

Chemical Analysis Report

NW-DIST-2017-06-01-02

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

Event Description: **Dune Lakes Run WBID 1037 959B,G,H,J**
Request ID: **RQ-2017-05-29-12**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-JUN-2017 15:39

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: EASTERN LAKE

Collection Date/Time: 05/31/2017 12:15

Field ID: G3NW0124

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902873	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P326119	
	SM 2320 B-97	Total Alkalinity	54		mg CaCO3/L	P326354	
	SM 2540 D-97	TSS	3	U	mg/L	P326744	
	SM 4500 F-C-97	Fluoride	0.42		mg F/L	P326357	
1902877	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P326133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P326135	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326206	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P326210	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P326317	
1902881	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326148	

Sample Location: LITTLE REDFISH LAKE

Collection Date/Time: 05/31/2017 13:30

Field ID: G3NW0125

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902874	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P326119	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P326356	
	SM 2540 D-97	TSS	5	IA	mg/L	P326743	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P326359	
1902878	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P326133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P326136	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326206	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P326210	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P326192	
1902882	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326148	

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: ALLEN LAKE

Collection Date/Time: 05/31/2017 14:30

Field ID: G3NW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902867	EPA 180.1 Rev. 2.0	Turbidity	1.1	A	NTU	P326119	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P326787	
		Sulfate	4.1		mg SO4/L	P326790	
	SM 2120 B	Color (true)	200		PCU	P326233	
	SM 2320 B-97	Total Alkalinity	1.0	I	mg CaCO3/L	P326356	
	SM 2540 C-97	TDS	61		mg/L	P326996	
	SM 2540 D-97	TSS	2	U	mg/L	P326742	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326359	
1902869	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P326130	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P326195	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326262	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P326199	

Field ID: G3NW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902869	SM 5310 B-00	Organic Carbon	15		mg C/L	P326191	
1902871	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326150	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: STALLWORTH LAKE

Collection Date/Time: 05/31/2017 15:00

Field ID: G3NW0083

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902875	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P326119	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P326356	
	SM 2540 D-97	TSS	6	I	mg/L	P326743	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P326359	
1902879	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P326133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P326136	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326206	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P326210	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P326192	
1902883	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326148	

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: MORRIS LAKE

Collection Date/Time: 05/31/2017 15:50

Field ID: G3NW0126

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902876	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P326119	
	SM 2320 B-97	Total Alkalinity	0.79	I	mg CaCO3/L	P326356	
	SM 2540 D-97	TSS	2	I	mg/L	P326742	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326359	
1902880	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P326130	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P326195	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326262	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P326199	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P326192	
1902884	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326148	

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: FULLER LAKE

Collection Date/Time: 05/31/2017 16:35

Field ID: G3NW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902868	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P326119	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P326787	
		Sulfate	5.7		mg SO4/L	P326790	

Field ID: G3NW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1902868	SM 2120 B	Color (true)	230		PCU	P326233	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P326356	
	SM 2540 C-97	TDS	67		mg/L	P326996	
	SM 2540 D-97	TSS	2	U	mg/L	P326742	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326359	
1902870	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P326130	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P326195	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326262	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P326199	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P326192	
1902872	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326146	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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: P326119

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P326787

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P326790

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P326130

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P326133

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P326135

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: P326136

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326195

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326206

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326262

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326199

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326210

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326146

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326148

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326150

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P326233

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P326354

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

Reference Method: SM 2320 B-97
Batch ID: P326356

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

Reference Method: SM 2540 C-97
Batch ID: P326996

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P326742

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P326743

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P326744

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P326357

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P326359

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P326191

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

Reference Method: SM 5310 B-00
Batch ID: P326192

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

Reference Method: SM 5310 B-00
Batch ID: P326317

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326787

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326790

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326130

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326133

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326135

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326136

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326136

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326195

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326206

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: P326262

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: P326199

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: P326210

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326146

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326148

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.8		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P326354

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P326356

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

Reference Method: SM 4500 F-C-97
Batch ID: P326357

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

Reference Method: SM 4500 F-C-97
Batch ID: P326359

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

Reference Method: SM 5310 B-00
Batch ID: P326191

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P326192

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P326317

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902675	Chloride	101		P	90 - 110
1902867	Chloride	96.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902675	Sulfate	98.2		P	90 - 110
1902867	Sulfate	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902605	Ammonia-N	109	109	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902451	Ammonia-N	95.8	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902859	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902910	Kjeldahl Nitrogen	99.8	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902847	Kjeldahl Nitrogen	101	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326206

