

# Freshwater Alert & Advisory Recap 2022

# Topics

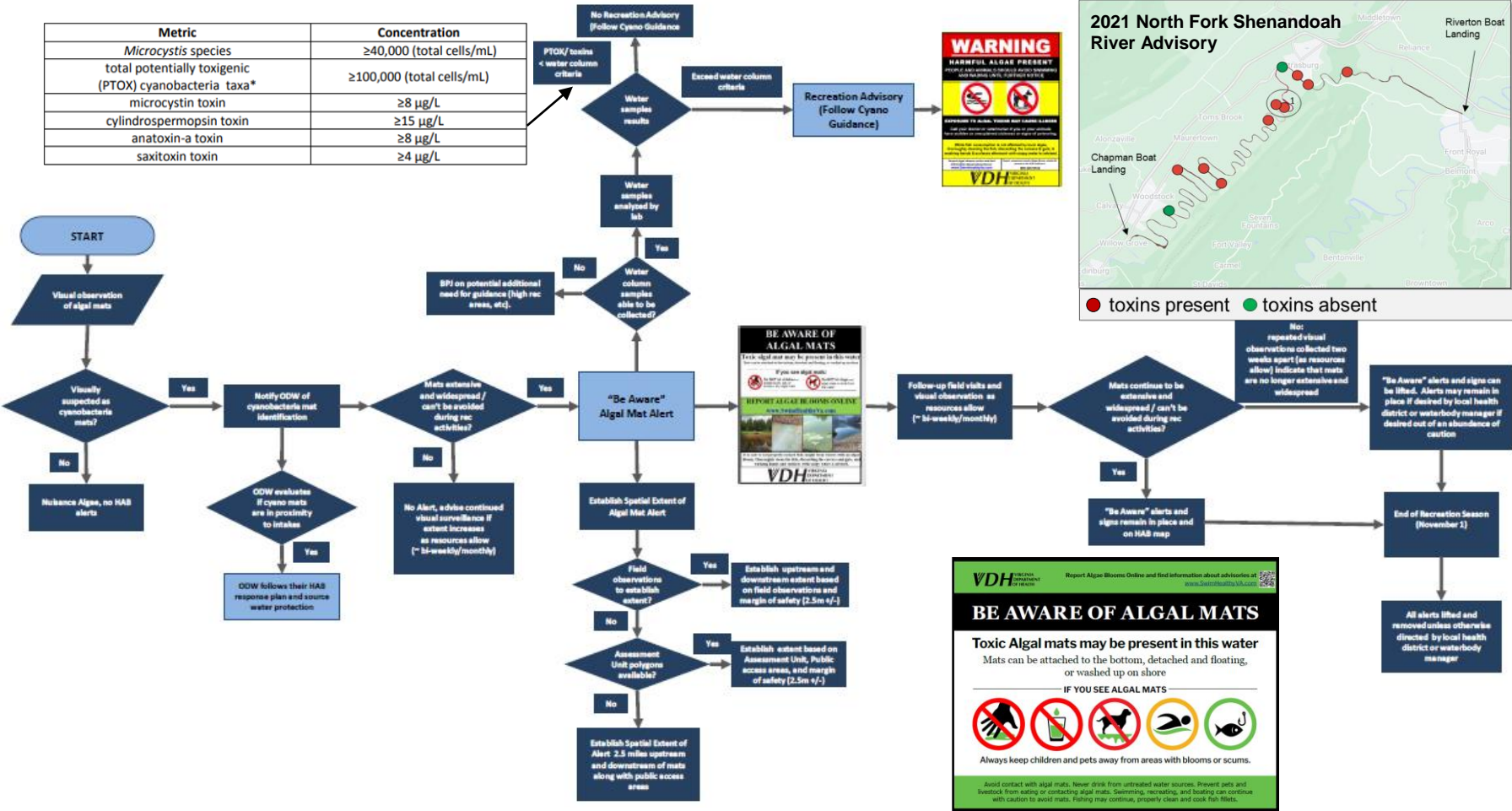
- Job Aid & Guidance for Cyanobacteria Advisory Management
- Freshwater HAB Alert & Advisory Summary
- HAB Meetings & Other Efforts
- 2023 HAB Program Priority Projects

