Chemical Analysis Report

SE-DIST-2016-02-23-01

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

Event Description: **SMP_2016_Bay_weekof2/22**
Request ID: **RQ-2016-02-22-23**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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2199 South Rock Road
Fort Pierce, FL 34945
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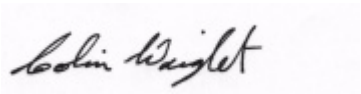
Certified by: Colin Wright, Environmental Administrator

Date Certified: 16-MAR-2016 10:59



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: ENRG7_8089 **Collection Date/Time: 02/22/2016 14:20**

Field ID: G5SE0034_02222016 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773721	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P299104	
	SM 2320 B-97	Total Alkalinity	128	A	mg CaCO3/L	P299822	
	SM 2540 D-97	TSS	4	I	mg/L	P299685	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P299390	
1773723	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P299636	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P299403	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299594	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P299421	MS
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P299379	
1773725	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299092	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: ENRG7_8088 **Collection Date/Time: 02/22/2016 15:00**

Field ID: 28040375_02222016 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773722	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P299104	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P299822	
	SM 2540 D-97	TSS	3	I	mg/L	P299685	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P299390	
1773724	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P299636	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P299403	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P299594	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P299421	MS
	SM 5310 B-00	Organic Carbon	1.9	I	mg C/L	P299379	
1773726	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299092	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: FLORIDA CITY CANAL @ 117TH **Collection Date/Time: 02/22/2016 16:30**

Field ID: 28040076_02222016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773718	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P299104	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P299332	
		Sulfate	21		mg SO4/L	P299335	
	SM 2120 B	Color (true)	2.5	U	PCU	P299422	
	SM 2320 B-97	Total Alkalinity	210		mg CaCO3/L	P299770	
	SM 2540 C-97	TDS	320	A	mg/L	P299756	
	SM 2540 D-97	TSS	2	I	mg/L	P299679	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P299391	
1773719	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P299634	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P299840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.58		mg N/L	P299497	

Field ID: 28040076_02222016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773719	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P299522	
	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P299378	
1773720	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299091	
1773733	EPA 200.7 Rev. 4.4	Calcium	79.9		mg/L	P299195	
		Iron	30	U	ug/L	P299195	
		Magnesium	4.83		mg/L	P299195	
		Potassium	7.0		mg/L	P299195	
		Sodium	27.4		mg/L	P299195	
		Zinc	5.0	U	ug/L	P299195	
	EPA 200.8 Rev. 5.4	Arsenic	0.81		ug/L	P299195	
		Cadmium	0.160		ug/L	P299195	
		Chromium	0.18	I	ug/L	P299195	
		Copper	1.07		ug/L	P299195	
		Lead	0.29		ug/L	P299195	
		Nickel	0.95		ug/L	P299195	
		Silver	0.073		ug/L	P299195	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299104

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P299195

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P299195

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299332

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299335

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299634

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299636

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299403

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299840

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299497

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299594

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299421

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
Batch ID: P299522

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299091

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299092

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

Reference Method: SM 2120 B
Batch ID: P299422

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P299770

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

Reference Method: SM 2320 B-97
Batch ID: P299822

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

Reference Method: SM 2540 C-97
Batch ID: P299756

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299679

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299685

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P299390

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299378

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

Reference Method: SM 5310 B-00
Batch ID: P299379

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: P299195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	106		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	105		P	85 - 115
Sodium	105		P	85 - 115
Zinc	98.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P299195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.1		P	85 - 115
Cadmium	97.2		P	85 - 115
Chromium	96.3		P	85 - 115
Copper	93.3		P	85 - 115
Lead	92.6		P	85 - 115
Nickel	95.8		P	85 - 115
Silver	97.0		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299332

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299335

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299634

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299636

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299840

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299497

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: P299594

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: P299421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299522

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299091

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299092

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

Reference Method: SM 2320 B-97
Batch ID: P299770

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P299822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P299390

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299378

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

Reference Method: SM 5310 B-00
Batch ID: P299379

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P299195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P299195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773480	Calcium	108		P	80 - 120
1773480	Iron	118	116	P/P	80 - 120
1773480	Magnesium	108		P	80 - 120
1773480	Potassium	104	106	P/P	80 - 120
1773480	Sodium	110		P	80 - 120
1773480	Zinc	96.0	97.4	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P299195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773480	Arsenic	97.8	98.3	P/P	80 - 120
1773480	Cadmium	98.3	96.1	P/P	80 - 120
1773480	Chromium	102	100	P/P	80 - 120
1773480	Copper	94.0	92.2	P/P	80 - 120
1773480	Lead	96.0	94.4	P/P	80 - 120
1773480	Nickel	95.9	94.4	P/P	80 - 120
1773480	Silver	98.9	98.8	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773691	Chloride	102		P	90 - 110
1773692	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773691	Sulfate	100		P	90 - 110
1773692	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773696	Ammonia-N	99.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773904	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773386	Kjeldahl Nitrogen	97.5	87.1	P/F	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773696	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773675	NO2NO3-N	98.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773392	NO2NO3-N	98.8	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773387	Total-P	87.6	89.3	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773697	Total-P	98.7	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773702	O-Phosphate-P	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773725	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P299390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774467	Fluoride	94.7	94.7	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774012	Fluoride	96.0	96.7	P/P	94 - 107

