

Chemical Analysis Report

SW-DIST-2019-05-07-02

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

Event Description: **LVis_Eckles, Dorset & Pine**
Request ID: **RQ-2019-05-06-15**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 28-MAY-2019 11:41

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the "T" in "Tate".

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: Nutrients and Pesticides.

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: DORSET LAKE @ CENTER

Collection Date/Time: 05/06/2019 10:10

Field ID: G2SW0083

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084050	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P363545	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P363822	
		Sulfate	17		mg SO4/L	P363824	
	SM 2120 B	Color (true)	31		PCU	P363561	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P363808	
	SM 2540 C-97	TDS	115		mg/L	P363789	
	SM 2540 D-97	TSS	2	I	mg/L	P363695	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P363970	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P363780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P363856	
2084053	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P363679	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P363963	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P363992	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P363530	
	dissolved						

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: PINE LAKE @ CENTER

Collection Date/Time: 05/06/2019 11:40

Field ID: G2SW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084051	EPA 180.1 Rev. 2.0	Turbidity	8.3	A	NTU	P363545	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P363822	
		Sulfate	20		mg SO4/L	P363824	
	SM 2120 B	Color (true)	26		PCU	P363561	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P363808	
	SM 2540 C-97	TDS	115		mg/L	P363789	
	SM 2540 D-97	TSS	9	I	mg/L	P363695	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P363970	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P363781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P363856	
2084054	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P363679	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P363717	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P363992	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P363530	
	dissolved						

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LAKE ECKLES @ CENTER

Collection Date/Time: 05/06/2019 14:00

Field ID: G2SW0082

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084052	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P363545	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P363822	
		Sulfate	7.3		mg SO4/L	P363824	
	SM 2120 B	Color (true)	22		PCU	P363561	
	SM 2320 B-97	Total Alkalinity	43		mg CaCO3/L	P363808	
	SM 2540 C-97	TDS	110		mg/L	P363790	
	SM 2540 D-97	TSS	6	I	mg/L	P363696	
	SM 4500 F-C-97	Fluoride	0.074	I	mg F/L	P363970	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P363781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P363856	
2084055	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P363679	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P363717	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P364413	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P363533	
	dissolved						

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Pine Lake @ Center

Collection Date/Time: 05/06/2019 11:40

Field ID: G2SW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084651	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P363630	
		Cylindrospermopsin**	0.25	U	ug/L	P363630	
		Microcystin LA**	0.25	U	ug/L	P363630	
		Microcystin LF**	0.25	U	ug/L	P363630	
		Microcystin LR**	0.46	I	ug/L	P363630	
		Microcystin LY**	0.25	U	ug/L	P363630	
		Microcystin RR**	0.25	U	ug/L	P363630	
		Microcystin YR**	0.25	U	ug/L	P363630	
		Saxitoxin**	0.25	UJ	ug/L	P363630	MS

Ref. Method and Comment:

EPA 8321B: Method validation for saxitoxin is still in progress. Second source was not analyzed.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363545

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363822

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363780

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363856

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363717

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363963

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 dissolved
Batch ID: P363530

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363533

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

Reference Method: EPA 8321B
Batch ID: P363630

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.25	U	ug/L
Microcystin LA	0.25	U	ug/L
Microcystin LF	0.25	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LY	0.25	U	ug/L
Microcystin RR	0.25	U	ug/L
Microcystin YR	0.25	U	ug/L
Saxitoxin	0.25	U	ug/L

Reference Method: SM 2120 B
Batch ID: P363561

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P363808

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

Reference Method: SM 2540 C-97
Batch ID: P363789

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P363790

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P363695

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P363696

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363970

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P363992

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

Reference Method: SM 5310 B-00
Batch ID: P364413

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: P363822

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363780

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

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: P363856

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

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: P363717

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: P363963

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.6		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363533

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

Reference Method: EPA 8321B
Batch ID: P363630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	79.2		P	40 - 140
Cylindrospermopsin	98.6		P	40 - 140
Microcystin LA	95.4		P	40 - 140
Microcystin LF	109		P	40 - 140
Microcystin LR	90.2		P	40 - 140
Microcystin LY	94.3		P	40 - 140
Microcystin RR	91.0		P	40 - 140
Microcystin YR	91.1		P	40 - 140
Saxitoxin	106		P	40 - 140

Reference Method: SM 2120 B
Batch ID: P363561

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P363808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P363970

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P363992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	88.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083564	Chloride	98.0		P	90 - 110
2084024	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083564	Sulfate	97.4		P	90 - 110
2084024	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083714	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084109	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084053	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084077	Total-P	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363963