# Job Aid for Mat Alerts (2022) & Cyanobacteria Advisory Guidance (2021)

Alert & Advisory Guidance

Figure 1. Flow chart for expected response actions related to Job Aid and Cyanobacteria Advisory Guidance (2022)

Metric	Concentration
<i>Microcystis</i> species	≥40,000 (total cells/mL)
total potentially toxigenic (PTOX) cyanobacteria taxa*	≥100,000 (total cells/mL)
microcystin toxin	≥8 µg/L
cylindrospermopsin toxin	≥15 µg/L
anatoxin-a toxin	≥8 µg/L
saxitoxin toxin	≥4 µg/L



## Key Adaptive Strategies for 2022:

- No external data accepted for advisory or alert management
- No algal mat samples to be collected or analyzed by the VA HAB TF
- Algal Mat Alerts for floating/benthic mats
- Observations of “widespread and unavoidable” mats trigger alerts
- Algal mat alert extent = 2.5 miles above/below the observation/sample
- Continue use of existing guidance for planktonic blooms

Job Aide for Algal Mat Alerts (2022): <https://www.vdh.virginia.gov/content/uploads/sites/178/2022/06/Cyanobacteria-Bloom-Response-Job-Aide-June-2022.pdf>

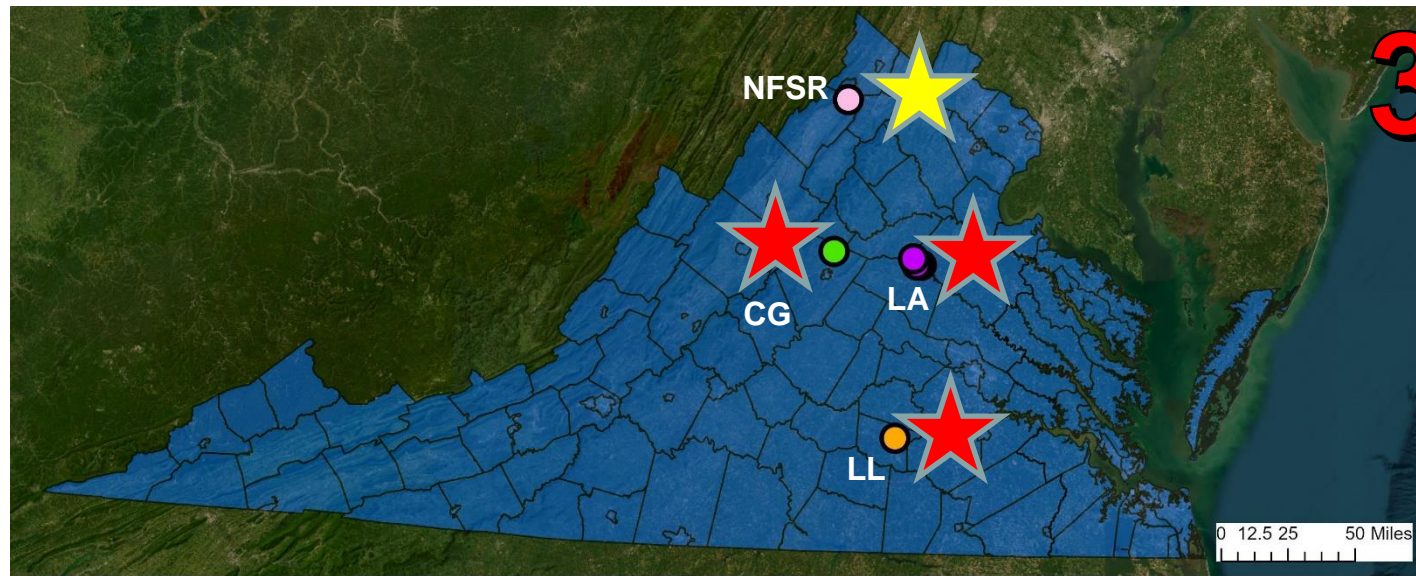
Guidance for Advisories (2021): [https://www.vdh.virginia.gov/content/uploads/sites/178/2022/01/FINAL\\_SIGNED\\_Guidance\\_for\\_Cyanobacteria\\_Recreational\\_Advisory\\_Mgt.5Aug2021-1.pdf](https://www.vdh.virginia.gov/content/uploads/sites/178/2022/01/FINAL_SIGNED_Guidance_for_Cyanobacteria_Recreational_Advisory_Mgt.5Aug2021-1.pdf)

