

Chemical Analysis Report

SO-DIST-2018-03-27-02

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

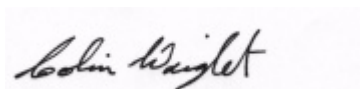
Event Description: **GOM : 8065, 8063, 3278U x 2**
Request ID: **RQ-2018-03-19-20**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 30-APR-2018 11:36



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 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: 8065-ENRE 6 @

Collection Date/Time: 03/26/2018 11:25

Field ID: G1SD0065

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978057	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P342271	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P342984	
	SM 2540 D-97	TSS	4	I	mg/L	P342633	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P342988	
1978059	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P342768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P342375	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342427	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P342499	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P342763	
1978061	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P342319	

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: Rookery Bay-Site 2

Collection Date/Time: 03/26/2018 12:10

Field ID: G1SD0068

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978051	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P342271	
	SM 2320 B-97	Total Alkalinity	134		mg CaCO3/L	P342984	
	SM 2540 D-97	TSS	4	I	mg/L	P342633	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P342988	
1978053	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P342768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P342375	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342427	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P342499	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P342763	
1978055	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P342319	
1978069	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P342362	
		Zinc	20	U	ug/L	P342362	
	EPA 200.8 Rev. 5.4	Arsenic	3.00		ug/L	P342362	
		Cadmium	0.080	U	ug/L	P342362	
		Chromium	1.6	U	ug/L	P342362	
		Copper	0.80	U	ug/L	P342362	
		Lead	0.50	U	ug/L	P342362	
		Nickel	0.80	U	ug/L	P342362	
		Silver	0.040	U	ug/L	P342362	

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: Rookery Bay-Site 1

Collection Date/Time: 03/26/2018 12:55

Field ID: G1SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978052	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P342271	
	SM 2320 B-97	Total Alkalinity	128		mg CaCO3/L	P342984	

Field ID: G1SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978052	SM 2540 D-97	TSS	5	I	mg/L	P342633	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P342988	
1978054	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P342768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P342375	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342427	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P342499	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P342763	
1978056	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P342319	
1978070	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P342362	
		Zinc	20	U	ug/L	P342362	
	EPA 200.8 Rev. 5.4	Arsenic	2.60		ug/L	P342362	
		Cadmium	0.080	U	ug/L	P342362	
		Chromium	1.6	U	ug/L	P342362	
		Copper	0.80	U	ug/L	P342362	
		Lead	0.50	U	ug/L	P342362	
		Nickel	0.80	U	ug/L	P342362	
		Silver	0.040	U	ug/L	P342362	

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: 8063-ENRE 2 @

Collection Date/Time: 03/26/2018 13:25

Field ID: G1SD0066

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1978058	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P342271	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P342984	
	SM 2540 D-97	TSS	7	I	mg/L	P342633	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P342988	
1978060	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P342768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P342375	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342427	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P342499	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P342763	
1978062	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P342319	

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: P342271

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342362

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342362

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342768

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342375

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342427

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342499

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342319

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

Reference Method: SM 2320 B-97
Batch ID: P342984

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P342633

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342763

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: P342362

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	109		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342362

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	70 - 130
Cadmium	103		P	70 - 130
Chromium	106		P	70 - 130
Copper	102		P	70 - 130
Lead	103		P	70 - 130
Nickel	101		P	70 - 130
Silver	97.5		P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342375

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.1		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342427

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: P342499

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342319

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

Reference Method: SM 2320 B-97
Batch ID: P342984

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342763

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978070	Iron	104	101	P/P	70 - 130
1978070	Zinc	101	98.3	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978070	Arsenic	101	103	P/P	70 - 130
1978070	Cadmium	92.3	89.8	P/P	70 - 130
1978070	Chromium	85.1	87.5	P/P	70 - 130
1978070	Copper	96.9	103	P/P	70 - 130
1978070	Lead	108	111	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978070	Nickel	100	103	P/P	70 - 130
1978070	Silver	86.0	87.3	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978053	Ammonia-N	97.9	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978053	Kjeldahl Nitrogen	95.8	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978053	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978053	Total-P	92.2	94.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1978055	O-Phosphate-P	98.1	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979416	Fluoride	95.2	94.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977213	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978033	Turbidity	1.60	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342362

