Chemical Analysis Report

WQAP-2021-01-15-01

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2020-12-21-35**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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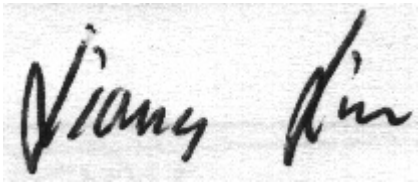
Date Certified: 08-FEB-2021 10:29



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: 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: IRL @ 528 Bridge S **Collection Date/Time: 01/14/2021 12:03**

Field ID: HABCE0054_IRLFishKill4 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219446	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P392510	
		Cylindrospermopsin**	0.25	U	ug/L	P392510	
		Desmethyl microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LA**	0.25	U	ug/L	P392510	
		Microcystin LF**	0.25	U	ug/L	P392510	
		Microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LW**	0.25	U	ug/L	P392510	
		Microcystin LY**	0.25	U	ug/L	P392510	
		Microcystin RR**	0.25	U	ug/L	P392510	
		Microcystin WR**	0.50	U	ug/L	P392510	
		Microcystin YR**	0.25	U	ug/L	P392510	
		Saxitoxin**	5.0	U	ug/L	P392632	
2219450	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P392505	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P392542	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392519	
	EPA 365.1 Rev. 2.0	Total-P	0.070		mg P/L	P392647	
2219454	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392481	

Ref. Method and Comment:
EPA 8321B: MDL elevated due to required dilution of sample matrix.

Sample Location: IRL @ Cocoa Village Marina **Collection Date/Time: 01/14/2021 11:22**

Field ID: HABCE0051_IRLFishKill1 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219447	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P392510	
		Cylindrospermopsin**	0.25	U	ug/L	P392510	
		Desmethyl microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LA**	0.25	U	ug/L	P392510	
		Microcystin LF**	0.25	U	ug/L	P392510	
		Microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LW**	0.25	U	ug/L	P392510	
		Microcystin LY**	0.25	U	ug/L	P392510	
		Microcystin RR**	0.25	U	ug/L	P392510	
		Microcystin WR**	0.50	U	ug/L	P392510	
		Microcystin YR**	0.25	U	ug/L	P392510	
		Saxitoxin**	5.0	U	ug/L	P392632	
2219451	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P392505	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P392542	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392519	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P392647	
2219455	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P392481	

Ref. Method and Comment:
EPA 8321B: MDL elevated due to required dilution of sample matrix.

Sample Location: IRL @ N of Magnolia Point **Collection Date/Time: 01/14/2021 11:43**

Field ID: HABCE0052_IRLFishKill2 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219448	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P392510	
		Cylindrospermopsin**	0.25	U	ug/L	P392510	
		Desmethyl microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LA**	0.25	U	ug/L	P392510	
		Microcystin LF**	0.25	U	ug/L	P392510	
		Microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LW**	0.25	U	ug/L	P392510	
		Microcystin LY**	0.25	U	ug/L	P392510	
		Microcystin RR**	0.25	U	ug/L	P392510	
		Microcystin WR**	0.50	U	ug/L	P392510	
		Microcystin YR**	0.25	U	ug/L	P392510	
		Saxitoxin**	5.0	U	ug/L	P392632	
2219452	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P392505	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P392542	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392520	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P392647	
2219456	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P392481	

Ref. Method and Comment:
EPA 8321B: MDL elevated due to required dilution of sample matrix.

Sample Location: IRL @ 528 Bridge N **Collection Date/Time: 01/14/2021 12:20**

Field ID: HABCE0053_IRLFishKill3 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219449	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P392510	
		Cylindrospermopsin**	0.25	U	ug/L	P392510	
		Desmethyl microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LA**	0.25	U	ug/L	P392510	
		Microcystin LF**	0.25	U	ug/L	P392510	
		Microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LW**	0.25	U	ug/L	P392510	
		Microcystin LY**	0.25	U	ug/L	P392510	
		Microcystin RR**	0.25	U	ug/L	P392510	
		Microcystin WR**	0.50	U	ug/L	P392510	
		Microcystin YR**	0.25	U	ug/L	P392510	
		Saxitoxin**	5.0	U	ug/L	P392632	
2219453	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P392505	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P392542	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392520	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P392647	
2219457	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392481	

Ref. Method and Comment:
EPA 8321B: MDL elevated due to required dilution of sample matrix.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P392505

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392542

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392519

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392520

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392647

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392481

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

Reference Method: EPA 8321B
Batch ID: P392510

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.25	U	ug/L
Desmethyl microcystin LR	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 LW	0.25	U	ug/L
Microcystin LY	0.25	U	ug/L
Microcystin RR	0.25	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L

Reference Method: EPA 8321B
Batch ID: P392632

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P392632

Component	Result	Code	Units
Saxitoxin	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P392505

