WASHINGTON ASSOCIATION OF CONSERVATION DISTRICTS

RESOLUTION

SHORT TITLE: Supporting the Recommendations of the HAB Work Group

SPONSOR CD: Whidbey Island CD

AREA: ☒ NW ☐SW ☐NC ☐SC ☐NE ☐SE

RESOLUTION TYPE:

- ☒ **Policy**
- ☐ **Position Statement**
- ☐ **Recognition**
- ☐ **Study**

RESOLUTION ACTION AGENCY (check any option that applies):

- ☒ **WACD**
- ☒ **WSCC**
- ☒ **OTHER STATE AGENCY** **Dept of Ecology, Dept of Health, WDFW, WSDA**
- ☐ **NRCS**
- ☐ **NACD**
- ☒ **NON-STATE/FEDERAL PARTNER** **Washington Lake Protection Association**

BACKGROUND/PROBLEM STATEMENT: In 2021, WACD adopted a resolution to organize a work group to study and report back on the growing issue of harmful algae blooms in Washington's freshwaters. This group of interested districts and affiliated technical advisory committee members issued a report with recommended actions that conservation districts could take to reduce the frequency and duration of harmful algae blooms in Washington.

PROPOSED RESOLUTION LANGUAGE: That WACD support the recommendations of the Harmful Algae Bloom Work Group and actively pursues their implementation through the state legislature and local, state, and federal agencies.

TYPE OF TEXT OF RESOLUTION (check all boxes that apply):

- ☐ Technical (changes address grammar, punctuation, sentence flow and makes **NO** substantive change(s) to the existing policy.
- ☐ Substantive change to existing policy. If in doubt, check the box.
- ☒ New policy.

ARE WACD RESOURCES (FUNDING, STAFF CAPACITY, ETC.) REQUIRED TO IMPLEMENT THE POLICY?

- ☐ **NO**
- ☒ **YES** (briefly explain): WACD's staff and lobbyist time and effort will be necessary to implement the policy.

Report to WACD

on

Harmful Algae Bloom (HAB) Management in Washington

from the

WACD HAB Workgroup

September 2022

Harmful algal blooms (HABs) in freshwater, caused by proliferation of cyanobacteria, are an environmental and human health problem in all 50 US states and nearly every country around the world. Dozens of Washington lakes, reservoirs, and ponds experience toxic blooms each year that impact recreational use, and numerous incidents of HAB-related animal deaths have been documented since 1990. In 2021, the Washington Association of Conservation Districts adopted a resolution to establish a workgroup to assess the status of HABs in the state, the adequacy of current funding for monitoring HABs, the adequacy of funding for programs to address HABs statewide, and to recommend actions that conservation districts could take to reduce the frequency and duration of HABs in Washington. HABs can occur in marine and freshwater systems. The workgroup focused on HABs in freshwater systems. The workgroup met monthly and consisted of the following members representing conservation districts spanning the state:

Chair Mark Sytsma, Whidbey Island CD
Co-chair Heather McCoy, Whidbey Island CD
Bill Blake, Skagit CD
Glenn Gately, Jefferson County CD
Mark Nielson, Franklin & Benton CD
Tom Salzer, WACD
Paul Andersson, San Juan Island CD
Marcella Appel, Benton CD
Walt Edelen, Spokane CD
Debbie Meisinger, King CD
Ron Scerbicke, Grant County CD
Ryan Baye, WACD

Because HABs are a complex problem the workgroup required input from experts in several fields to ensure that recommendations were well conceived. Therefore, the workgroup formed a technical advisory committee (TAC) comprised of representatives from federal, state, and local agencies and nongovernmental organizations to provide input to the workgroup deliberations. TAC members also presented summaries of their agencies' current activities related to HAB management in Washington. The TAC included the following:

Angela Strecker, Institute for Watershed Studies, WWU
Lizbeth Seebacher, WA Dept. of Ecology
Gopal Mulukutla, WA Dept. of Health
Rob Zissette, WA Lake Protection Association
Justin Spinelli, WA Dept. Fish and Wildlife
Rochelle Labiosa, US EPA
Will Hobbs, WA Dept. of Ecology
Jason Armstrong, WA State Parks
Kyrre Flege, WA Dept. Agriculture
Bill Sharp, Yakama Nation Fisheries

Causes and Impacts of HABs

HABs occur when cyanobacteria populations proliferate. Not all cyanobacteria produce toxins, and even within a species some strains produce toxins and some do not. They can occur in any freshwater system, from small ponds and lakes to large rivers and reservoirs. Causes of HAB events are multifaceted and complex (Chapman, 2015; Brooks et al, 2015), including temperature, hydrology, and species present; although high nutrient loading, especially of phosphorus, is considered a primary cause. Alteration of several of these factors with climate change is expected to increase the frequency and duration of HABs in the future (Paerl and Huisman, 2009; Visser et al. 2015; Huisman et al., 2018). HAB events cause a variety of water quality problems, such as impairment to recreational use, reduced aesthetics, lower dissolved oxygen concentrations, taste and odor problems in drinking water, and the production of toxins that can impact aquatic and terrestrial wildlife and human health (Brooks et al, 2015).

