

Chemical Analysis Report

NE-DIST-2022-05-26-01

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

Event Description: **Normandy Village investigation**

Request ID: **RQ-2022-05-23-49**

Customer: **NE-DIST**

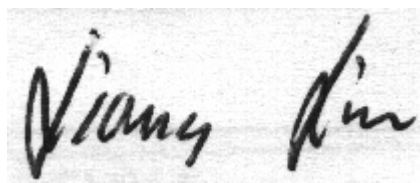
Project ID: **DISTRICT**

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-JUN-2022 09:50

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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 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: NVU Ribs #2

Collection Date/Time: 05/25/2022 16:10

Field ID: NVU Ribs #2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2330238	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414442	
		Cylindrospermopsin	0.10	U	ug/L	P414339	
		Desmethyl microcystin LR	0.25	U	ug/L	P414339	
		Microcystin HIR**	0.25	U	ug/L	P414339	
		Microcystin HtyR**	0.25	U	ug/L	P414339	
		Microcystin LA	0.10	U	ug/L	P414339	
		Microcystin LF	0.10	U	ug/L	P414339	
		Microcystin LR	0.25	U	ug/L	P414339	
		Microcystin LW	0.25	U	ug/L	P414339	
		Microcystin LY	0.10	U	ug/L	P414339	
		Microcystin RR	0.10	U	ug/L	P414339	
		Microcystin WR	0.50	U	ug/L	P414339	
		Neosaxitoxin**	0.50	U	ug/L	P414442	
		Microcystin YR	0.25	U	ug/L	P414339	
		Saxitoxin	0.50	U	ug/L	P414442	
		Nodularin-R**	0.10	U	ug/L	P414339	
2330239	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P415078	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	5.5		mg N/L	P414622	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P414921	
	EPA 365.1 Rev. 2.0	Total-P	0.55		mg P/L	P414553	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415078

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414622

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414921

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414553

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

Reference Method: EPA 8321B
Batch ID: P414339

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HILR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Reference Method: EPA 8321B
Batch ID: P414442

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415078

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414622

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414921

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414553

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

Reference Method: EPA 8321B
Batch ID: P414339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	77.3		P	40 - 150
Desmethyl microcystin LR	85.7		P	40 - 150
Microcystin HILR	69.4		P	40 - 150
Microcystin HtyR	71.7		P	40 - 150
Microcystin LA	56.3		P	40 - 150
Microcystin LF	68.9		P	40 - 150
Microcystin LR	76.2		P	40 - 150
Microcystin LW	51.2		P	40 - 150
Microcystin LY	52.7		P	40 - 150
Microcystin RR	78.4		P	40 - 150
Microcystin WR	78.3		P	40 - 150
Microcystin YR	75.6		P	40 - 150
Nodularin-R	71.5		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P414442

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	87.0		P	40 - 150
Neosaxitoxin	91.3		P	40 - 150
Saxitoxin	89.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415078

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330246	Ammonia-N	95.6	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414622

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330438	Kjeldahl Nitrogen	104	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330239	NO2NO3-N	98.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330205	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P414339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329415	Cylindrospermopsin	78.7	85.7	P/P	40 - 150
2329415	Desmethyl microcystin LR	86.0	92.4	P/P	40 - 150
2329415	Microcystin HILR	69.7	81.1	P/P	40 - 150
2329415	Microcystin HtyR	72.7	77.9	P/P	40 - 150
2329415	Microcystin LA	63.1	51.8	P/P	40 - 150
2329415	Microcystin LF	63.6	55.8	P/P	40 - 150
2329415	Microcystin LR	73.2	77.6	P/P	40 - 150
2329415	Microcystin LW	47.9	64.1	P/P	40 - 150
2329415	Microcystin LY	57.7	51.6	P/P	40 - 150
2329415	Microcystin RR	78.0	86.5	P/P	40 - 150
2329415	Microcystin WR	69.4	81.4	P/P	40 - 150
2329415	Microcystin YR	78.3	85.5	P/P	40 - 150
2329415	Nodularin-R	71.6	79.0	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P414442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330177	Anatoxin-a	91.6	82.7	P/P	40 - 150
2330177	Neosaxitoxin	51.3	43.3	P/P	40 - 150
2330177	Saxitoxin	54.5	49.2	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P415078

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330246	Ammonia-N	0.780	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P414622

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330438	Kjeldahl Nitrogen	1.06	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P414921

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330239	NO2NO3-N	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P414553

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330205	Total-P	0.178	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P414339

