Chemical Analysis Report

SO-DIST-2021-10-21-01

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

Event Description: **2021 SMP : Charlotte Harbor**
Request ID: **RQ-2021-10-18-50**
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: William Mullen

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: Colin Wright, Program Administrator

Date Certified: 15-NOV-2021 08:27

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: Coral Creek East **Collection Date/Time: 10/20/2021 09:35**

Field ID: G2SD0046 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2285299	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P405444	
	SM 2320 B-2011	Total Alkalinity	163		mg CaCO3/L	P405522	
	SM 2540 D-2011	TSS	7	I A	mg/L	P406101	
	SM 4500 F-C-2011	Fluoride	0.85		mg F/L	P405525	
2285300	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P405856	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P405660	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P405806	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P405508	
	SM 5310 B-2011	Organic Carbon	17		mg C/L	P405738	
2285301	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P405417	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB **Collection Date/Time: 10/20/2021 09:50**

Field ID: FB_10202021 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2285302	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P405444	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P405813	
	SM 2540 D-2011	TSS	2	U	mg/L	P406100	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P405815	
2285303	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P405840	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P405934	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P405583	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P405618	
	SM 5310 B-2011	Organic Carbon	0.80	I	mg C/L	P405773	
2285304	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P405416	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 5310 B-2011: The result was confirmed on 11/01/2021.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P405444

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405840

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405856

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405660

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405934

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405806

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405508

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405618

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: P405416

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405417

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

Reference Method: SM 2320 B-2011
Batch ID: P405522

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

Reference Method: SM 2320 B-2011
Batch ID: P405813

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

Reference Method: SM 2540 D-2011
Batch ID: P406100

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406101

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P405525

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P405738

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P405773

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405840

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405856

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405660

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405934

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

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: P405806

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405508

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405618

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405416

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405417

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

Reference Method: SM 2320 B-2011
Batch ID: P405522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P405813

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.5		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P405525

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P405738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P405773

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285406	Ammonia-N	95.6	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285312	Ammonia-N	104	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2284951	Kjeldahl Nitrogen	106	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285541	Kjeldahl Nitrogen	99.4	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285206	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285199	NO2NO3-N	97.6	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285300	Total-P	101	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285263	O-Phosphate-P	96.6	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285313	O-Phosphate-P	95.8	97.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P405525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2284389	Fluoride	98.9	99.7	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285338	Fluoride	97.5	96.4	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P405738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2284944	Organic Carbon	98.2	98.3	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P405773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2284255	Organic Carbon	98.4	96.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P405444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285203	Turbidity	12.7	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285406	Ammonia-N	1.15	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285312	Ammonia-N	1.42	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2284951	Kjeldahl Nitrogen	6.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285541	Kjeldahl Nitrogen	1.89	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285206	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285199	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285300	Total-P	2.03	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285231	Total-P	1.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285263	O-Phosphate-P	0.927	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285313	O-Phosphate-P	1.67	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P405522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2284389	Total Alkalinity	1.02	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P405813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285338	Total Alkalinity	0.361	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P405525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2284389	Fluoride	0.480	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285338	Fluoride	0.513	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P405738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2284944	Organic Carbon	0.0977	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P405773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2284255	Organic Carbon	1.27	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A108469
Included Lab Sample IDs: 2285301, 2285304

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A108477
Included Lab Sample IDs: 2285299, 2285302

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: SM 2320 B-2011
Run ID: A108510
Included Lab Sample IDs: 2285299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	97.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A108510
Included Lab Sample IDs: 2285299

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A108531
Included Lab Sample IDs: 2285300

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A108532
Included Lab Sample IDs: 2285303

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A108561
Included Lab Sample IDs: 2285303

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A108584
Included Lab Sample IDs: 2285300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.5	95.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A108603
Included Lab Sample IDs: 2285300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	97.4	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A108622
Included Lab Sample IDs: 2285303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	105	106	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A108640
Included Lab Sample IDs: 2285302

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A108640
Included Lab Sample IDs: 2285302

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A108647
Included Lab Sample IDs: 2285300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A108657
Included Lab Sample IDs: 2285303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A108662
Included Lab Sample IDs: 2285300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A108713
Included Lab Sample IDs: 2285303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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					12.7	
EPA 350.1 Rev. 2.0	Ammonia-N	96.8	95.6	96.8			1.15
	Ammonia-N	98.0	104	106			1.42
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	106	97.0			6.55
	Kjeldahl Nitrogen	99.8	99.4	101			1.89
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	103			0.487
	NO2NO3-N	98.5	97.6	97.6			0.0
EPA 365.1 Rev. 2.0	Total-P	105	101	98.8			2.03
	Total-P	106					1.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.2	96.6	97.5			0.927
	O-Phosphate-P	98.1	95.8	97.5			1.67
SM 2320 B-2011	Total Alkalinity	102				1.02	
	Total Alkalinity	98.5				0.361	
SM 4500 F-C-2011	Fluoride	100	98.9	99.7			0.480
	Fluoride	100	97.5	96.4			0.513
SM 5310 B-2011	Organic Carbon	99.2	98.2	98.3			0.0977
	Organic Carbon	98.0	98.4	96.9			1.27

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2285299, 2285302
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2285300, 2285303
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2285300, 2285303
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2285300, 2285303
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2285300, 2285303
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2285301, 2285304
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2285299, 2285302
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2285299, 2285302
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2285299, 2285302
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2285300, 2285303

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	10/21/2021			10/21/2021 16:03	Khloe J Berg	2285299, 2285302
EPA 350.1 Rev. 2.0	10/21/2021			11/01/2021 13:10	Ping Hua	2285303
	10/21/2021			11/02/2021 11:09	Ping Hua	2285300
EPA 351.2 Rev. 2.0	10/21/2021	10/27/2021 12:05	Benjamin T. Nordmann	10/28/2021 10:36	Alexandra J Mattheus	2285300
	10/21/2021	11/03/2021 12:43	Benjamin T. Nordmann	11/04/2021 11:19	Alexandra J Mattheus	2285303
EPA 353.2 Rev. 2.0	10/21/2021			10/26/2021 11:14	Virginia P. Brown	2285303
	10/21/2021			11/01/2021 10:19	Beverly Y. Sanders	2285300
EPA 365.1 Rev. 2.0	10/21/2021	10/25/2021 13:13	Simonne.V. Calhoun	10/26/2021 12:15	Lipi Saha	2285300
	10/21/2021	10/26/2021 17:15	Simonne.V. Calhoun	10/27/2021 13:13	Lipi Saha	2285303
EPA 365.1 Rev. 2.0 dissolved	10/21/2021			10/21/2021 14:52	James L Waggerby	2285304
	10/21/2021			10/21/2021 15:02	James L Waggerby	2285301
SM 2320 B-2011	10/21/2021			10/23/2021 08:21	Dale L. Simmons	2285299
	10/21/2021			10/27/2021 20:00	Dale L. Simmons	2285302
SM 2540 D-2011	10/21/2021			10/26/2021 15:36	Yijie Li	2285299, 2285302
SM 4500 F-C-2011	10/21/2021			10/23/2021 05:14	Dale L. Simmons	2285299
	10/21/2021			10/27/2021 20:00	Dale L. Simmons	2285302
SM 5310 B-2011	10/21/2021			10/28/2021 10:07	Khloe J Berg	2285300
	10/21/2021			10/29/2021 00:28	Khloe J Berg	2285303