

Chemical Analysis Report

SO-DIST-2017-10-24-01

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

Event Description: **SMP: Collier Canals**
Request ID: **RQ-2017-10-23-04**
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: Colin Wright, Program Administrator

Date Certified: 16-NOV-2017 09:54

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: Drainage Ditch @ CR 850

Collection Date/Time: 10/23/2017 12:20

Field ID: G1SD102317-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939538	EPA 180.1 Rev. 2.0	Turbidity	4.2	A	NTU	P333960	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P333984	
		Sulfate	21		mg SO4/L	P333987	
	SM 2120 B	Color (true)	100		PCU	P333951	
	SM 2320 B-97	Total Alkalinity	182		mg CaCO3/L	P334079	
	SM 2540 C-97	TDS	295		mg/L	P334386	
	SM 2540 D-97	TSS	5	I	mg/L	P334375	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P334082	
1939542	EPA 350.1 Rev. 2.0	Ammonia-N	0.28		mg N/L	P334470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P334627	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.054		mg N/L	P334293	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P334199	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P334510	
1939546	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.086		mg P/L	P333955	

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-139 - SE

Collection Date/Time: 10/23/2017 11:12

Field ID: G1SD102317-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939539	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P333960	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P333984	
		Sulfate	7.7		mg SO4/L	P333987	
	SM 2120 B	Color (true)	210		PCU	P333951	
	SM 2320 B-97	Total Alkalinity	137		mg CaCO3/L	P334079	
	SM 2540 C-97	TDS	240		mg/L	P334386	
	SM 2540 D-97	TSS	7	I	mg/L	P334375	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P334082	
1939543	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P334470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P334627	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.074		mg N/L	P334293	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P334199	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P334510	
1939547	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P333955	

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-139 Annex @ Half Bridge Rd.

Collection Date/Time: 10/23/2017 10:30

Field ID: G1SD102317-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939540	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P333960	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P333984	
		Sulfate	3.0		mg SO4/L	P333987	

Field ID: G1SD102317-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939540	SM 2120 B	Color (true)	150		PCU	P333951	
	SM 2320 B-97	Total Alkalinity	158		mg CaCO3/L	P334079	
	SM 2540 C-97	TDS	243		mg/L	P334386	
	SM 2540 D-97	TSS	4	I	mg/L	P334375	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P334082	
1939544	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P334470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P334627	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P334293	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P334199	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P334510	
1939548	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P333955	

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: L-28 Tieback @ I-75

Collection Date/Time: 10/23/2017 09:45

Field ID: G1SD102317-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1939541	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P333960	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P333984	
		Sulfate	2.9		mg SO4/L	P333987	
	SM 2120 B	Color (true)	110		PCU	P333951	
	SM 2320 B-97	Total Alkalinity	185	A	mg CaCO3/L	P334079	
	SM 2540 C-97	TDS	264	A	mg/L	P334386	
	SM 2540 D-97	TSS	3	IA	mg/L	P334375	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P334082	
1939545	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P334470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P334627	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P334293	
	EPA 365.1 Rev. 2.0	Total-P	0.067		mg P/L	P334199	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P334510	
1939549	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P333955	

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: P333960

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P333984

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333984

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334470

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334627

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334293

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334199

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333955

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

Reference Method: SM 2120 B
Batch ID: P333951

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P334079

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P334386

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P334375

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P334082

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P334510

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: P333984

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	109		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334470

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334627

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334293

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334293

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334199

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333955

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

Reference Method: SM 2320 B-97
Batch ID: P334079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P334082

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P334510

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939482	Chloride	105		P	90 - 110
1939641	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939639	Sulfate	110		P	90 - 110
1939640	Sulfate	109		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334470

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939544	Ammonia-N	94.2	95.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939485	Kjeldahl Nitrogen	98.3	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939485	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939484	Total-P	100	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939487	O-Phosphate-P	94.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P334082

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939541	Fluoride	96.8	97.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P334510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1939454	Organic Carbon	94.3	95.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939538	Turbidity	1.42	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939482	Chloride	0.620	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939640	Sulfate	1.05	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P334470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939544	Ammonia-N	0.590	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939485	Kjeldahl Nitrogen	1.81	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939485	NO2NO3-N	0.952	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939484	Total-P	8.78	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939487	O-Phosphate-P	6.43	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P333951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939482	Color (true)	2.73	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P334079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939541	Total Alkalinity	0.116	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P334386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939541	TDS	4.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P334082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939541	Fluoride	0.467	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P334510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1939454	Organic Carbon	0.879	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: A79769
Included Lab Sample IDs: 1939546, 1939547, 1939548, 1939549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	97.3	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A79770
Included Lab Sample IDs: 1939538, 1939539, 1939540, 1939541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.0	99.6	P/P	85 - 115
Color (true)	98.5	99.6	P/P	85 - 115
Color (true)	99.6	98.0	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A79771
Included Lab Sample IDs: 1939538, 1939539, 1939540, 1939541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A79771

