

Chemical Analysis Report

SO-DIST-2019-04-18-01

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

Event Description: **2019 SMP : Charlotte Harbor**
Request ID: **RQ-2019-04-08-33**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 13-MAY-2019 19:29



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 groups are included in this report: Metals and 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: MyakkaCutoff(Western)

Collection Date/Time: 04/17/2019 10:00

Field ID: G3SD0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2079180	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P362455	
	EPA 300.0	Bromide	44		mg Br/L	P362742	
	SM 2320 B-97	Total Alkalinity	113		mg CaCO3/L	P363131	
	SM 2540 D-97	TSS	49		mg/L	P362755	
	SM 4500 F-C-97	Fluoride	0.96		mg F/L	P363132	
2079182	EPA 350.1 Rev. 2.0	Ammonia-N	0.048		mg N/L	P362715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P362841	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362648	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P362615	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P362592	
2079184	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P362464	

Sample Location: TrailerParkCanal@Mouth

Collection Date/Time: 04/17/2019 10:25

Field ID: G3SD0072

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2079177	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P362454	
	EPA 300.0	Bromide	38		mg Br/L	P362742	
	SM 2320 B-97	Total Alkalinity	97		mg CaCO3/L	P363131	
	SM 2540 D-97	TSS	19	A	mg/L	P362755	
	SM 4500 F-C-97	Fluoride	0.85		mg F/L	P363132	
2079178	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P362715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P362841	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362648	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P362615	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P362592	
2079179	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P362464	
2079213	EPA 200.7 Rev. 4.4	Iron	230	I	ug/L	P362810	
		Manganese	11	I	ug/L	P362810	
		Zinc	15	U	ug/L	P362810	
	EPA 200.8 Rev. 5.4	Aluminum	200		ug/L	P363173	
		Antimony	0.20	U	ug/L	P362810	
		Arsenic	2.19		ug/L	P362810	
		Boron**	2.15E+03		ug/L	P362810	
		Cadmium	0.080	U	ug/L	P362810	
		Chromium	4.0	U	ug/L	P362810	
		Copper	1.6	U	ug/L	P362810	
		Lead	0.80	U	ug/L	P362810	
		Nickel	2.0	U	ug/L	P362810	
		Selenium	0.80	U	ug/L	P362810	
		Silver	0.040	U	ug/L	P362810	
		Thallium	0.40	U	ug/L	P362810	

Sample Location: TrailerParkCanal@Mouth

Collection Date/Time: 04/17/2019 10:30

Field ID: G3SD0072_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2079186	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P362455	
	EPA 300.0	Bromide	38		mg Br/L	P362742	
	SM 2320 B-97	Total Alkalinity	98		mg CaCO3/L	P363131	
	SM 2540 D-97	TSS	18		mg/L	P362755	
	SM 4500 F-C-97	Fluoride	0.84		mg F/L	P363132	
2079187	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P362715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P362844	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362648	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P362615	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P362592	
2079188	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P362464	
2079214	EPA 200.7 Rev. 4.4	Iron	110	I	ug/L	P362810	
		Manganese	11	I	ug/L	P362810	
		Zinc	15	U	ug/L	P362810	
	EPA 200.8 Rev. 5.4	Aluminum	170	I	ug/L	P363173	
		Antimony	0.20	U	ug/L	P362810	
		Arsenic	2.22		ug/L	P362810	
		Boron**	2.08E+03		ug/L	P362810	
		Cadmium	0.080	U	ug/L	P362810	
		Chromium	4.0	U	ug/L	P362810	
		Copper	1.6	U	ug/L	P362810	
		Lead	0.80	U	ug/L	P362810	
		Nickel	2.0	U	ug/L	P362810	
		Selenium	0.80	U	ug/L	P362810	
		Silver	0.040	U	ug/L	P362810	
		Thallium	0.40	U	ug/L	P362810	

Sample Location: Whidden Creek South Pt

Collection Date/Time: 04/17/2019 12:20

Field ID: G2SD0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2079181	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P362455	
	EPA 300.0	Bromide	70		mg Br/L	P362742	
	SM 2320 B-97	Total Alkalinity	148		mg CaCO3/L	P363131	
	SM 2540 D-97	TSS	30		mg/L	P362755	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P363132	
2079183	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P362715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P362844	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362648	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P362615	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P362592	
2079185	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P362464	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362454

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362455

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362810

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362810

Component	Result	Code	Units
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363173