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978070	Iron	3.25	Spike	P	0 - 20
1978070	Zinc	2.98	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342362

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978070	Arsenic	1.96	Spike	P	0 - 20
1978070	Cadmium	2.81	Spike	P	0 - 20
1978070	Chromium	2.75	Spike	P	0 - 20
1978070	Copper	5.97	Spike	P	0 - 20
1978070	Lead	2.53	Spike	P	0 - 20
1978070	Nickel	3.16	Spike	P	0 - 20
1978070	Silver	1.45	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978053	Ammonia-N	0.695	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978053	Kjeldahl Nitrogen	10.2	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978053	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978053	Total-P	1.76	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1978055	O-Phosphate-P	0.664	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P342984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979416	Total Alkalinity	0.835	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979416	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977213	Organic Carbon	0.312	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: A82876
Included Lab Sample IDs: 1978051, 1978052, 1978057, 1978058

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82895
Included Lab Sample IDs: 1978055, 1978056, 1978061, 1978062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	101	102	P/P	90 - 110
O-Phosphate-P	101	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82938
Included Lab Sample IDs: 1978053, 1978054, 1978059, 1978060

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82938

Included Lab Sample IDs: 1978053, 1978054, 1978059, 1978060

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A82953

Included Lab Sample IDs: 1978069, 1978070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	96.4	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82981

Included Lab Sample IDs: 1978053, 1978054, 1978059, 1978060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.3	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83000

Included Lab Sample IDs: 1978053, 1978054, 1978059, 1978060

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

Reference Method: SM 5310 B-00

Run ID: A83038

Included Lab Sample IDs: 1978053, 1978054, 1978059, 1978060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83041

Included Lab Sample IDs: 1978053, 1978054, 1978059, 1978060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	96.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83063

Included Lab Sample IDs: 1978069, 1978070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	101	P/P	90 - 110
Cadmium	99.3	99.3	P/P	90 - 110
Chromium	98.6	96.8	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Lead	98.5	99.8	P/P	90 - 110
Lead	99.8	100	P/P	90 - 110
Nickel	101	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83063

Included Lab Sample IDs: 1978069, 1978070

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

Reference Method: SM 2320 B-97

Run ID: A83098

Included Lab Sample IDs: 1978051, 1978052, 1978057, 1978058

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83098

Included Lab Sample IDs: 1978051, 1978052, 1978057, 1978058

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.1	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					1.60	
EPA 200.7 Rev. 4.4	Iron	109	104	101			3.25
	Zinc	100	101	98.3			2.98
EPA 200.8 Rev. 5.4	Arsenic	102	101	103			1.96
	Cadmium	103	92.3	89.8			2.81
	Chromium	106	85.1	87.5			2.75
	Copper	102	96.9	103			5.97
	Lead	103	108	111			2.53
	Nickel	101	100	103			3.16
	Silver	97.5	86.0	87.3			1.45
EPA 350.1 Rev. 2.0	Ammonia-N	94.8	97.9	97.1			0.695
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	95.8	108			10.2
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	104	104			0.480
EPA 365.1 Rev. 2.0	Total-P	101	92.2	94.0			1.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.1	98.9			0.664
SM 2320 B-97	Total Alkalinity	100				0.835	
SM 4500 F-C-97	Fluoride	94.2	95.2	94.5			0.477
SM 5310 B-00	Organic Carbon	98.8	101	102			0.312

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1978051, 1978052, 1978057, 1978058

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1978069, 1978070
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1978069, 1978070
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1978053, 1978054, 1978059, 1978060
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1978053, 1978054, 1978059, 1978060
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1978053, 1978054, 1978059, 1978060
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1978053, 1978054, 1978059, 1978060
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1978055, 1978056, 1978061, 1978062
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1978051, 1978052, 1978057, 1978058
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1978051, 1978052, 1978057, 1978058
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1978051, 1978052, 1978057, 1978058
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1978053, 1978054, 1978059, 1978060