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902861	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902869	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902964	Total-P	97.2	97.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902877	Total-P	96.8	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902726	O-Phosphate-P	94.9	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326148

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902881	O-Phosphate-P	97.4	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902976	O-Phosphate-P	95.6	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P326357

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902394	Fluoride	97.3	98.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P326359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903066	Fluoride	101	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P326191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902538	Organic Carbon	97.8	97.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P326192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902870	Organic Carbon	98.1	98.0	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P326317

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902483	Organic Carbon	93.0	93.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P326119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902867	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902675	Chloride	0.908	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902605	Ammonia-N	0.116	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902451	Ammonia-N	8.54	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902859	Kjeldahl Nitrogen	0.987	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902910	Kjeldahl Nitrogen	2.81	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902847	Kjeldahl Nitrogen	1.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326206

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902861	NO2NO3-N	0.477	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902869	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902964	Total-P	0.424	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902877	Total-P	5.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902726	O-Phosphate-P	0.294	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902881	O-Phosphate-P	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902976	O-Phosphate-P	0.937	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P326233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902811	Color (true)	0.196	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P326354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902751	Total Alkalinity	0.0219	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P326356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903066	Total Alkalinity	0.0657	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P326996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902963	TDS	0.491	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P326744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902808	TSS	1.27	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P326357

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902394	Fluoride	0.986	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P326359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903066	Fluoride	0.498	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P326191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902538	Organic Carbon	0.0511	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P326192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902870	Organic Carbon	0.0270	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P326317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902483	Organic Carbon	0.0942	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 180.1 Rev. 2.0

Run ID: A76814

Included Lab Sample IDs: 1902867, 1902868, 1902873, 1902874, 1902875, 1902876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	101	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A76815

Included Lab Sample IDs: 1902869, 1902870, 1902877, 1902878, 1902879, 1902880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A76820

Included Lab Sample IDs: 1902871, 1902872, 1902881, 1902882, 1902883, 1902884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.7	P/P	90 - 110
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	99.7	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A76846

Included Lab Sample IDs: 1902869, 1902870, 1902878, 1902879, 1902880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.2	P/P	90 - 110
Organic Carbon	97.2	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76855

Included Lab Sample IDs: 1902877, 1902878, 1902879

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

Reference Method: SM 2120 B

Run ID: A76865

Included Lab Sample IDs: 1902867, 1902868

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	104	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76880

Included Lab Sample IDs: 1902869, 1902870, 1902880

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76886

Included Lab Sample IDs: 1902877, 1902878, 1902879

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76898

Included Lab Sample IDs: 1902869, 1902870, 1902880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.4	91.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A76902

Included Lab Sample IDs: 1902877

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	95.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76915

Included Lab Sample IDs: 1902867, 1902868, 1902873, 1902874, 1902875, 1902876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76915

Included Lab Sample IDs: 1902867, 1902868, 1902873, 1902874, 1902875, 1902876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	101	102	P/P	90 - 110
Fluoride	98.5	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76950

Included Lab Sample IDs: 1902869, 1902870, 1902877, 1902878, 1902879, 1902880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	98.8	P/P	90 - 110
Total-P	98.8	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77076
Included Lab Sample IDs: 1902867, 1902868

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	98.7	P/P	90 - 110
Chloride	98.1	99.7	P/P	90 - 110
Sulfate	103	105	P/P	90 - 110
Sulfate	104	105	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				0.0	
EPA 300.0 Rev. 2.1	Chloride	99.5	101 96.3		0.908	
	Sulfate	98.9	98.2 96.6			
EPA 350.1 Rev. 2.0	Ammonia-N	105	109 109			0.116
	Ammonia-N	104	95.8 105			8.54
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	102 101			0.987
	Kjeldahl Nitrogen	108	99.8 96.7			2.81
	Kjeldahl Nitrogen	98.7	101 98.7			1.48
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 105			0.477
	NO2NO3-N	102	102 102			0.491
EPA 365.1 Rev. 2.0	Total-P	101	97.2 97.6			0.424
	Total-P	99.4	96.8 102			5.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	94.9 94.6			0.294
	O-Phosphate-P	97.5	97.4 98.4			1.02
	O-Phosphate-P	97.8	95.6 96.5			0.937
SM 2120 B	Color (true)				0.196	
SM 2320 B-97	Total Alkalinity	103			0.0219	
	Total Alkalinity	104			0.0657	
SM 2540 C-97	TDS				0.491	
SM 2540 D-97	TSS				1.27	
SM 4500 F-C-97	Fluoride	96.6	97.3 98.8			0.986
	Fluoride	99.0	101 100			0.498
SM 5310 B-00	Organic Carbon	96.4	97.8 97.8			0.0511
	Organic Carbon	96.2	98.1 98.0			0.0270
	Organic Carbon	95.3	93.0 93.1			0.0942

