Chemical Analysis Report

SO-DIST-2019-07-02-03

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

Event Description: **OKEE Canals**
Request ID: **RQ-2019-07-01-13**
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 33901-3381
Attn: Gary Snorek

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 15-JUL-2019 10:47

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Harney Pond Canal@SR 70 **Collection Date/Time: 07/01/2019 11:00**

Field ID: G4SD0173 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100118	EPA 180.1 Rev. 2.0	Turbidity	13	A	NTU	P366657	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P366802	
		Sulfate	45		mg SO4/L	P366804	
	SM 2120 B	Color (true)	140		PCU	P366623	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P366738	
	SM 2540 C-97	TDS	186		mg/L	P366897	
	SM 2540 D-97	TSS	20	I	mg/L	P366872	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P366745	
2100121	EPA 350.1 Rev. 2.0	Ammonia-N	0.068		mg N/L	P366779	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P366890	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P366828	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P366775	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P366799	
2100124	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P366646	

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

Sample Location: Prairie Canal@ SR 70 **Collection Date/Time: 07/01/2019 10:15**

Field ID: G4SD0174 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100119	EPA 180.1 Rev. 2.0	Turbidity	9.4		NTU	P366657	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P366802	
		Sulfate	84		mg SO4/L	P366921	
	SM 2120 B	Color (true)	320		PCU	P366623	
	SM 2320 B-97	Total Alkalinity	43		mg CaCO3/L	P366738	
	SM 2540 C-97	TDS	322		mg/L	P366897	
	SM 2540 D-97	TSS	14		mg/L	P366872	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P366745	
2100122	EPA 350.1 Rev. 2.0	Ammonia-N	0.35		mg N/L	P366811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.9		mg N/L	P366890	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P366829	
	EPA 365.1 Rev. 2.0	Total-P	0.44		mg P/L	P366775	
	SM 5310 B-00	Organic Carbon	38		mg C/L	P366799	
2100125	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.26		mg P/L	P366646	

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: C-41 A @ SR 70 **Collection Date/Time: 07/01/2019 10:40**

Field ID: G4SD0175 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100120	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P366657	
	EPA 300.0 Rev. 2.1	Chloride	28		mg Cl/L	P366802	
		Sulfate	26		mg SO4/L	P366804	
	SM 2120 B	Color (true)	63		PCU	P366623	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P366738	
	SM 2540 C-97	TDS	138		mg/L	P366897	
	SM 2540 D-97	TSS	24	I	mg/L	P366872	
	SM 4500 F-C-97	Fluoride	0.087	I	mg F/L	P366745	
2100123	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P366811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P366890	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P366829	
	EPA 365.1 Rev. 2.0	Total-P	0.082		mg P/L	P366775	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P366799	
2100126	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366647	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366657

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366921

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366890

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366828

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366647

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

Reference Method: SM 2120 B
Batch ID: P366623

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P366738

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

Reference Method: SM 2540 C-97
Batch ID: P366897

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P366872

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P366799

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: P366802

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	107		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

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: P366890

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366828

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366647

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.7		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P366623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P366738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P366799

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099703	Chloride	104	105	P/P	90 - 110
2100316	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099703	Sulfate	104	104	P/P	90 - 110
2100316	Sulfate	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100159	Sulfate	96.9		P	90 - 110
2100627	Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100090	Ammonia-N	106	108	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100123	Ammonia-N	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100091	Kjeldahl Nitrogen	97.9	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366828

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099994	NO2NO3-N	98.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100122	NO2NO3-N	96.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100090	Total-P	98.5	98.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099950	O-Phosphate-P	92.7	93.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100126	O-Phosphate-P	93.9	95.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099948	Fluoride	98.9	98.9	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P366799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100320	Organic Carbon	95.8	95.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100118	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099703	Chloride	0.663	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099703	Sulfate	0.211	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100159	Sulfate	1.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100090	Ammonia-N	0.958	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100123	Ammonia-N	2.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100091	Kjeldahl Nitrogen	0.215	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099994	NO2NO3-N	1.74	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100122	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100090	Total-P	0.0927	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099950	O-Phosphate-P	1.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100126	O-Phosphate-P	1.69	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P366623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100084	Color (true)	0.275	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P366738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099948	Total Alkalinity	0.709	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P366897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099983	TDS	5.57	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099948	Fluoride	0.0	Spike	P	0 - 2.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P366799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100320	Organic Carbon	0.0	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: SM 2120 B
Run ID: A92506
Included Lab Sample IDs: 2100118, 2100119, 2100120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A92512
Included Lab Sample IDs: 2100118, 2100119, 2100120

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A92513
Included Lab Sample IDs: 2100124, 2100125, 2100126

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.2	P/P	90 - 110
O-Phosphate-P	102	96.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A92518
Included Lab Sample IDs: 2100118, 2100119, 2100120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 2320 B-97
Run ID: A92563
Included Lab Sample IDs: 2100118, 2100119, 2100120

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

Reference Method: SM 4500 F-C-97
Run ID: A92563
Included Lab Sample IDs: 2100118, 2100119, 2100120