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P299378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773697	Organic Carbon	102	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P299379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773723	Organic Carbon	99.0	99.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773674	Turbidity	1.83	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P299195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773480	Calcium	0.696	Spike	P	0 - 20
1773480	Iron	1.12	Spike	P	0 - 20
1773480	Magnesium	0.420	Spike	P	0 - 20
1773480	Potassium	1.26	Spike	P	0 - 20
1773480	Sodium	0.220	Spike	P	0 - 20
1773480	Zinc	1.40	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P299195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773480	Arsenic	0.477	Spike	P	0 - 20
1773480	Cadmium	2.28	Spike	P	0 - 20
1773480	Chromium	1.17	Spike	P	0 - 20
1773480	Copper	1.60	Spike	P	0 - 20
1773480	Lead	1.60	Spike	P	0 - 20
1773480	Nickel	1.45	Spike	P	0 - 20
1773480	Silver	0.0867	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773692	Chloride	0.153	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773692	Sulfate	0.876	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773696	Ammonia-N	0.714	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773904	Ammonia-N	0.279	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773386	Kjeldahl Nitrogen	9.50	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773696	Kjeldahl Nitrogen	0.0670	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773675	NO2NO3-N	0.368	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773392	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773387	Total-P	1.88	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299522

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773697	Total-P	4.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299091

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773702	O-Phosphate-P	0.291	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299092

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773725	O-Phosphate-P	1.76	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299422

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773742	Color (true)	2.04	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P299770

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773988	Total Alkalinity	0.785	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P299822

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773721	Total Alkalinity	1.14	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P299756

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773718	TDS	4.68	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P299390

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774467	Fluoride	0.0	Spike	P	0 - 3.7

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774012	Fluoride	0.473	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773697	Organic Carbon	0.175	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P299379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773723	Organic Carbon	0.535	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 300.0 Rev. 2.1
Run ID: A67740
Included Lab Sample IDs: 1773718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	97.7	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67763
Included Lab Sample IDs: 1773720, 1773725, 1773726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.9	P/P	90 - 110
O-Phosphate-P	99.9	99.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67767
Included Lab Sample IDs: 1773718, 1773721, 1773722

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

Reference Method: SM 5310 B-00
Run ID: A67869
Included Lab Sample IDs: 1773719, 1773723, 1773724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A67869
Included Lab Sample IDs: 1773719, 1773723, 1773724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	96.6	P/P	90 - 110
Organic Carbon	99.8	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A67872
Included Lab Sample IDs: 1773718, 1773721, 1773722

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	98.6	P/P	90 - 110
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67883
Included Lab Sample IDs: 1773718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.2	94.0	P/P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A67902
Included Lab Sample IDs: 1773733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.3	99.8	P/P	90 - 110
Iron	102	99.3	P/P	90 - 110
Magnesium	102	98.3	P/P	90 - 110
Potassium	103	101	P/P	90 - 110
Sodium	100	95.3	P/P	90 - 110
Zinc	96.6	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A67907
Included Lab Sample IDs: 1773733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.1	98.3	P/P	90 - 110
Cadmium	97.7	97.7	P/P	90 - 110
Chromium	98.0	97.6	P/P	90 - 110
Copper	96.7	96.1	P/P	90 - 110
Lead	96.7	97.1	P/P	90 - 110
Nickel	97.1	96.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67914
Included Lab Sample IDs: 1773719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67920
Included Lab Sample IDs: 1773723, 1773724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67942
Included Lab Sample IDs: 1773723, 1773724

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67947
Included Lab Sample IDs: 1773719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67955
Included Lab Sample IDs: 1773719, 1773723, 1773724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	99.4	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A67998
Included Lab Sample IDs: 1773733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	98.8	98.2	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A68005
Included Lab Sample IDs: 1773718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.4	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68018
Included Lab Sample IDs: 1773723, 1773724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	104	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A68022
Included Lab Sample IDs: 1773721, 1773722

