

Chemical Analysis Report

SO-DIST-2016-09-27-01

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

Event Description: **SMP: Florida Keys**
Request ID: **RQ-2016-09-26-14**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 24-OCT-2016 14:29



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 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: Indian Key Fill @ SW End

Collection Date/Time: 09/26/2016 14:00

Field ID: G5SD0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834756	EPA 180.1 Rev. 2.0	Turbidity	2.8	A	NTU	P311923	
	SM 2320 B-97	Total Alkalinity	117		mg CaCO3/L	P312271	
	SM 2540 D-97	TSS	3	U	mg/L	P312367	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P312275	
1834763	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P312117	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P312389	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P312549	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P312525	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P312196	
1834770	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311918	
1834784	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P312024	
	EPA 200.8 Rev. 5.4	Arsenic	1.72		ug/L	P312024	
		Cadmium	0.060	U	ug/L	P312024	
		Chromium	0.15	U	ug/L	P312024	
		Copper	0.30	U	ug/L	P312024	
		Lead	0.25	U	ug/L	P312024	
		Nickel	0.20	I	ug/L	P312024	
		Silver	0.015	U	ug/L	P312024	
		Zinc	3.0	U	ug/L	P312024	

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: Grassy Key @ Curry Hammock Creek

Collection Date/Time: 09/26/2016 15:00

Field ID: FLKEYS0022FTM

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834757	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P311923	
	SM 2320 B-97	Total Alkalinity	126		mg CaCO3/L	P312271	
	SM 2540 D-97	TSS	3	I	mg/L	P312367	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P312275	
1834764	EPA 350.1 Rev. 2.0	Ammonia-N	0.060		mg N/L	P312117	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P312389	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P312550	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P312525	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P312196	
1834771	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311918	
1834785	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P312024	
	EPA 200.8 Rev. 5.4	Arsenic	3.69		ug/L	P312024	
		Cadmium	0.060	U	ug/L	P312024	
		Chromium	0.15	U	ug/L	P312024	
		Copper	0.30	U	ug/L	P312024	
		Lead	0.25	U	ug/L	P312024	
		Nickel	0.17	I	ug/L	P312024	
		Silver	0.015	U	ug/L	P312024	

Field ID: FLKEYS0022FTM

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834785	EPA 200.8 Rev. 5.4	Zinc	3.0	U	ug/L	P312024	

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: Field Blank

Collection Date/Time: 09/26/2016 15:15

Field ID: G5SD-Blank1

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834758	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P311923	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P312096	
	SM 2540 D-97	TSS	2	U	mg/L	P312757	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P312097	
1834765	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P312619	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P312496	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312336	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P312529	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P312198	
1834772	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311917	
1834786	EPA 200.7 Rev. 4.4	Iron	30	U	ug/L	P312024	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P312024	
		Cadmium	0.020	U	ug/L	P312024	
		Chromium	0.050	U	ug/L	P312024	
		Copper	0.10	U	ug/L	P312024	
		Lead	0.050	U	ug/L	P312024	
		Nickel	0.050	U	ug/L	P312024	
		Silver	0.0050	U	ug/L	P312024	
		Zinc	1.0	U	ug/L	P312024	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: 6012C By Bridge No Name Key

Collection Date/Time: 09/26/2016 16:40

Field ID: G5SD0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834759	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P311923	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P312271	
	SM 2540 D-97	TSS	3	U	mg/L	P312367	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P312275	
1834766	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P312117	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36	I	mg N/L	P312389	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P312700	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P312525	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P312196	
1834773	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311918	

Field ID: G5SD0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834787	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P312024	
	EPA 200.8 Rev. 5.4	Arsenic	1.67		ug/L	P312024	
		Cadmium	0.060	U	ug/L	P312024	
		Chromium	0.15	U	ug/L	P312024	
		Copper	0.30	U	ug/L	P312024	
		Lead	0.25	U	ug/L	P312024	
		Nickel	0.15	U	ug/L	P312024	
		Silver	0.015	U	ug/L	P312024	
		Zinc	3.0	U	ug/L	P312024	