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1902867, 1902868, 1902873, 1902874, 1902875, 1902876
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1902867, 1902868
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1902867, 1902868

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1902869, 1902870, 1902877, 1902878, 1902879, 1902880
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1902869, 1902870, 1902877, 1902878, 1902879, 1902880
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1902869, 1902870, 1902877, 1902878, 1902879, 1902880
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1902869, 1902870, 1902877, 1902878, 1902879, 1902880
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1902871, 1902872, 1902881, 1902882, 1902883, 1902884
SM 2120 B / E31780	True Color measured at 450 nm	1902867, 1902868
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1902867, 1902868, 1902873, 1902874, 1902875, 1902876
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1902867, 1902868
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1902867, 1902868, 1902873, 1902874, 1902875, 1902876
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1902867, 1902868, 1902873, 1902874, 1902875, 1902876
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1902869, 1902870, 1902877, 1902878, 1902879, 1902880

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	06/01/2017			06/01/2017 16:02	Sima Feizi	1902867, 1902868, 1902873, 1902874, 1902875, 1902876
EPA 300.0 Rev. 2.1	06/01/2017			06/13/2017	Julia Storbeck	1902867, 1902868
EPA 350.1 Rev. 2.0	06/01/2017			06/01/2017	Julie Michelle Frank	1902869, 1902870, 1902877, 1902878, 1902879, 1902880
EPA 351.2 Rev. 2.0	06/01/2017	06/02/2017	Adrian Shelby	06/06/2017	Joseph Suarez	1902877, 1902878, 1902879
	06/01/2017	06/05/2017	Adrian Shelby	06/06/2017	Joseph Suarez	1902869, 1902870, 1902880
EPA 353.2 Rev. 2.0	06/01/2017			06/05/2017	Beverly Y. Sanders	1902877, 1902878, 1902879
	06/01/2017			06/06/2017	Beverly Y. Sanders	1902869, 1902870, 1902880
EPA 365.1 Rev. 2.0	06/01/2017	06/05/2017	Vijayalakshmi Reddy	06/08/2017	Lipi Saha	1902869, 1902870, 1902877, 1902878, 1902879, 1902880
EPA 365.1 Rev. 2.0 dissolved	06/01/2017			06/01/2017 15:50	Anthony C. Onicha	1902881
	06/01/2017			06/01/2017 16:21	Anthony C. Onicha	1902871
	06/01/2017			06/01/2017 16:26	Anthony C. Onicha	1902872
	06/01/2017			06/01/2017 16:27	Anthony C. Onicha	1902882
	06/01/2017			06/01/2017 16:28	Anthony C. Onicha	1902883
	06/01/2017			06/01/2017 16:29	Anthony C. Onicha	1902884
SM 2120 B	06/01/2017			06/01/2017 16:22	Tanya Welborn	1902867
	06/01/2017			06/01/2017 16:23	Tanya Welborn	1902868
SM 2320 B-97	06/01/2017			06/06/2017	Dale L. Simmons	1902873
	06/01/2017			06/07/2017	Dale L. Simmons	1902867, 1902868, 1902874, 1902875, 1902876
SM 2540 C-97	06/01/2017			06/05/2017	Sima Feizi	1902867, 1902868
SM 2540 D-97	06/01/2017			06/05/2017	Sima Feizi	1902867, 1902868, 1902873, 1902874, 1902875, 1902876
SM 4500 F-C-97	06/01/2017			06/06/2017	Dale L. Simmons	1902873
	06/01/2017			06/07/2017	Dale L. Simmons	1902867, 1902868, 1902874, 1902875, 1902876
SM 5310 B-00	06/01/2017			06/02/2017	Julie Michelle Frank	1902869
	06/01/2017			06/03/2017	Julie Michelle Frank	1902870, 1902878, 1902879, 1902880
	06/01/2017			06/06/2017	Christopher Armour	1902877