# 2022 Freshwater HAB Alert & Advisory Summary

Alert & Advisory Summary

**3** Number of Virginia waterbodies that required advisory/alert due to PTOX taxa > 100,000 cells/ml

Number of samples where cyanotoxins in water column analyzed were > 1µg/L **0**



**“Yellow”** = Alert  
Issued for Cyanobacteria algal mats

**“Red”** = Advisory  
Due to PTOX ≥ 100,000cells/ml

**Sampling Events:**  
Chris Greene (3) - *not TF*  
Lake Nottoway (1)  
Lake Anna (6)  
NF Shenandoah River (8)  
Smith Mtn Lake (1)  
Lake Gaston (1)  
Ashby Pond (1)

2022 Waterbodies of Concern	2022 Months: sampled (x), <b>Advisory</b> , <b>Alert</b>						Total # Days of Advisory or Alert	
	May	June	July	Aug	Sept	Oct		
Chris Greene Lake			x	x			31	★ CG
Lee Lake (Nottoway Lake)			x				111	★ LL
Lake Anna Splits	x	x	x	x	x	x	38	★ LA
LA: Lower Pamunkey, Lower North Anna	x	x	x	x	x	x	88	
LA: Upper Pamunkey, Middle Pamunkey, Upper North Anna, Middle North Anna	x	x	x	x	x	x	112	
North Fork Shenandoah River		x	x	x			100	★ NFSR