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084025	Total-P	103	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083715	O-Phosphate-P	96.4	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084058	O-Phosphate-P	95.3	96.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P363630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084354	Anatoxin-a	69.8	69.4	P/P	40 - 140
2084354	Cylindrospermopsin	93.9	87.4	P/P	40 - 140
2084354	Microcystin LA	91.7	93.9	P/P	40 - 140
2084354	Microcystin LF	98.3	93.4	P/P	40 - 140
2084354	Microcystin LR	92.5	93.9	P/P	40 - 140
2084354	Microcystin LY	85.2	89.5	P/P	40 - 140
2084354	Microcystin RR	78.6	78.1	P/P	40 - 140
2084354	Microcystin YR	89.1	80.7	P/P	40 - 140
2084354	Saxitoxin	32.3	30.0	F/F	40 - 140

Reference Method: SM 5310 B-00
Batch ID: P363992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084028	Organic Carbon	90.5	90.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086216	Organic Carbon	97.9	96.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084051	Turbidity	11.9	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083564	Chloride	1.02	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083564	Sulfate	1.32	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083714	Ammonia-N	0.363	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084109	Ammonia-N	0.138	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084054	Kjeldahl Nitrogen	2.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084053	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084077	Total-P	1.22	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P363963

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084025	Total-P	2.41	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P363530

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083715	O-Phosphate-P	1.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P363533

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084058	O-Phosphate-P	1.25	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P363630

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084354	Anatoxin-a	0.513	Spike	P	0 - 30
2084354	Cylindrospermopsin	7.17	Spike	P	0 - 30
2084354	Microcystin LA	2.41	Spike	P	0 - 30
2084354	Microcystin LF	5.10	Spike	P	0 - 30
2084354	Microcystin LR	1.59	Spike	P	0 - 30
2084354	Microcystin LY	4.86	Spike	P	0 - 30
2084354	Microcystin RR	0.643	Spike	P	0 - 30
2084354	Microcystin YR	9.86	Spike	P	0 - 30
2084354	Saxitoxin	7.64	Spike	P	0 - 30

Reference Method: SM 2120 B

Batch ID: P363561

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084021	Color (true)	0.421	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P363808

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083606	Total Alkalinity	0.0673	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97

Batch ID: P363789

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083606	TDS	0.866	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P363790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084076	TDS	1.42	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P363970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083606	Fluoride	1.91	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P363992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084028	Organic Carbon	0.319	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P364413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086216	Organic Carbon	0.727	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 Surrogates

Lab Sample ID: 2084651
Field Sample ID: G2SW0084

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	102	P	30 - 165

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91228

Included Lab Sample IDs: 2084050, 2084051, 2084052

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91257

Included Lab Sample IDs: 2084056, 2084057, 2084058

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.5	P/P	90 - 110
O-Phosphate-P	99.5	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91261

Included Lab Sample IDs: 2084050, 2084051, 2084052

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

Reference Method: SM 2120 B

Run ID: A91271

Included Lab Sample IDs: 2084050, 2084051, 2084052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91321

Included Lab Sample IDs: 2084053, 2084054, 2084055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A91330

Included Lab Sample IDs: 2084651

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	93.1	78.4	P/P	50 - 160
Cylindrospermopsin	101	100	P/P	60 - 160
Microcystin LA	97.8	97.9	P/P	50 - 160
Microcystin LF	106	97.0	P/P	60 - 160
Microcystin LR	98.4	77.1	P/P	60 - 160
Microcystin LY	98.4	84.6	P/P	60 - 160
Microcystin RR	95.1	94.7	P/P	60 - 160
Microcystin YR	94.1	88.9	P/P	60 - 160
Saxitoxin	104	100	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91350

Included Lab Sample IDs: 2084053, 2084054, 2084055

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

Reference Method: SM 2320 B-97

Run ID: A91372

Included Lab Sample IDs: 2084050, 2084051, 2084052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91428

Included Lab Sample IDs: 2084054, 2084055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A91436

Included Lab Sample IDs: 2084050, 2084051, 2084052

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

Reference Method: SM 5310 B-00

Run ID: A91449

Included Lab Sample IDs: 2084053, 2084054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.1	91.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91456

Included Lab Sample IDs: 2084053, 2084054, 2084055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.1	P/P	90 - 110
Kjeldahl Nitrogen	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91522

Included Lab Sample IDs: 2084053

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A91605
Included Lab Sample IDs: 2084055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.5	100	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	MS
EPA 180.1 Rev. 2.0	Turbidity				11.9	
EPA 300.0 Rev. 2.1	Chloride	97.7	98.0	98.4	1.02	
	Sulfate	98.2	97.4	98.2	1.32	
EPA 350.1 Rev. 2.0	Ammonia-N	103	102	102		0.363
	Ammonia-N	102	103	103		0.138
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6				2.09
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	103	102		0.487
EPA 365.1 Rev. 2.0	Total-P	101	98.5	100		1.22
	Total-P	101	103	100		2.41
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.6	96.4	97.6		1.24
	O-Phosphate-P	99.1	95.3	96.5		1.25
EPA 8321B	Anatoxin-a	79.2	69.8	69.4		0.513
	Cylindrospermopsin	98.6	93.9	87.4		7.17
	Microcystin LA	95.4	93.9	91.7		2.41
	Microcystin LF	109	93.4	98.3		5.10
	Microcystin LR	90.2	92.5	93.9		1.59
	Microcystin LY	94.3	89.5	85.2		4.86
	Microcystin RR	91.0	78.6	78.1		0.643
	Microcystin YR	91.1	89.1	80.7		9.86
	Saxitoxin	106	32.3	30.0		7.64
SM 2120 B	Color (true)	102			0.421	
SM 2320 B-97	Total Alkalinity	103			0.0673	
SM 2540 C-97	TDS				0.866	
	TDS				1.42	
SM 4500 F-C-97	Fluoride	97.1				1.91
SM 5310 B-00	Organic Carbon	88.8	90.5	90.9		0.319
	Organic Carbon	98.2	97.9	96.7		0.727