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68087
Included Lab Sample IDs: 1773719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	106	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.83	
EPA 200.7 Rev. 4.4	Calcium	101	108				0.696
	Iron	106	118	116			1.12
	Magnesium	104	108				0.420
	Potassium	105	104	106			1.26
	Sodium	105	110				0.220
	Zinc	98.9	96.0	97.4			1.40
EPA 200.8 Rev. 5.4	Arsenic	97.1	97.8	98.3			0.477
	Cadmium	97.2	98.3	96.1			2.28
	Chromium	96.3	102	100			1.17
	Copper	93.3	94.0	92.2			1.60
	Lead	92.6	96.0	94.4			1.60
	Nickel	95.8	95.9	94.4			1.45
	Silver	97.0	98.9	98.8			0.0867
EPA 300.0 Rev. 2.1	Chloride	103	103	102		0.153	
	Sulfate	99.7	101	100		0.876	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	99.6	100			0.714
	Ammonia-N	102	103	104			0.279
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.6	97.5	87.1			9.50
	Kjeldahl Nitrogen	105	101	101			0.0670
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.8				0.368
	NO2NO3-N	100	98.8	98.8			0.0
EPA 365.1 Rev. 2.0	Total-P	97.2	87.6	89.3			1.88
	Total-P	102	98.7	103			4.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	103	103			0.291
	O-Phosphate-P	102	102	103			1.76
SM 2120 B	Color (true)					2.04	
SM 2320 B-97	Total Alkalinity	103				0.785	
	Total Alkalinity	101				1.14	
SM 2540 C-97	TDS					4.68	
SM 4500 F-C-97	Fluoride	97.3	94.7	94.7			0.0
	Fluoride	96.8	96.0	96.7			0.473
SM 5310 B-00	Organic Carbon	101	102	102			0.175
	Organic Carbon	100	99.0	99.6			0.535

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1773718, 1773721, 1773722
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1773733
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1773733
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1773718
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1773718
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1773719, 1773723, 1773724
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1773719, 1773723, 1773724
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1773719, 1773723, 1773724
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1773719, 1773723, 1773724
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1773720, 1773725, 1773726
SM 2120 B / E31780	True Color measured at 450 nm	1773718
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1773718, 1773721, 1773722
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1773718
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1773718, 1773721, 1773722
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1773718, 1773721, 1773722
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1773719, 1773723, 1773724

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	02/23/2016			02/23/2016 15:58	Sima Feizi	1773718, 1773721, 1773722
EPA 200.7 Rev. 4.4	02/23/2016	02/24/2016	Elliott D. Healy	02/29/2016	Joshua Ayres	1773733
EPA 200.8 Rev. 5.4	02/23/2016	02/24/2016	Elliott D. Healy	02/29/2016	Charles J. Peterson	1773733
	02/23/2016	02/24/2016	Elliott D. Healy	03/03/2016	Charles J. Peterson	1773733
EPA 300.0 Rev. 2.1	02/23/2016			02/25/2016	Ping Hua	1773718
EPA 350.1 Rev. 2.0	02/23/2016			03/02/2016	Diana M. Turner	1773719, 1773723, 1773724
EPA 351.2 Rev. 2.0	02/23/2016	02/29/2016	Christopher Armour	03/03/2016	Rochelle Y Jackson	1773723, 1773724
	02/23/2016	03/07/2016	Sofia Elnemr	03/08/2016	Rochelle Y Jackson	1773719
EPA 353.2 Rev. 2.0	02/23/2016			03/01/2016	Peter D. Kaus	1773719
	02/23/2016			03/02/2016	Virginia P. Brown	1773723, 1773724
EPA 365.1 Rev. 2.0	02/23/2016	02/29/2016	Christopher Armour	03/01/2016	Lipi Saha	1773723, 1773724
	02/23/2016	03/01/2016	Lipi Saha	03/02/2016	Lipi Saha	1773719
EPA 365.1 Rev. 2.0 dissolved	02/23/2016			02/23/2016 15:07	Bryan A. Werth	1773725
	02/23/2016			02/23/2016 15:19	Bryan A. Werth	1773720
	02/23/2016			02/23/2016 15:20	Bryan A. Werth	1773726
SM 2120 B	02/23/2016			02/23/2016 13:55	Rochelle Y Jackson	1773718
SM 2320 B-97	02/23/2016			03/03/2016	Dale L. Simmons	1773718
	02/23/2016			03/04/2016	Dale L. Simmons	1773721, 1773722
SM 2540 C-97	02/23/2016			02/26/2016	Yijie Li	1773718
SM 2540 D-97	02/23/2016			02/26/2016	Yijie Li	1773718, 1773721, 1773722
SM 4500 F-C-97	02/23/2016			02/26/2016	Dale L. Simmons	1773718, 1773721, 1773722
SM 5310 B-00	02/23/2016			02/26/2016	Sofia Elnemr	1773719, 1773723, 1773724