# North Fork Shenandoah River – Algal Mat Alert

Investigation &  
Alert/Advisory  
Summary –  
NFSR

2022 Algal Mat Alert – 100 days\*

2021 Recreational Advisory – 70 days\*\*

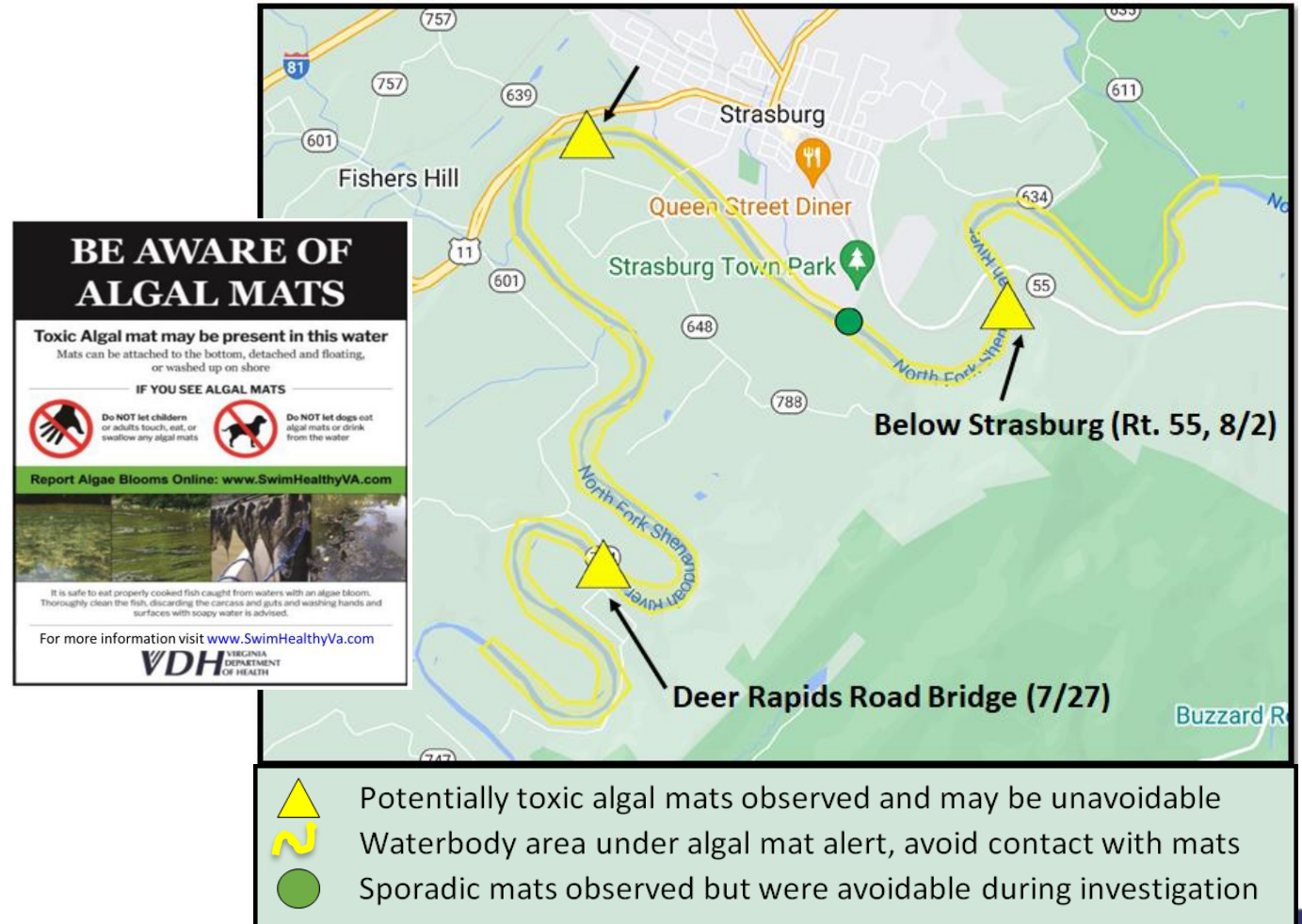
2020 Recreational Advisory – 0 days\*\*\*

\*water samples collected and analyzed only; chose not to resample or revisit to lift alerts to conserve resources

\*\*advisory issued in abundance of caution due to presence of algal mats containing toxins at several locations (discontinuation of mat sample/analysis)

\*\*\*mat sample analysis method not developed until 2021

- Alert Issued for Deer Rapids 7/29/22 – 5 mile extent
- Alert Issued for Vicinity of Town of Strasburg ~11 mile extent
- To be protective, the NFSR alert was left in place, however, observations suggest the algal mats mostly dissipated by Aug/Sept
- Alert was lifted by end of season on Oct 31