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: 8080-ENRG3 Nearshore

Collection Date/Time: 09/26/2016 17:00

Field ID: G5SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834760	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P311923	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P312271	
	SM 2540 D-97	TSS	3	U	mg/L	P312367	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P312275	
1834767	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P312117	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P312389	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P312550	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P312525	
	SM 5310 B-00	Organic Carbon	2.7		mg C/L	P312196	
1834774	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311918	
1834788	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P312024	
	EPA 200.8 Rev. 5.4	Arsenic	1.67		ug/L	P312024	
		Cadmium	0.060	U	ug/L	P312024	
		Chromium	0.15	U	ug/L	P312024	
		Copper	0.30	U	ug/L	P312024	
		Lead	0.25	U	ug/L	P312024	
		Nickel	0.17	I	ug/L	P312024	
		Silver	0.015	U	ug/L	P312024	
		Zinc	3.0	U	ug/L	P312024	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The sample was reanalyzed 09/29/2016. The result was 0.70 Q NTU

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: 8080-ENRG3 Nearshore DUPL

Collection Date/Time: 09/26/2016 17:05

Field ID: G5SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834761	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P311923	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P312271	
	SM 2540 D-97	TSS	3	U	mg/L	P312367	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P312275	

Field ID: G5SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834768	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P312311	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P312497	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P312550	
	EPA 365.1 Rev. 2.0	Total-P	0.006	IJ	mg P/L	P312530	MS
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P312874	
1834775	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311918	
1834789	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P312024	
	EPA 200.8 Rev. 5.4	Arsenic	1.69		ug/L	P312024	
		Cadmium	0.060	U	ug/L	P312024	
		Chromium	0.15	U	ug/L	P312024	
		Copper	0.30	U	ug/L	P312024	
		Lead	0.25	U	ug/L	P312024	
		Nickel	0.15	U	ug/L	P312024	
		Silver	0.015	U	ug/L	P312024	
		Zinc	3.0	U	ug/L	P312024	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 09/29/2016.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Refer to the narrative for an explanation of QC Codes.

Sample Location: 8080-ENRG3 Out By Reef

Collection Date/Time: 09/26/2016 17:20

Field ID: G5SD0069

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834762	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P311923	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P312271	
	SM 2540 D-97	TSS	3	U	mg/L	P312367	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P312275	
1834769	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P312311	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P312497	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P312550	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P312530	MS
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P312874	
1834776	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311918	
1834790	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P312024	
	EPA 200.8 Rev. 5.4	Arsenic	1.78		ug/L	P312024	
		Cadmium	0.060	U	ug/L	P312024	
		Chromium	0.15	U	ug/L	P312024	
		Copper	0.30	U	ug/L	P312024	
		Lead	0.25	U	ug/L	P312024	
		Nickel	0.17	I	ug/L	P312024	
		Silver	0.015	U	ug/L	P312024	
		Zinc	3.0	U	ug/L	P312024	

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: P311923

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P312024

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312024

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
Zinc	1.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312117

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312311

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312496

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312497

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312336

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312550

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312700

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312529

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312530

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311918

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

Reference Method: SM 2320 B-97
Batch ID: P312096

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2320 B-97
Batch ID: P312271

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 D-97
Batch ID: P312367

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312757

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P312097

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P312275

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P312196

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

Reference Method: SM 5310 B-00
Batch ID: P312198

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P312874

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: P312024

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312024

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	99.5		P	85 - 115
Copper	94.4		P	85 - 115
Lead	95.2		P	85 - 115
Nickel	94.9		P	85 - 115
Silver	94.9		P	85 - 115
Zinc	96.6		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312117

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312311

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312496

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312497

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312336

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312550

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312700

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312529

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312530

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311918

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

Reference Method: SM 2320 B-97
Batch ID: P312096

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P312271

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P312097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P312275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P312196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P312198