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392542

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392519

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392520

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392647

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392481

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

Reference Method: EPA 8321B
Batch ID: P392510

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	140		P	40 - 150
Cylindrospermopsin	115		P	40 - 150
Desmethyl microcystin LR	92.0		P	40 - 150
Microcystin LA	106		P	40 - 150
Microcystin LF	93.9		P	40 - 150
Microcystin LR	70.5		P	40 - 150
Microcystin LW	98.2		P	40 - 150
Microcystin LY	78.8		P	40 - 150
Microcystin RR	114		P	40 - 150
Microcystin WR	78.1		P	40 - 150
Microcystin YR	91.2		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P392632

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P392632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Saxitoxin	85.5		P	40 - 160

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P392505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2218989	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2218638	Kjeldahl Nitrogen	108	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219450	NO2NO3-N	98.8	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219452	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2218990	Total-P	94.5	94.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219454	O-Phosphate-P	90.3	92.8	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P392510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219446	Anatoxin-a	106	101	P/P	40 - 150
2219446	Cylindrospermopsin	83.1	77.8	P/P	40 - 150
2219446	Desmethyl microcystin LR	82.3	88.5	P/P	40 - 150
2219446	Microcystin LA	82.1	99.9	P/P	40 - 150
2219446	Microcystin LF	76.2	71.7	P/P	40 - 150
2219446	Microcystin LR	56.3	65.9	P/P	40 - 150
2219446	Microcystin LW	73.8	77.6	P/P	40 - 150
2219446	Microcystin LY	65.5	67.5	P/P	40 - 150
2219446	Microcystin RR	99.4	105	P/P	40 - 150
2219446	Microcystin WR	74.7	73.3	P/P	40 - 150
2219446	Microcystin YR	72.4	82.3	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P392632

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P392632

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219446	Saxitoxin	52.2	52.2	P/P	40 - 160

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P392505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2218989	Ammonia-N	1.65	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2218638	Kjeldahl Nitrogen	2.95	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219450	NO2NO3-N	0.507	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219452	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2218990	Total-P	0.235	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219454	O-Phosphate-P	2.73	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P392510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219446	Anatoxin-a	4.86	Spike	P	0 - 30
2219446	Cylindrospermopsin	6.66	Spike	P	0 - 30
2219446	Desmethyl microcystin LR	7.24	Spike	P	0 - 30
2219446	Microcystin LA	19.6	Spike	P	0 - 30
2219446	Microcystin LF	6.09	Spike	P	0 - 30
2219446	Microcystin LR	15.7	Spike	P	0 - 30
2219446	Microcystin LW	5.01	Spike	P	0 - 30
2219446	Microcystin LY	3.00	Spike	P	0 - 30
2219446	Microcystin RR	5.25	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P392510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219446	Microcystin WR	1.90	Spike	P	0 - 30
2219446	Microcystin YR	12.7	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P392632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219446	Saxitoxin	0.0	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Surrogates

Lab Sample ID: 2219446
Field Sample ID: HABCE0054_IRLFishKill4

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	78.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	59.0	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	70.4	P	30 - 160

Lab Sample ID: 2219447
Field Sample ID: HABCE0051_IRLFishKill1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	75.9	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	55.0	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	72.9	P	30 - 160

Lab Sample ID: 2219448
Field Sample ID: HABCE0052_IRLFishKill2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	87.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	55.7	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	80.1	P	30 - 160

Lab Sample ID: 2219449
Field Sample ID: HABCE0053_IRLFishKill3

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	81.8	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	49.1	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	50.5	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A103092
Included Lab Sample IDs: 2219454, 2219455, 2219456, 2219457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.2	98.5	P/P	90 - 110
O-Phosphate-P	98.5	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A103098
Included Lab Sample IDs: 2219450, 2219451, 2219452, 2219453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.6	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A103107
Included Lab Sample IDs: 2219450, 2219451, 2219452, 2219453