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	03/27/2018			03/27/2018 15:15	DeAsia Armster	1978051, 1978052, 1978057, 1978058
EPA 200.7 Rev. 4.4	03/27/2018	03/28/2018 17:05	Elliott D. Healy	03/29/2018 19:21	Martin Acosta	1978069
	03/27/2018	03/28/2018 17:05	Elliott D. Healy	03/29/2018 19:29	Martin Acosta	1978070
EPA 200.8 Rev. 5.4	03/27/2018	03/28/2018 17:05	Elliott D. Healy	04/05/2018 22:32	Nadine Brooks	1978070
	03/27/2018	03/28/2018 17:05	Elliott D. Healy	04/05/2018 23:36	Nadine Brooks	1978069
	03/27/2018	03/28/2018 17:05	Elliott D. Healy	04/06/2018 00:57	Nadine Brooks	1978070
	03/27/2018	03/28/2018 17:05	Elliott D. Healy	04/06/2018 01:33	Nadine Brooks	1978069
EPA 350.1 Rev. 2.0	03/27/2018			04/04/2018 12:58	Ping Hua	1978053
	03/27/2018			04/04/2018 13:03	Ping Hua	1978054
	03/27/2018			04/04/2018 13:04	Ping Hua	1978059
	03/27/2018			04/04/2018 13:06	Ping Hua	1978060
EPA 351.2 Rev. 2.0	03/27/2018	03/29/2018 11:18	Adrian Shelby	04/02/2018 11:50	Joseph Suarez	1978053
	03/27/2018	03/29/2018 11:18	Adrian Shelby	04/02/2018 11:55	Joseph Suarez	1978054
	03/27/2018	03/29/2018 11:18	Adrian Shelby	04/02/2018 11:56	Joseph Suarez	1978059
	03/27/2018	03/29/2018 11:18	Adrian Shelby	04/02/2018 11:58	Joseph Suarez	1978060
EPA 353.2 Rev. 2.0	03/27/2018			03/29/2018 12:29	Lauren Bottorf	1978053
	03/27/2018			03/29/2018 12:36	Lauren Bottorf	1978054
	03/27/2018			03/29/2018 12:37	Lauren Bottorf	1978059
	03/27/2018			03/29/2018 12:38	Lauren Bottorf	1978060
EPA 365.1 Rev. 2.0	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:17	Beverly Y. Sanders	1978053
	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:18	Beverly Y. Sanders	1978054
	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:26	Beverly Y. Sanders	1978059
	03/27/2018	03/30/2018 13:51	Sima Feizi	04/02/2018 13:27	Beverly Y. Sanders	1978060
EPA 365.1 Rev. 2.0 dissolved	03/27/2018			03/27/2018 15:17	Megan Treadwell	1978055
	03/27/2018			03/27/2018 15:46	Megan Treadwell	1978056
	03/27/2018			03/27/2018 15:51	Megan Treadwell	1978061
	03/27/2018			03/27/2018 15:52	Megan Treadwell	1978062
SM 2320 B-97	03/27/2018			04/06/2018 06:33	Dale L. Simmons	1978051
	03/27/2018			04/06/2018 06:43	Dale L. Simmons	1978052
	03/27/2018			04/06/2018 06:52	Dale L. Simmons	1978057
	03/27/2018			04/06/2018 07:02	Dale L. Simmons	1978058
SM 2540 D-97	03/27/2018			03/28/2018 15:49	Yijie Li	1978051, 1978052, 1978057, 1978058
SM 4500 F-C-97	03/27/2018			04/06/2018 04:42	Dale L. Simmons	1978051
	03/27/2018			04/06/2018 04:46	Dale L. Simmons	1978052
	03/27/2018			04/06/2018 04:49	Dale L. Simmons	1978057
	03/27/2018			04/06/2018 04:53	Dale L. Simmons	1978058
SM 5310 B-00	03/27/2018			04/04/2018 10:47	Megan Treadwell	1978053
	03/27/2018			04/04/2018 11:06	Megan Treadwell	1978054
	03/27/2018			04/04/2018 11:26	Megan Treadwell	1978059
	03/27/2018			04/04/2018 11:43	Megan Treadwell	1978060