Component	Result	Code	Units
Aluminum	5.0	U	ug/L

Reference Method: EPA 300.0
Batch ID: P362742

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362715

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362841

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362844

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362648

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362615

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362464

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

Reference Method: SM 2320 B-97
Batch ID: P363131

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

Reference Method: SM 2540 D-97
Batch ID: P362755

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P362592

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362810

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115
Manganese	102		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362810

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Antimony	98.4		P	85 - 115
Arsenic	101		P	85 - 115
Boron	96.5		P	85 - 115
Cadmium	99.9		P	85 - 115
Chromium	90.5		P	85 - 115
Copper	98.4		P	85 - 115
Lead	91.9		P	85 - 115
Nickel	99.5		P	85 - 115
Selenium	101		P	85 - 115
Silver	95.4		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363173

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

Reference Method: EPA 300.0
Batch ID: P362742

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362715

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362841

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: P362844

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362648

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: P362615

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362464

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

Reference Method: SM 2320 B-97
Batch ID: P363131

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P362592

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P362810

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079824	Iron	104		P	70 - 130
2079824	Manganese	96.5		P	70 - 130
2079824	Zinc	102		P	70 - 130
2080086	Iron	104	105	P/P	80 - 120
2080086	Manganese	97.6	97.9	P/P	80 - 120
2080086	Zinc	100	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P362810

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079824	Antimony	101		P	70 - 130
2079824	Arsenic	109		P	70 - 130
2079824	Boron	99.1		P	70 - 130
2079824	Cadmium	96.9		P	70 - 130
2079824	Chromium	88.5		P	70 - 130
2079824	Copper	95.5		P	70 - 130
2079824	Lead	96.8		P	70 - 130
2079824	Nickel	99.4		P	70 - 130
2079824	Selenium	103		P	70 - 130
2079824	Silver	90.3		P	70 - 130
2079824	Thallium	106		P	70 - 130
2080086	Antimony	105	103	P/P	70 - 130
2080086	Arsenic	112	110	P/P	70 - 130
2080086	Boron	87.0	79.7	P/P	70 - 130
2080086	Cadmium	101	97.9	P/P	70 - 130
2080086	Chromium	88.6	91.4	P/P	70 - 130
2080086	Copper	97.0	96.3	P/P	70 - 130
2080086	Lead	98.0	97.2	P/P	70 - 130
2080086	Nickel	98.9	97.0	P/P	70 - 130
2080086	Selenium	103	104	P/P	70 - 130
2080086	Silver	90.0	89.1	P/P	70 - 130
2080086	Thallium	106	106	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P363173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080892	Aluminum	111	111	P/P	70 - 130
2081091	Aluminum	106		P	70 - 130

Reference Method: EPA 300.0
 Batch ID: P362742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079290	Bromide	98.4		P	90 - 110
2079303	Bromide	99.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P362715

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078380	Ammonia-N	107	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079178	Kjeldahl Nitrogen	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362844

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079183	Kjeldahl Nitrogen	94.1	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078626	NO2NO3-N	98.7	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079270	Total-P	99.5	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362464

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079185	O-Phosphate-P	96.7	97.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080079	Fluoride	97.9	99.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P362592

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079272	Organic Carbon	101	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079142	Turbidity	2.43	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079243	Turbidity	4.99	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080086	Iron	0.149	Spike	P	0 - 20
2080086	Manganese	0.321	Spike	P	0 - 20
2080086	Zinc	0.0135	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080086	Antimony	1.42	Spike	P	0 - 20
2080086	Arsenic	1.09	Spike	P	0 - 20
2080086	Boron	1.24	Spike	P	0 - 20
2080086	Cadmium	2.65	Spike	P	0 - 20
2080086	Chromium	3.10	Spike	P	0 - 20
2080086	Copper	0.732	Spike	P	0 - 20
2080086	Lead	0.799	Spike	P	0 - 20
2080086	Nickel	1.92	Spike	P	0 - 20
2080086	Selenium	1.48	Spike	P	0 - 20
2080086	Silver	1.02	Spike	P	0 - 20
2080086	Thallium	0.296	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080892	Aluminum	0.461	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P362742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079290	Bromide	0.988	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078380	Ammonia-N	0.0398	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079178	Kjeldahl Nitrogen	1.19	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079183	Kjeldahl Nitrogen	2.87	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078626	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079270	Total-P	1.83	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079185	O-Phosphate-P	0.824	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P363131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080079	Total Alkalinity	0.508	Sample	P	0 - 2.8

Reference Method: SM 2540 D-97
Batch ID: P362755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079177	TSS	4.17	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080079	Fluoride	0.940	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P362592

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079272	Organic Carbon	0.522	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 180.1 Rev. 2.0