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A92578
Included Lab Sample IDs: 2100121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	106	108	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A92585
Included Lab Sample IDs: 2100121, 2100122, 2100123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	96.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A92596
Included Lab Sample IDs: 2100122, 2100123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	103	P/P	90 - 110
Ammonia-N	105	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A92605
Included Lab Sample IDs: 2100121, 2100122, 2100123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A92610
Included Lab Sample IDs: 2100121, 2100122, 2100123

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A92640
Included Lab Sample IDs: 2100119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A92675
Included Lab Sample IDs: 2100121, 2100122, 2100123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	101	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						0.0	
EPA 300.0 Rev. 2.1	Chloride	103	104	105	104			0.663
	Sulfate	104	104	104	103			0.211
	Sulfate	97.9	97.8	96.9			1.30	
EPA 350.1 Rev. 2.0	Ammonia-N	107	106	108				0.958
	Ammonia-N	104	102	104				2.17
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.7	97.9	97.6				0.215
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.2					1.74
	NO2NO3-N	100	96.5	96.5				0.0
EPA 365.1 Rev. 2.0	Total-P	100	98.5	98.4				0.0927
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	92.7	93.7				1.07
	O-Phosphate-P	99.7	93.9	95.5				1.69
SM 2120 B	Color (true)	100					0.275	
SM 2320 B-97	Total Alkalinity	104					0.709	
SM 2540 C-97	TDS						5.57	
SM 4500 F-C-97	Fluoride	101	98.9	98.9				0.0
SM 5310 B-00	Organic Carbon	96.8	95.8	95.8				0.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2100118, 2100119, 2100120
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2100118, 2100119, 2100120
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2100118, 2100119, 2100120
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2100121, 2100122, 2100123
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2100121, 2100122, 2100123
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2100121, 2100122, 2100123
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2100121, 2100122, 2100123
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2100124, 2100125, 2100126
SM 2120 B / E31780	True Color measured at 450 nm	2100118, 2100119, 2100120
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2100118, 2100119, 2100120
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2100118, 2100119, 2100120
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2100118, 2100119, 2100120
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2100118, 2100119, 2100120
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2100121, 2100122, 2100123

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	07/02/2019			07/02/2019 16:56	Adrian Shelby	2100118, 2100119, 2100120
EPA 300.0 Rev. 2.1	07/02/2019			07/05/2019 23:27	Jhamieka S. Greenwood	2100118
	07/02/2019			07/05/2019 23:40	Jhamieka S. Greenwood	2100119
	07/02/2019			07/06/2019 00:16	Jhamieka S. Greenwood	2100120
	07/02/2019			07/09/2019 16:20	Jhamieka S. Greenwood	2100119
EPA 350.1 Rev. 2.0	07/02/2019			07/06/2019 12:07	Ping Hua	2100121
	07/02/2019			07/07/2019 13:00	Ping Hua	2100123
	07/02/2019			07/07/2019 13:10	Ping Hua	2100122
EPA 351.2 Rev. 2.0	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 11:11	Joseph Suarez	2100121
	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 11:12	Joseph Suarez	2100122
	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 11:14	Joseph Suarez	2100123
EPA 353.2 Rev. 2.0	07/02/2019			07/08/2019 12:34	Lauren Lees	2100121
	07/02/2019			07/08/2019 12:41	Lauren Lees	2100122
	07/02/2019			07/08/2019 12:47	Lauren Lees	2100123
EPA 365.1 Rev. 2.0	07/02/2019	07/05/2019 15:00	Adrian Shelby	07/08/2019 11:58	Beverly Y. Sanders	2100121
	07/02/2019	07/05/2019 15:00	Adrian Shelby	07/08/2019 11:59	Beverly Y. Sanders	2100122
	07/02/2019	07/05/2019 15:00	Adrian Shelby	07/08/2019 12:01	Beverly Y. Sanders	2100123
EPA 365.1 Rev. 2.0 dissolved	07/02/2019			07/02/2019 17:25	Jhamieka S. Greenwood	2100126
	07/02/2019			07/02/2019 17:48	Jhamieka S. Greenwood	2100124, 2100125
SM 2120 B	07/02/2019			07/02/2019 15:27	Madeline Funaro	2100118
	07/02/2019			07/02/2019 15:29	Madeline Funaro	2100120
	07/02/2019			07/02/2019 15:51	Madeline Funaro	2100119
SM 2320 B-97	07/02/2019			07/04/2019 16:21	Dale L. Simmons	2100118
	07/02/2019			07/04/2019 16:34	Dale L. Simmons	2100119
	07/02/2019			07/04/2019 16:46	Dale L. Simmons	2100120
SM 2540 C-97	07/02/2019			07/03/2019 15:12	Yijie Li	2100118, 2100119, 2100120
SM 2540 D-97	07/02/2019			07/03/2019 15:12	Yijie Li	2100118, 2100119, 2100120
SM 4500 F-C-97	07/02/2019			07/04/2019 16:21	Dale L. Simmons	2100118
	07/02/2019			07/04/2019 16:34	Dale L. Simmons	2100119
	07/02/2019			07/04/2019 16:46	Dale L. Simmons	2100120
SM 5310 B-00	07/02/2019			07/05/2019 11:00	Madeline Funaro	2100121
	07/02/2019			07/05/2019 11:14	Madeline Funaro	2100122
	07/02/2019			07/05/2019 11:28	Madeline Funaro	2100123