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

Reference Method: SM 5310 B-00
Batch ID: P312874

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P312024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834515	Iron	108	108	P/P	70 - 130
1834785	Iron	103		P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834515	Arsenic	104	105	P/P	70 - 130
1834515	Cadmium	95.6	98.5	P/P	70 - 130
1834515	Chromium	94.7	95.5	P/P	70 - 130
1834515	Copper	91.3	94.0	P/P	70 - 130
1834515	Lead	99.4	99.1	P/P	70 - 130
1834515	Nickel	92.1	95.3	P/P	70 - 130
1834515	Silver	90.6	92.1	P/P	70 - 130
1834515	Zinc	95.6	97.1	P/P	70 - 130
1834785	Arsenic	101		P	70 - 130
1834785	Cadmium	87.7		P	70 - 130
1834785	Chromium	79.2		P	70 - 130
1834785	Copper	89.5		P	70 - 130
1834785	Lead	104		P	70 - 130
1834785	Nickel	91.6		P	70 - 130
1834785	Silver	84.1		P	70 - 130
1834785	Zinc	81.7		P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834497	Ammonia-N	105	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833921	Ammonia-N	97.2	94.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834074	Ammonia-N	105	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834498	Kjeldahl Nitrogen	109	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312497

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834769	Kjeldahl Nitrogen	97.2	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834586	NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833629	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834764	NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834498	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834222	Total-P	93.8	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312529

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834801	Total-P	97.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834768	Total-P	93.5	87.5	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834566	O-Phosphate-P	102	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311918

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834507	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P312275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835048	Fluoride	96.7	98.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P312196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833837	Organic Carbon	88.9	91.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P312198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834614	Organic Carbon	96.8	99.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P312874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834768	Organic Carbon	87.6	89.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311923

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834756	Turbidity	3.27	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P312024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834515	Iron	0.154	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834515	Arsenic	0.381	Spike	P	0 - 20
1834515	Cadmium	3.07	Spike	P	0 - 20
1834515	Chromium	0.868	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834515	Copper	2.86	Spike	P	0 - 20
1834515	Lead	0.340	Spike	P	0 - 20
1834515	Nickel	3.27	Spike	P	0 - 20
1834515	Silver	1.66	Spike	P	0 - 20
1834515	Zinc	1.64	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834497	Ammonia-N	0.325	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1833921	Ammonia-N	1.92	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834074	Ammonia-N	4.10	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834498	Kjeldahl Nitrogen	7.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834823	Kjeldahl Nitrogen	4.32	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834769	Kjeldahl Nitrogen	0.583	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834586	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1833629	NO2NO3-N	0.488	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834764	NO2NO3-N	1.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834498	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834222	Total-P	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834800	Total-P	2.71	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834768	Total-P	6.60	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834566	O-Phosphate-P	0.977	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311918

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834507	O-Phosphate-P	1.08	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P312096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834561	Total Alkalinity	0.0286	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P312271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1835048	Total Alkalinity	0.0309	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P312097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834561	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P312275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1835048	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P312196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1833837	Organic Carbon	2.45	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P312198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834614	Organic Carbon	2.05	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P312874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834768	Organic Carbon	2.07	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A71862

Included Lab Sample IDs: 1834770, 1834771, 1834772, 1834773, 1834774, 1834775, 1834776

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	97.9	P/P	90 - 110
O-Phosphate-P	99.3	99.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A71863

Included Lab Sample IDs: 1834756, 1834757, 1834758, 1834759, 1834760, 1834761, 1834762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: SM 2320 B-97

Run ID: A71907

Included Lab Sample IDs: 1834758

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71907

Included Lab Sample IDs: 1834758

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71914

Included Lab Sample IDs: 1834763, 1834764, 1834766, 1834767

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

Reference Method: SM 5310 B-00

Run ID: A71942

Included Lab Sample IDs: 1834763, 1834764, 1834766, 1834767

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	97.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A71943

Included Lab Sample IDs: 1834765

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A71961

Included Lab Sample IDs: 1834756, 1834757, 1834759, 1834760, 1834761, 1834762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71961

Included Lab Sample IDs: 1834756, 1834757, 1834759, 1834760, 1834761, 1834762

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A71966

Included Lab Sample IDs: 1834784, 1834785, 1834786, 1834787, 1834788, 1834789, 1834790

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	102	P/P	90 - 110
Iron	102	101	P/P	90 - 110
Iron	104	102	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71970

Included Lab Sample IDs: 1834768, 1834769

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	94.6	91.2	P/P	90 - 110
Ammonia-N	98.3	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71983

Included Lab Sample IDs: 1834765

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71985

Included Lab Sample IDs: 1834784, 1834785, 1834786, 1834787, 1834788, 1834789, 1834790