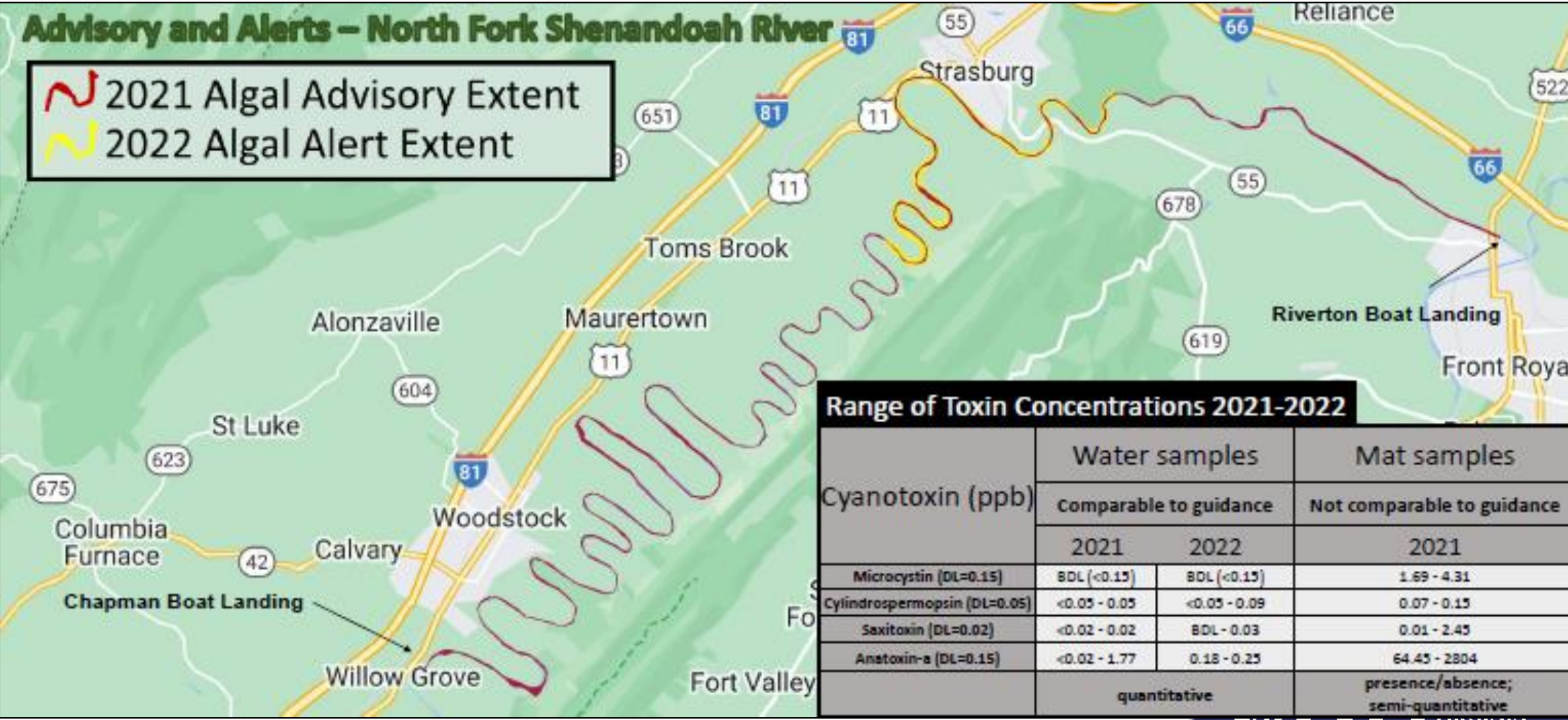


# North Fork Shenandoah River – Algal Mat Alert 2022 vs Advisory 2021

Investigation & Alert/Advisory Summary – NFSR

**2021 Advisory**  
~52 miles

**2022 Alert**  
~11 miles



Range of Toxin Concentrations 2021-2022			
Cyanotoxin (ppb)	Water samples		Mat samples
	Comparable to guidance		Not comparable to guidance
	2021	2022	2021
Microcystin (DL=0.15)	BDL (<0.15)	BDL (<0.15)	1.69 - 4.31
Cylindrospermopsin (DL=0.05)	<0.05 - 0.05	<0.05 - 0.09	0.07 - 0.15
Saxitoxin (DL=0.02)	<0.02 - 0.02	BDL - 0.03	0.01 - 2.45
Anatoxin-a (DL=0.15)	<0.02 - 1.77	0.18 - 0.25	64.45 - 2804
	quantitative		presence/absence; semi-quantitative