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329415	Cylindrospermopsin	8.51	Spike	P	0 - 30
2329415	Desmethyl microcystin LR	7.11	Spike	P	0 - 30
2329415	Microcystin H1LR	15.1	Spike	P	0 - 30
2329415	Microcystin HtyR	6.95	Spike	P	0 - 30
2329415	Microcystin LA	16.7	Spike	P	0 - 30
2329415	Microcystin LF	13.2	Spike	P	0 - 30
2329415	Microcystin LR	3.85	Spike	P	0 - 30
2329415	Microcystin LW	29.0	Spike	P	0 - 30
2329415	Microcystin LY	11.1	Spike	P	0 - 30
2329415	Microcystin RR	6.28	Spike	P	0 - 30
2329415	Microcystin WR	15.9	Spike	P	0 - 30
2329415	Microcystin YR	8.79	Spike	P	0 - 30
2329415	Nodularin-R	9.78	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P414442

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330177	Anatoxin-a	10.2	Spike	P	0 - 30
2330177	Neosaxitoxin	16.9	Spike	P	0 - 30
2330177	Saxitoxin	10.3	Spike	P	0 - 30

Quality Assurance Report Precision

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

Quality Assurance Report Surrogates

Lab Sample ID: 2330238

Field Sample ID: NVU Ribs #2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	77.7	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	61.2	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A112405
Included Lab Sample IDs: 2330238

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	91.3	89.5	P/P	50 - 160
Desmethyl microcystin LR	92.9	86.9	P/P	50 - 160
Microcystin HILR	80.8	78.1	P/P	50 - 160
Microcystin HtyR	79.0	81.7	P/P	50 - 160
Microcystin LA	64.6	76.8	P/P	50 - 160
Microcystin LF	64.2	69.9	P/P	50 - 160
Microcystin LR	91.0	80.4	P/P	50 - 160
Microcystin LW	70.8	78.9	P/P	50 - 160
Microcystin LY	61.1	65.2	P/P	50 - 160
Microcystin RR	92.5	96.2	P/P	50 - 160
Microcystin WR	85.7	83.0	P/P	50 - 160
Microcystin YR	85.9	76.9	P/P	50 - 160
Nodularin-R	76.8	74.5	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112569
Included Lab Sample IDs: 2330239

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

Reference Method: EPA 8321B
Run ID: A112571
Included Lab Sample IDs: 2330238

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	82.0	74.9	P/P	50 - 160
Neosaxitoxin	84.1	74.5	P/P	50 - 160
Saxitoxin	86.2	79.9	P/P	50 - 160

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112631
Included Lab Sample IDs: 2330239

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.1	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112683
Included Lab Sample IDs: 2330239

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A112754
Included Lab Sample IDs: 2330239

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	98.0	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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	95.6	95.6	96.4			0.780
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	104	102			1.06
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.0	99.0			1.02
EPA 365.1 Rev. 2.0	Total-P	101	102	102			0.178
EPA 8321B	Anatoxin-a	87.0	91.6	82.7			10.2
	Cylindrospermopsin	77.3	78.7	85.7			8.51
	Desmethyl microcystin LR	85.7	86.0	92.4			7.11
	Microcystin HilR	69.4	69.7	81.1			15.1
	Microcystin HtyR	71.7	72.7	77.9			6.95
	Microcystin LA	56.3	63.1	51.8			16.7
	Microcystin LF	68.9	63.6	55.8			13.2
	Microcystin LR	76.2	73.2	77.6			3.85
	Microcystin LW	51.2	47.9	64.1			29.0
	Microcystin LY	52.7	57.7	51.6			11.1
	Microcystin RR	78.4	78.0	86.5			6.28
	Microcystin WR	78.3	69.4	81.4			15.9
	Microcystin YR	75.6	78.3	85.5			8.79
	Neosaxitoxin	91.3	51.3	43.3			16.9
	Nodularin-R	71.5	71.6	79.0			9.78
	Saxitoxin	89.5	54.5	49.2			10.3

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2330239
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2330239
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2330239
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2330239
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2330238
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2330238

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	05/26/2022			06/10/2022 15:11	Ping Hua	2330239
EPA 351.2 Rev. 2.0	05/26/2022	06/03/2022 11:25	Samantha L Bates	06/06/2022 15:22	Alexandra J Mattheus	2330239
EPA 353.2 Rev. 2.0	05/26/2022			06/08/2022 17:39	Nathaniel J Jones	2330239
EPA 365.1 Rev. 2.0	05/26/2022	06/01/2022 16:00	Adam P Silver	06/02/2022 11:33	James L Waggerby	2330239
EPA 8321B	05/26/2022	05/26/2022 12:00	Manjita Shrestha	05/26/2022 15:36	Manjita Shrestha	2330238
	05/26/2022	06/01/2022 09:00	Manjita Shrestha	06/02/2022 12:11	Manjita Shrestha	2330238