Run ID: A90832

Included Lab Sample IDs: 2079177, 2079180, 2079181, 2079186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90833

Included Lab Sample IDs: 2079179, 2079184, 2079185, 2079188

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	98.8	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A90876

Included Lab Sample IDs: 2079178, 2079182, 2079183, 2079187

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

Reference Method: EPA 300.0

Run ID: A90903

Included Lab Sample IDs: 2079177, 2079180, 2079181, 2079186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	98.0	98.4	P/P	90 - 110
Bromide	98.4	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90918

Included Lab Sample IDs: 2079178, 2079182, 2079183, 2079187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90927

Included Lab Sample IDs: 2079178, 2079182, 2079187

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90934

Included Lab Sample IDs: 2079183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90946

Included Lab Sample IDs: 2079178, 2079182, 2079183, 2079187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	107	108	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91009

Included Lab Sample IDs: 2079213, 2079214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	102	P/P	95 - 105
Manganese	102	103	P/P	95 - 105
Zinc	102	102	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91019

Included Lab Sample IDs: 2079213, 2079214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	99.1	99.9	P/P	90 - 110
Arsenic	99.2	99.7	P/P	90 - 110
Boron	93.4	92.6	P/P	90 - 110
Cadmium	97.3	97.2	P/P	90 - 110
Copper	98.4	98.1	P/P	90 - 110
Lead	90.6	91.4	P/P	90 - 110
Nickel	97.7	98.4	P/P	90 - 110
Selenium	97.3	99.8	P/P	90 - 110
Silver	95.9	95.7	P/P	90 - 110
Thallium	96.2	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91020

Included Lab Sample IDs: 2079178, 2079182, 2079183, 2079187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.4	P/P	90 - 110
Kjeldahl Nitrogen	96.9	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A91108

Included Lab Sample IDs: 2079177, 2079180, 2079181, 2079186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A91108

Included Lab Sample IDs: 2079177, 2079180, 2079181, 2079186

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91145

Included Lab Sample IDs: 2079213, 2079214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	93.2	94.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91286

Included Lab Sample IDs: 2079213, 2079214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.4	104	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					2.43	
	Turbidity					4.99	
EPA 200.7 Rev. 4.4	Iron	105	104	104	105		0.149
	Manganese	102	96.5	97.6	97.9		0.321
	Zinc	102	102	100	100		0.0135
EPA 200.8 Rev. 5.4	Aluminum	101	111	111	106		0.461
	Antimony	98.4	101	105	103		1.42
	Arsenic	101	109	112	110		1.09
	Boron	96.5	99.1	87.0	79.7		1.24
	Cadmium	99.9	96.9	101	97.9		2.65
	Chromium	90.5	88.6	91.4	88.5		3.10
	Copper	98.4	95.5	97.0	96.3		0.732
	Lead	91.9	96.8	98.0	97.2		0.799
	Nickel	99.5	99.4	98.9	97.0		1.92
	Selenium	101	103	103	104		1.48
	Silver	95.4	90.3	90.0	89.1		1.02
	Thallium	102	106	106	106		0.296
EPA 300.0	Bromide	101	98.4	99.0		0.988	
EPA 350.1 Rev. 2.0	Ammonia-N	107	107	107			0.0398
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	101	102			1.19
	Kjeldahl Nitrogen	100	94.1	97.9			2.87
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.7	98.2			0.471
EPA 365.1 Rev. 2.0	Total-P	99.0	99.5	97.6			1.83
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	96.7	97.5			0.824
SM 2320 B-97	Total Alkalinity	100				0.508	
SM 2540 D-97	TSS					4.17	
SM 4500 F-C-97	Fluoride	96.6	97.9	99.6			0.940
SM 5310 B-00	Organic Carbon	101	101	100			0.522

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2079177, 2079180, 2079181, 2079186
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2079213, 2079214
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2079213, 2079214
EPA 300.0 / E31780	Bromide in aqueous matrices	2079177, 2079180, 2079181, 2079186
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2079178, 2079182, 2079183, 2079187
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2079178, 2079182, 2079183, 2079187
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2079178, 2079182, 2079183, 2079187
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2079178, 2079182, 2079183, 2079187
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2079179, 2079184, 2079185, 2079188
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2079177, 2079180, 2079181, 2079186
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2079177, 2079180, 2079181, 2079186
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2079177, 2079180, 2079181, 2079186
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2079178, 2079182, 2079183, 2079187