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2084050, 2084051, 2084052
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2084050, 2084051, 2084052
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2084050, 2084051, 2084052
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2084053, 2084054, 2084055
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2084053, 2084054, 2084055
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2084053, 2084054, 2084055
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2084053, 2084054, 2084055
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2084056, 2084057, 2084058
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	2084651
SM 2120 B / E31780	True Color measured at 450 nm	2084050, 2084051, 2084052
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2084050, 2084051, 2084052
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2084050, 2084051, 2084052
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2084050, 2084051, 2084052
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2084050, 2084051, 2084052
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2084053, 2084054, 2084055

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	05/07/2019			05/07/2019 16:30	Adrian Shelby	2084050, 2084051, 2084052
EPA 300.0 Rev. 2.1	05/07/2019			05/10/2019 19:53	Lipi Saha	2084050
	05/07/2019			05/10/2019 20:05	Lipi Saha	2084051
	05/07/2019			05/10/2019 20:17	Lipi Saha	2084052
EPA 350.1 Rev. 2.0	05/07/2019			05/09/2019 13:19	Ping Hua	2084053
	05/07/2019			05/09/2019 13:36	Ping Hua	2084054
	05/07/2019			05/09/2019 13:37	Ping Hua	2084055
EPA 351.2 Rev. 2.0	05/07/2019	05/13/2019 17:00	Adrian Shelby	05/15/2019 14:37	Joseph Suarez	2084053
	05/07/2019	05/13/2019 17:00	Adrian Shelby	05/15/2019 14:39	Joseph Suarez	2084054
	05/07/2019	05/13/2019 17:00	Adrian Shelby	05/15/2019 14:47	Joseph Suarez	2084055
EPA 353.2 Rev. 2.0	05/07/2019			05/09/2019 10:59	Beverly Y. Sanders	2084053
	05/07/2019			05/09/2019 11:06	Beverly Y. Sanders	2084054
	05/07/2019			05/09/2019 11:08	Beverly Y. Sanders	2084055
EPA 365.1 Rev. 2.0	05/07/2019	05/10/2019 08:53	Joseph Suarez	05/14/2019 17:29	Rosalyn Ballman	2084054
	05/07/2019	05/10/2019 08:53	Joseph Suarez	05/14/2019 17:30	Rosalyn Ballman	2084055
	05/07/2019	05/15/2019 11:26	Joseph Suarez	05/17/2019 14:27	Rosalyn Ballman	2084053
EPA 365.1 Rev. 2.0 dissolved	05/07/2019			05/07/2019 15:07	Jhamieka S. Greenwood	2084058
	05/07/2019			05/07/2019 15:19	Jhamieka S. Greenwood	2084056
	05/07/2019			05/07/2019 15:20	Jhamieka S. Greenwood	2084057
EPA 8321B	05/07/2019	05/09/2019 11:45	Juyoung Kim	05/09/2019 14:12	Juyoung Kim	2084651
SM 2120 B	05/07/2019			05/07/2019 15:28	Mariam Hanna	2084050, 2084051
	05/07/2019			05/07/2019 15:29	Mariam Hanna	2084052
SM 2320 B-97	05/07/2019			05/11/2019 23:04	Dale L. Simmons	2084050
	05/07/2019			05/11/2019 23:16	Dale L. Simmons	2084051
	05/07/2019			05/11/2019 23:59	Dale L. Simmons	2084052
SM 2540 C-97	05/07/2019			05/08/2019 16:15	Mariam Hanna	2084050, 2084051, 2084052
SM 2540 D-97	05/07/2019			05/08/2019 17:47	Mariam Hanna	2084050, 2084051, 2084052
SM 4500 F-C-97	05/07/2019			05/15/2019 06:46	Dale L. Simmons	2084050
	05/07/2019			05/15/2019 06:51	Dale L. Simmons	2084051
	05/07/2019			05/15/2019 06:56	Dale L. Simmons	2084052
SM 5310 B-00	05/07/2019			05/14/2019 09:53	Julia Storbeck	2084053
	05/07/2019			05/14/2019 10:06	Julia Storbeck	2084054
	05/07/2019			05/22/2019 11:14	Julia Storbeck	2084055