Included Lab Sample IDs: 1939538, 1939539, 1939540, 1939541

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A79775

Included Lab Sample IDs: 1939538, 1939539, 1939540, 1939541

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

Reference Method: SM 2320 B-97

Run ID: A79813

Included Lab Sample IDs: 1939538, 1939539, 1939540, 1939541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	100	P/P	90 - 110
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A79813

Included Lab Sample IDs: 1939538, 1939539, 1939540, 1939541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.5	P/P	90 - 110
Fluoride	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A79881

Included Lab Sample IDs: 1939542, 1939543, 1939544, 1939545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A79892

Included Lab Sample IDs: 1939542, 1939543, 1939544, 1939545

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A79954

Included Lab Sample IDs: 1939542, 1939543, 1939544, 1939545

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A79974

Included Lab Sample IDs: 1939542, 1939543, 1939544, 1939545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80098

Included Lab Sample IDs: 1939542, 1939543, 1939544, 1939545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.42	
EPA 300.0 Rev. 2.1	Chloride	104	105 104		0.620	
	Sulfate	109	109 110		1.05	
EPA 350.1 Rev. 2.0	Ammonia-N	93.7	94.2 95.2			0.590
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.5	98.3 95.6			1.81
EPA 353.2 Rev. 2.0	NO2NO3-N	104	106 104			0.952
EPA 365.1 Rev. 2.0	Total-P	105	100 110			8.78
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	94.8 101			6.43
SM 2120 B	Color (true)				2.73	
SM 2320 B-97	Total Alkalinity	102			0.116	
SM 2540 C-97	TDS				4.17	
SM 4500 F-C-97	Fluoride	96.9	96.8 97.4			0.467
SM 5310 B-00	Organic Carbon	95.6	94.3 95.4			0.879

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1939538, 1939539, 1939540, 1939541
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1939538, 1939539, 1939540, 1939541
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1939538, 1939539, 1939540, 1939541
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1939542, 1939543, 1939544, 1939545
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1939542, 1939543, 1939544, 1939545
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1939542, 1939543, 1939544, 1939545
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1939542, 1939543, 1939544, 1939545
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1939546, 1939547, 1939548, 1939549

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1939538, 1939539, 1939540, 1939541
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1939538, 1939539, 1939540, 1939541
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1939538, 1939539, 1939540, 1939541
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1939538, 1939539, 1939540, 1939541
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1939538, 1939539, 1939540, 1939541
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1939542, 1939543, 1939544, 1939545

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	10/24/2017			10/24/2017 15:02	DeAsia Armster	1939538, 1939539, 1939540, 1939541
EPA 300.0 Rev. 2.1	10/24/2017			10/25/2017	Julia Storbeck	1939538, 1939539, 1939540, 1939541
	10/24/2017			10/27/2017	Irina Carbone	1939538, 1939539, 1939540, 1939541
EPA 350.1 Rev. 2.0	10/24/2017			10/31/2017	Sofia Elnemr	1939542, 1939543, 1939544, 1939545
EPA 351.2 Rev. 2.0	10/24/2017	11/03/2017	Adrian Shelby	11/06/2017	Joseph Suarez	1939542, 1939543, 1939544, 1939545
EPA 353.2 Rev. 2.0	10/24/2017			10/30/2017	Beverly Y. Sanders	1939542, 1939543, 1939544, 1939545
EPA 365.1 Rev. 2.0	10/24/2017	10/27/2017	Sima Feizi	10/30/2017	Lipi Saha	1939542, 1939543, 1939544, 1939545
EPA 365.1 Rev. 2.0 dissolved	10/24/2017			10/24/2017 15:25	Megan Treadwell	1939546, 1939548
	10/24/2017			10/24/2017 15:26	Megan Treadwell	1939549
	10/24/2017			10/24/2017 15:27	Megan Treadwell	1939547
SM 2120 B	10/24/2017			10/24/2017 15:38	Tanya Welborn	1939538
	10/24/2017			10/24/2017 15:40	Tanya Welborn	1939541
	10/24/2017			10/24/2017 15:51	Tanya Welborn	1939539
	10/24/2017			10/24/2017 15:59	Tanya Welborn	1939540
SM 2320 B-97	10/24/2017			10/26/2017	Dale L. Simmons	1939538, 1939539, 1939540, 1939541
SM 2540 C-97	10/24/2017			10/25/2017	Yijie Li	1939538, 1939539, 1939540, 1939541
SM 2540 D-97	10/24/2017			10/25/2017	Yijie Li	1939538, 1939539, 1939540, 1939541
SM 4500 F-C-97	10/24/2017			10/26/2017	Dale L. Simmons	1939538, 1939539, 1939540, 1939541
SM 5310 B-00	10/24/2017			10/31/2017	Ping Hua	1939542, 1939543, 1939544, 1939545