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	04/18/2019			04/18/2019 16:29	Adrian Shelby	2079177, 2079180, 2079181, 2079186
EPA 200.7 Rev. 4.4	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/25/2019 13:56	Betina Topolski	2079213
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/25/2019 14:04	Betina Topolski	2079214
EPA 200.8 Rev. 5.4	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/25/2019 23:35	Martin Acosta	2079213
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/25/2019 23:44	Martin Acosta	2079214
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/26/2019 05:17	Martin Acosta	2079213
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/26/2019 05:27	Martin Acosta	2079214
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	05/01/2019 17:32	Martin Acosta	2079213
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	05/01/2019 17:38	Martin Acosta	2079214
	04/18/2019	05/01/2019 16:30	Elliott D. Healy	05/08/2019 01:03	Robert K Palmer	2079213
	04/18/2019	05/01/2019 16:30	Elliott D. Healy	05/08/2019 01:12	Robert K Palmer	2079214
EPA 300.0	04/18/2019			04/23/2019 16:14	Lipi Saha	2079177
	04/18/2019			04/23/2019 16:31	Lipi Saha	2079180
	04/18/2019			04/23/2019 17:22	Lipi Saha	2079181
	04/18/2019			04/23/2019 17:39	Lipi Saha	2079186
EPA 350.1 Rev. 2.0	04/18/2019			04/22/2019 13:12	Ping Hua	2079178
	04/18/2019			04/22/2019 13:13	Ping Hua	2079182
	04/18/2019			04/22/2019 13:15	Ping Hua	2079183
	04/18/2019			04/22/2019 13:16	Ping Hua	2079187
EPA 351.2 Rev. 2.0	04/18/2019	04/25/2019 12:15	Adrian Shelby	04/26/2019 10:53	Joseph Suarez	2079183
	04/18/2019	04/25/2019 12:15	Adrian Shelby	04/26/2019 10:57	Joseph Suarez	2079187
	04/18/2019	04/25/2019 12:20	Adrian Shelby	04/26/2019 09:44	Joseph Suarez	2079178
	04/18/2019	04/25/2019 12:20	Adrian Shelby	04/26/2019 09:48	Joseph Suarez	2079182
EPA 353.2 Rev. 2.0	04/18/2019			04/23/2019 11:02	Beverly Y. Sanders	2079178
	04/18/2019			04/23/2019 11:04	Beverly Y. Sanders	2079187
	04/18/2019			04/23/2019 11:05	Beverly Y. Sanders	2079182
	04/18/2019			04/23/2019 11:06	Beverly Y. Sanders	2079183
EPA 365.1 Rev. 2.0	04/18/2019	04/22/2019 15:10	Sima Feizi	04/23/2019 12:01	Rosalyn Ballman	2079178
	04/18/2019	04/22/2019 15:10	Sima Feizi	04/23/2019 12:02	Rosalyn Ballman	2079182
	04/18/2019	04/22/2019 15:10	Sima Feizi	04/23/2019 12:05	Rosalyn Ballman	2079187
	04/18/2019	04/22/2019 15:10	Sima Feizi	04/23/2019 14:07	Rosalyn Ballman	2079183
EPA 365.1 Rev. 2.0 dissolved	04/18/2019			04/18/2019 16:39	Julia Storbeck	2079185
	04/18/2019			04/18/2019 17:12	Julia Storbeck	2079179
	04/18/2019			04/18/2019 17:13	Julia Storbeck	2079184, 2079188
SM 2320 B-97	04/18/2019			04/30/2019 22:49	Dale L. Simmons	2079177
	04/18/2019			04/30/2019 23:02	Dale L. Simmons	2079180
	04/18/2019			04/30/2019 23:14	Dale L. Simmons	2079181
	04/18/2019			04/30/2019 23:25	Dale L. Simmons	2079186
SM 2540 D-97	04/18/2019			04/22/2019 18:35	Mariam Hanna	2079177, 2079180, 2079181, 2079186
SM 4500 F-C-97	04/18/2019			04/30/2019 18:35	Dale L. Simmons	2079177

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	04/18/2019			04/30/2019 18:40	Dale L. Simmons	2079180
	04/18/2019			04/30/2019 18:44	Dale L. Simmons	2079181
	04/18/2019			04/30/2019 18:48	Dale L. Simmons	2079186
SM 5310 B-00	04/18/2019			04/20/2019 04:11	Julia Storbeck	2079178
	04/18/2019			04/20/2019 04:23	Julia Storbeck	2079182
	04/18/2019			04/20/2019 04:48	Julia Storbeck	2079183
	04/18/2019			04/20/2019 05:25	Julia Storbeck	2079187