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.2	99.9	P/P	90 - 110
Arsenic	99.9	101	P/P	90 - 110
Cadmium	96.9	96.0	P/P	90 - 110
Cadmium	97.5	96.9	P/P	90 - 110
Chromium	98.2	99.6	P/P	90 - 110
Chromium	99.6	94.1	P/P	90 - 110
Copper	93.8	95.0	P/P	90 - 110
Copper	95.0	98.2	P/P	90 - 110
Lead	94.5	94.9	P/P	90 - 110
Nickel	94.0	94.8	P/P	90 - 110
Nickel	94.8	99.1	P/P	90 - 110
Silver	96.2	97.1	P/P	90 - 110
Silver	97.1	96.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71985

Included Lab Sample IDs: 1834784, 1834785, 1834786, 1834787, 1834788, 1834789, 1834790

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	96.3	97.2	P/P	90 - 110
Zinc	97.2	98.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A72019

Included Lab Sample IDs: 1834784, 1834785, 1834787, 1834788, 1834789, 1834790

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	94.3	94.8	P/P	90 - 110
Lead	94.8	93.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72035

Included Lab Sample IDs: 1834763, 1834764, 1834767, 1834768, 1834769

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72057

Included Lab Sample IDs: 1834765

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72071

Included Lab Sample IDs: 1834768, 1834769

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.7	99.6	P/P	90 - 110
Kjeldahl Nitrogen	98.4	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72075

Included Lab Sample IDs: 1834763, 1834764, 1834765, 1834766, 1834767

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.2	P/P	90 - 110
Kjeldahl Nitrogen	98.7	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72083

Included Lab Sample IDs: 1834766

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72124

Included Lab Sample IDs: 1834763, 1834764, 1834766, 1834767

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72125

Included Lab Sample IDs: 1834765, 1834768, 1834769

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.5	P/P	90 - 110
Total-P	99.5	99.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A72148

Included Lab Sample IDs: 1834768, 1834769

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	93.0	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						3.27	
EPA 200.7 Rev. 4.4	Iron	106	108	108	103			0.154
EPA 200.8 Rev. 5.4	Arsenic	100	104	105	101			0.381
	Cadmium	98.4	95.6	98.5	87.7			3.07
	Chromium	99.5	94.7	95.5	79.2			0.868
	Copper	94.4	91.3	94.0	89.5			2.86
	Lead	95.2	99.4	99.1	104			0.340
	Nickel	94.9	92.1	95.3	91.6			3.27
	Silver	94.9	90.6	92.1	84.1			1.66
	Zinc	96.6	95.6	97.1	81.7			1.64
EPA 350.1 Rev. 2.0	Ammonia-N	106	105	105				0.325
	Ammonia-N	99.3	97.2	94.3				1.92
	Ammonia-N	101	105	99.7				4.10
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	109	99.7				7.59
	Kjeldahl Nitrogen	103						4.32
	Kjeldahl Nitrogen	103	97.2	96.5				0.583
EPA 353.2 Rev. 2.0	NO2NO3-N	107	98.5					0.0
	NO2NO3-N	103	103	102				0.488
	NO2NO3-N	104	104	102				1.83
	NO2NO3-N	102	102	102				0.0
EPA 365.1 Rev. 2.0	Total-P	101	93.8	94.9				1.09
	Total-P	100	97.4	100				2.71
	Total-P	100	93.5	87.5				6.60

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	102	103		0.977
	O-Phosphate-P	105	101	102		1.08
SM 2320 B-97	Total Alkalinity	104			0.0286	
	Total Alkalinity	104			0.0309	
SM 4500 F-C-97	Fluoride	99.0				0.473
	Fluoride	97.5	96.7	98.0		0.946
SM 5310 B-00	Organic Carbon	98.6	88.9	91.6		2.45
	Organic Carbon	101	96.8	99.6		2.05
	Organic Carbon	95.5	87.6	89.6		2.07