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A103144
Included Lab Sample IDs: 2219450, 2219451, 2219452, 2219453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.8	95.4	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A103149
Included Lab Sample IDs: 2219446, 2219447, 2219448, 2219449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	134	132	P/P	50 - 160
Cylindrospermopsin	111	114	P/P	60 - 160
Desmethyl microcystin LR	80.5	95.4	P/P	60 - 160
Microcystin LA	87.0	117	P/P	50 - 160
Microcystin LF	92.2	83.4	P/P	50 - 160
Microcystin LR	69.8	62.9	P/P	60 - 160
Microcystin LW	95.7	84.6	P/P	60 - 160
Microcystin LY	72.7	74.3	P/P	60 - 160
Microcystin RR	102	122	P/P	60 - 160
Microcystin WR	84.2	81.3	P/P	60 - 160
Microcystin YR	92.4	67.7	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A103176
Included Lab Sample IDs: 2219446, 2219447, 2219448, 2219449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Saxitoxin	103	100	P/P	60 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A103211
Included Lab Sample IDs: 2219450, 2219451, 2219452, 2219453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	97.2	P/P	90 - 110
Total-P	97.2	97.5	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	97.1	100	102			1.65
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	108	105			2.95
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.8	98.3			0.507
	NO2NO3-N	101	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	105	94.5	94.7			0.235
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	90.3	92.8			2.73
EPA 8321B	Anatoxin-a	140	106	101			4.86
	Cylindrospermopsin	115	83.1	77.8			6.66
	Desmethyl microcystin LR	92.0	82.3	88.5			7.24
	Microcystin LA	106	82.1	99.9			19.6
	Microcystin LF	93.9	76.2	71.7			6.09
	Microcystin LR	70.5	56.3	65.9			15.7
	Microcystin LW	98.2	73.8	77.6			5.01
	Microcystin LY	78.8	65.5	67.5			3.00
	Microcystin RR	114	99.4	105			5.25
	Microcystin WR	78.1	74.7	73.3			1.90
	Microcystin YR	91.2	72.4	82.3			12.7
	Saxitoxin	85.5	52.2	52.2			0.0

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2219450, 2219451, 2219452, 2219453
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2219450, 2219451, 2219452, 2219453
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2219450, 2219451, 2219452, 2219453
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2219450, 2219451, 2219452, 2219453
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2219454, 2219455, 2219456, 2219457
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2219446, 2219447, 2219448, 2219449
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2219446, 2219447, 2219448, 2219449

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	01/15/2021			01/18/2021 12:37	Ping Hua	2219450
	01/15/2021			01/18/2021 12:39	Ping Hua	2219451
	01/15/2021			01/18/2021 12:40	Ping Hua	2219452
	01/15/2021			01/18/2021 12:42	Ping Hua	2219453
EPA 351.2 Rev. 2.0	01/15/2021	01/19/2021 12:12	Yen Ta	01/20/2021 15:21	Julia Storbeck	2219450
	01/15/2021	01/19/2021 12:12	Yen Ta	01/20/2021 15:23	Julia Storbeck	2219451
	01/15/2021	01/19/2021 12:12	Yen Ta	01/20/2021 15:25	Julia Storbeck	2219452
	01/15/2021	01/19/2021 12:12	Yen Ta	01/20/2021 15:26	Julia Storbeck	2219453
EPA 353.2 Rev. 2.0	01/15/2021			01/19/2021 09:18	Beverly Y. Sanders	2219450
	01/15/2021			01/19/2021 09:33	Beverly Y. Sanders	2219451
	01/15/2021			01/19/2021 09:41	Beverly Y. Sanders	2219452
	01/15/2021			01/19/2021 09:46	Beverly Y. Sanders	2219453
EPA 365.1 Rev. 2.0	01/15/2021	01/20/2021 18:21	Madeline Gruver	01/25/2021 12:18	Shengyu Wang	2219450
	01/15/2021	01/20/2021 18:21	Madeline Gruver	01/25/2021 12:25	Shengyu Wang	2219451
	01/15/2021	01/20/2021 18:21	Madeline Gruver	01/25/2021 12:26	Shengyu Wang	2219452
	01/15/2021	01/20/2021 18:21	Madeline Gruver	01/25/2021 12:27	Shengyu Wang	2219453
EPA 365.1 Rev. 2.0 dissolved	01/15/2021			01/15/2021 16:22	Ping Hua	2219454
	01/15/2021			01/15/2021 16:30	Ping Hua	2219455
	01/15/2021			01/15/2021 16:31	Ping Hua	2219456
	01/15/2021			01/15/2021 16:32	Ping Hua	2219457
EPA 8321B	01/15/2021	01/20/2021 11:00	Pramila Ghimire	01/20/2021 14:08	Pramila Ghimire	2219446
	01/15/2021	01/20/2021 11:00	Pramila Ghimire	01/20/2021 14:25	Pramila Ghimire	2219447
	01/15/2021	01/20/2021 11:00	Pramila Ghimire	01/20/2021 14:41	Pramila Ghimire	2219448
	01/15/2021	01/20/2021 11:00	Pramila Ghimire	01/20/2021 14:58	Pramila Ghimire	2219449
	01/15/2021	01/21/2021 11:00	Pramila Ghimire	01/21/2021 22:54	Pramila Ghimire	2219446
	01/15/2021	01/21/2021 11:00	Pramila Ghimire	01/21/2021 23:06	Pramila Ghimire	2219447
	01/15/2021	01/21/2021 11:00	Pramila Ghimire	01/21/2021 23:19	Pramila Ghimire	2219448
	01/15/2021	01/21/2021 11:00	Pramila Ghimire	01/21/2021 23:32	Pramila Ghimire	2219449