# Lake Anna Advisories

Investigation &  
Advisory  
Summary – Lake  
Anna

2022 Recreational Advisory – **112** days

2021 Recreational Advisory – 123 days

2020 Recreational Advisory – 92 days

2019 Recreational Advisory – 94 days

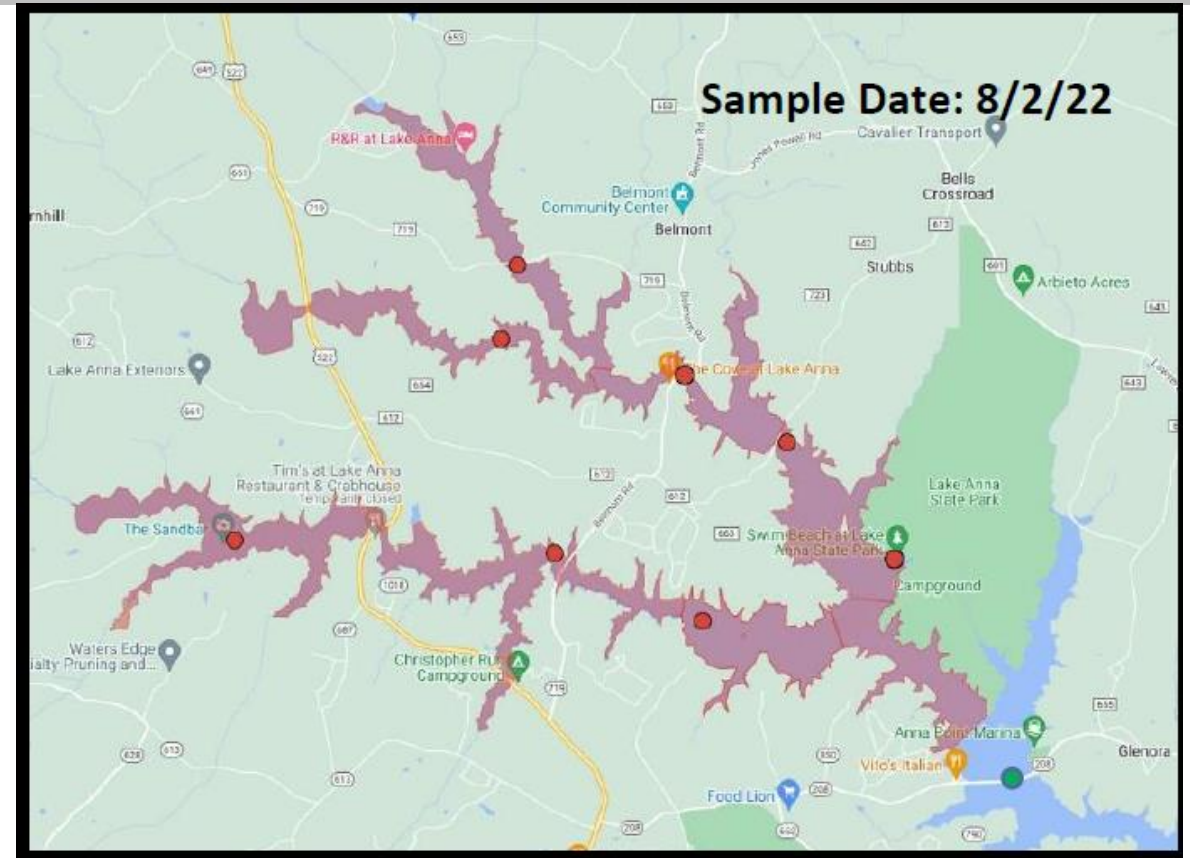
2018 Recreational Advisory – 76 days

2017 Recreational Advisory – none

## Worst extent advisory:

- Advisory issued 8/8/22; Upper, Middle, Lower Pamunkey Branch, including Terry's Branch & Upper, Middle, Lower North Anna Branch down to just above Rt 208 to include the "Splits" and Lake Anna SP – lifted 9/13
- Advisories for Upper and Middle NA and Pamunkey Branches could not be lifted by Sept/Oct samples

**NO advisories issued for the Lake Anna State Park shoreline site in 2020 or 2021, the 2022 advisory lasted 38 days**



- Harmful algae (cyanobacteria) concentrations exceed safe levels.
- Harmful algae (cyanobacteria) concentrations below safe levels.
- 🟪 Lake area under HAB swimming advisory.