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1834756, 1834757, 1834758, 1834759, 1834760, 1834761, 1834762
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1834784, 1834785, 1834786, 1834787, 1834788, 1834789, 1834790
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1834784, 1834785, 1834786, 1834787, 1834788, 1834789, 1834790
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1834763, 1834764, 1834765, 1834766, 1834767, 1834768, 1834769
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1834763, 1834764, 1834765, 1834766, 1834767, 1834768, 1834769
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1834763, 1834764, 1834765, 1834766, 1834767, 1834768, 1834769
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1834763, 1834764, 1834765, 1834766, 1834767, 1834768, 1834769
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1834770, 1834771, 1834772, 1834773, 1834774, 1834775, 1834776
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1834756, 1834757, 1834758, 1834759, 1834760, 1834761, 1834762
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1834756, 1834757, 1834758, 1834759, 1834760, 1834761, 1834762
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1834756, 1834757, 1834758, 1834759, 1834760, 1834761, 1834762
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1834763, 1834764, 1834765, 1834766, 1834767, 1834768, 1834769

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	09/27/2016			09/27/2016 15:28	Sima Feizi	1834756, 1834757, 1834758, 1834759, 1834760, 1834761, 1834762
EPA 200.7 Rev. 4.4	09/27/2016	09/28/2016	Elliott D. Healy	09/30/2016	Joshua Ayres	1834784, 1834785, 1834786, 1834787, 1834788, 1834789, 1834790
EPA 200.8 Rev. 5.4	09/27/2016	09/28/2016	Elliott D. Healy	10/03/2016	Charles J. Peterson	1834786
	09/27/2016	09/28/2016	Elliott D. Healy	10/04/2016	Charles J. Peterson	1834784, 1834785, 1834787, 1834788, 1834789, 1834790
EPA 350.1 Rev. 2.0	09/27/2016			09/28/2016	Sofia Elnemr	1834763, 1834764, 1834766, 1834767
	09/27/2016			09/30/2016	Sofia Elnemr	1834768, 1834769
	09/27/2016			10/05/2016	Sofia Elnemr	1834765
EPA 351.2 Rev. 2.0	09/27/2016	10/04/2016	Adrian Shelby	10/06/2016	Christopher Armour	1834763, 1834764, 1834766, 1834767
	09/27/2016	10/05/2016	Adrian Shelby	10/06/2016	Christopher Armour	1834765
	09/27/2016	10/05/2016	Adrian Shelby	10/06/2016	Joseph Suarez	1834768, 1834769
EPA 353.2 Rev. 2.0	09/27/2016			10/03/2016	Beverly Y. Sanders	1834765
	09/27/2016			10/05/2016	Beverly Y. Sanders	1834763, 1834764, 1834767, 1834768, 1834769
	09/27/2016			10/07/2016	Beverly Y. Sanders	1834766
EPA 365.1 Rev. 2.0	09/27/2016	10/05/2016	Vijayalakshmi Reddy	10/10/2016	Lipi Saha	1834763, 1834764, 1834765, 1834766, 1834767, 1834768, 1834769
EPA 365.1 Rev. 2.0 dissolved	09/27/2016			09/27/2016 14:56	Julia Storbeck	1834772
	09/27/2016			09/27/2016 15:22	Julia Storbeck	1834770
	09/27/2016			09/27/2016 15:23	Julia Storbeck	1834771
	09/27/2016			09/27/2016 15:24	Julia Storbeck	1834773
	09/27/2016			09/27/2016 15:25	Julia Storbeck	1834774
	09/27/2016			09/27/2016 15:26	Julia Storbeck	1834775
	09/27/2016			09/27/2016 15:27	Julia Storbeck	1834776
SM 2320 B-97	09/27/2016			09/29/2016	Dale L. Simmons	1834758
	09/27/2016			09/30/2016	Dale L. Simmons	1834756, 1834757, 1834759, 1834760, 1834761, 1834762
SM 2540 D-97	09/27/2016			09/30/2016	Yijie Li	1834756, 1834757, 1834759, 1834760, 1834761, 1834762
	09/27/2016			10/03/2016	Yijie Li	1834758
SM 4500 F-C-97	09/27/2016			09/29/2016	Dale L. Simmons	1834758
	09/27/2016			09/30/2016	Dale L. Simmons	1834756, 1834757, 1834759, 1834760, 1834761, 1834762
SM 5310 B-00	09/27/2016			09/29/2016	Julie Michelle Frank	1834763, 1834764, 1834765, 1834766, 1834767
	09/27/2016			10/11/2016	Julie Michelle Frank	1834768, 1834769