8	P/P	90 - 110
Chloride	99.8	99.3	P/P	90 - 110
Sulfate	96.7	95.2	P/P	90 - 110
Sulfate	97.5	96.7	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73223
Included Lab Sample IDs: 1852572

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73247
Included Lab Sample IDs: 1852571, 1852573

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73260
Included Lab Sample IDs: 1852572

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73267
Included Lab Sample IDs: 1852571, 1852573

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	103	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					3.89	
EPA 300.0 Rev. 2.1	Chloride	103	102	103		0.0432	
	Sulfate	99.9	97.9	98.6		0.0122	
EPA 350.1 Rev. 2.0	Ammonia-N	106	94.5	97.4			2.45
	Ammonia-N	104	99.1	100			0.925
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	97.1	101			2.98
	Kjeldahl Nitrogen	102	103	98.0			3.19
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	106			0.727
	NO2NO3-N	102	104	103			1.45
EPA 365.1 Rev. 2.0	Total-P	101	103	102			0.816
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.7	98.7	98.9			0.202
	O-Phosphate-P	97.0	96.2	97.1			0.611
SM 2120 B	Color (true)					0.523	
SM 2320 B-97	Total Alkalinity	98.8				0.0745	
SM 2540 C-97	TDS					2.43	
SM 4500 F-C-97	Fluoride	97.1	94.8	95.3			0.498
SM 5310 B-00	Organic Carbon	97.0	95.7	94.8			0.773

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1852568, 1852569, 1852570
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1852568, 1852569, 1852570
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1852568, 1852569, 1852570
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1852571, 1852572, 1852573
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1852571, 1852572, 1852573
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1852571, 1852572, 1852573
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1852571, 1852572, 1852573
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1852574, 1852575, 1852576
SM 2120 B / E31780	True Color measured at 450 nm	1852568, 1852569, 1852570
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1852568, 1852569, 1852570
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1852568, 1852569, 1852570
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1852568, 1852569, 1852570
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1852568, 1852569, 1852570
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1852571, 1852572, 1852573

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	11/29/2016			11/29/2016 15:54	Sima Feizi	1852568, 1852569, 1852570
EPA 300.0 Rev. 2.1	11/29/2016			12/08/2016	Ping Hua	1852568, 1852569, 1852570
EPA 350.1 Rev. 2.0	11/29/2016			12/02/2016	Sofia Elnemr	1852571, 1852572, 1852573
EPA 351.2 Rev. 2.0	11/29/2016	12/07/2016	Adrian Shelby	12/08/2016	Joseph Suarez	1852572
	11/29/2016	12/08/2016	Adrian Shelby	12/09/2016	Joseph Suarez	1852571, 1852573
EPA 353.2 Rev. 2.0	11/29/2016			12/07/2016	Beverly Y. Sanders	1852572
	11/29/2016			12/08/2016	Beverly Y. Sanders	1852571, 1852573
EPA 365.1 Rev. 2.0	11/29/2016	12/05/2016	Adrian Shelby	12/06/2016	Lipi Saha	1852571, 1852572, 1852573
EPA 365.1 Rev. 2.0 dissolved	11/29/2016			11/29/2016 15:44	Julia Storbeck	1852575
	11/29/2016			11/29/2016 15:47	Julia Storbeck	1852574, 1852576
SM 2120 B	11/29/2016			11/29/2016 16:40	Jared I. Manley	1852568, 1852569
	11/29/2016			11/29/2016 16:41	Jared I. Manley	1852570
SM 2320 B-97	11/29/2016			11/30/2016	Dale L. Simmons	1852568, 1852569, 1852570
SM 2540 C-97	11/29/2016			12/01/2016	Yijie Li	1852568, 1852569, 1852570
SM 2540 D-97	11/29/2016			12/01/2016	Yijie Li	1852568, 1852569, 1852570
SM 4500 F-C-97	11/29/2016			11/30/2016	Dale L. Simmons	1852568, 1852569, 1852570
SM 5310 B-00	11/29/2016			11/30/2016	Julie Michelle Frank	1852571, 1852572, 1852573