# 2022 Virginia HAB Task Force Meetings & Efforts

**HAB Meetings & Efforts**

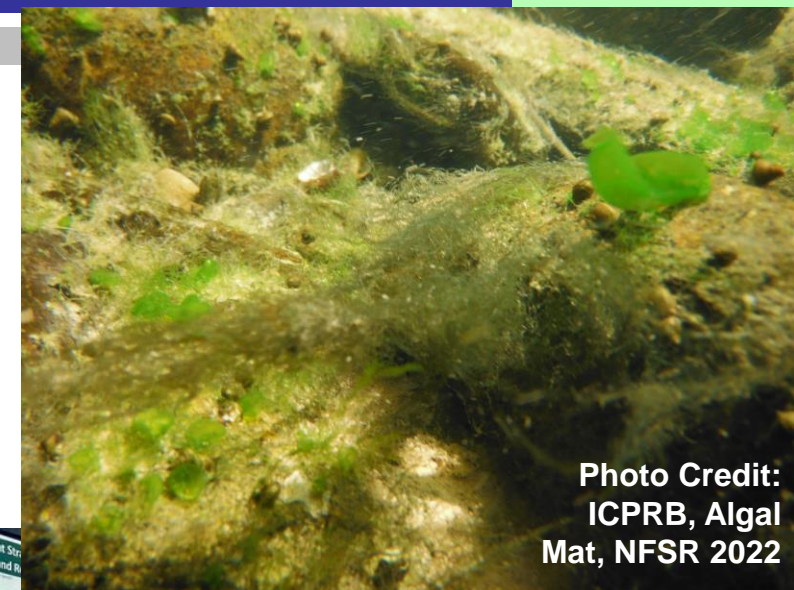


Photo Credit: ICPRB, Algal Mat, NFSR 2022

**Coordination with VIMS for Virginia Annual HAB Task Force Meeting February 2021**

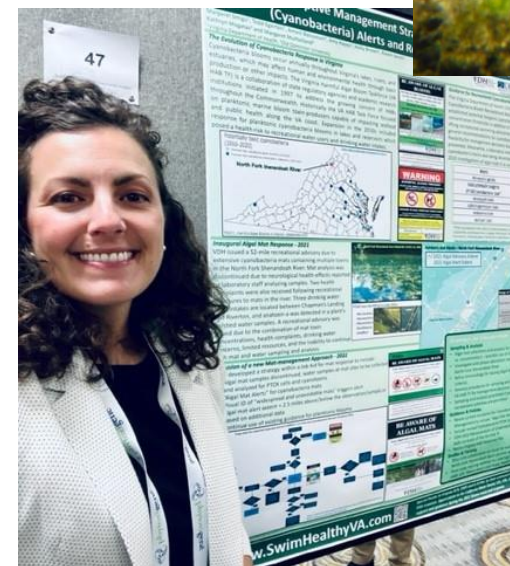
**NF Shenandoah River – Mat Alert Job Aid proposal (~6 meetings)**

**Job Aid for Algal Mat Alerts - June 2022**

**HAB Task Force Coordination Meetings VIMS/ODU/DEQ/VDH (10)**

**Eurofins/Gold Standard Diagnostics - Summer NFSR Algal Mat Project (~2 meetings and project scope)**

**US HAB Symposium Poster – NF Shenandoah River - Adaptive Management Strategies**



Poster for US HAB Symposium 2022





# 2023 HAB Program Priority Projects

HAB Program  
Priorities 2023

- **VDH Update to Guidance for Recreational Cyanobacteria Alert/Advisory**  
(~anticipated for May/June)
  - Include Job Aid for Algal Mat Alerts as a section of the guidance
  - Public comment period required
  - Further define the scope of Task Force response in public waters to only public waters where swimming use poses an immediate health concern
- **Continued collaboration with partners:**
  - SPATT project potential for the NF Shenandoah River
  - Discuss next steps with Gold Standard Diagnostics for efficacy/use of field test strips to determine toxin presence/absence of cyanobacteria mat material
  - MOU development between DEQ and VDH coordination of co-led response efforts
  - Develop guidance for external partner data - *how VDH will use/not use HAB data collected/analyzed/submitted by external sources (non-profit and for-profit agencies)*
  - Finalize a toolkit for private waterbody managers (*post online, ~May/June*)

*Special thanks to members of the Virginia HAB Task Force and our local, state, and federal partners who have supported bloom response efforts this year!*

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