Numerous freshwater bodies in Washington produce cyanobacteria blooms, including toxic blooms (NWToxicalgae.org). Even with the limited monitoring of freshwater HABs in Washington, the number of water bodies with confirmed detection of microcystin, a potent liver toxin, near or above the recreational guidance levels (8 µg/L) is increasing (Figure 1). In 2021 there were multiple suspected and confirmed incidents of human and animal (pets, wildlife, livestock) exposures to cyanotoxins (Table 1). A 2021 toxic bloom in the Columbia River near the Tri-Cities in Benton and Franklin Counties was of particular concern because six public drinking water systems have water intakes in the area where the bloom occurred, and several dog deaths and illnesses were reported in the area.

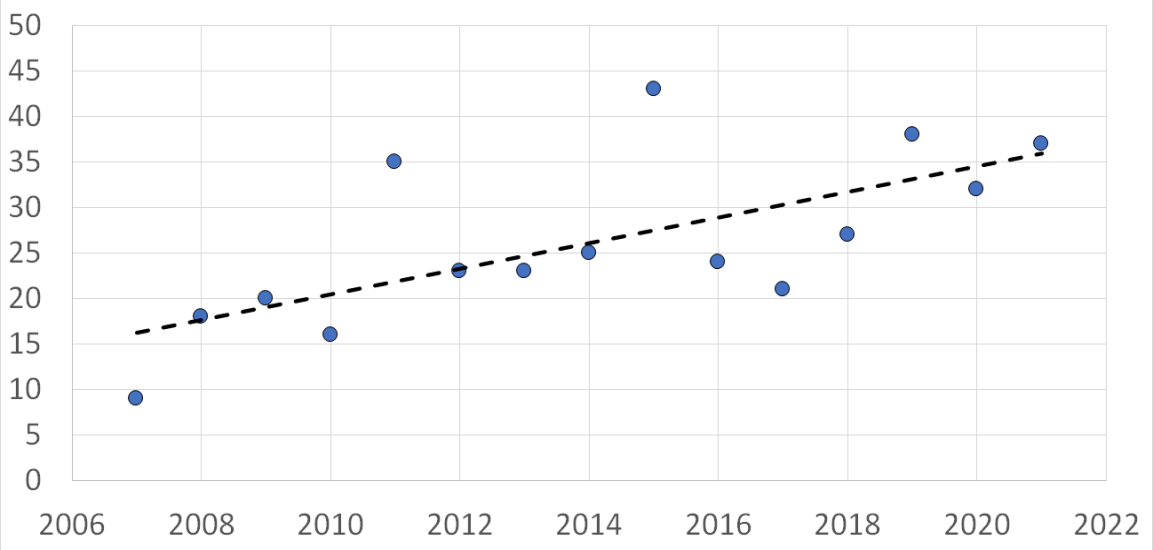

Figure 1. Number of water bodies with microcystin concentration greater than 6 µg/L (state recreational guidance value = 8 ug/L) detected in water samples (2007-2021) (source: NWToxicAlgae.org).

Table 1. Summary of suspected or confirmed human and animal exposure events to cyanotoxins in Washington in 2021 (data source: Laurie Stewart, WA DOH).

Type	Number	Outcome	Water Body	Month 2021	Toxin Detected
Dog	3	Death	Little Spokane River	Jul	Anatoxin-a
Human	1	Rash	Yale Reservoir	Aug	Anatoxin-a Saxitoxin
Dog	1	Illness	Spokane River	Aug	Microcystin
Bats	2000+	Death	Pass Lake	Aug	Anatoxin-a
Cows	10	Death	Skamokawa Creek	Aug	Microcystin
Dog	1	Death	Columbia River	Aug	Anatoxin-a Microcystin Saxitoxin Cylindrospermopsin
Dog	1	Illness	Clarke Lake	Sep	Unknown
Dog	6	2 ill, 4 died	Columbia River	Sep	Anatoxin-a

Public health actions to prevent exposure to toxic cyanobacteria blooms in fresh surface water bodies depend on timely detection and appropriate public communication of risk. There is a need for a proactive approach to HABs in Washington as climate change models predict increases in air temperature and changes in the precipitation regime (e.g., longer dry spells with episodic periods of increased rainfall). These evolving conditions are favorable to increased HAB duration and frequency. To meet current challenges, and those posed by a changing climate, greater participation of the public is necessary, *e.g*. through a volunteer monitoring program (Hoyer and Canfield, 2021), as is equipping water resource managers and public health practitioners with the latest technologies and tools for a timely decision-making process for better management of water resources.

HAB management in Washington

Based on residents' concerns after animal deaths in Pierce County lakes with toxic blooms in the 1990s, state legislators established funding for the Freshwater Algae Program through an annual one-dollar license fee assessed to boat owners (RCW 43.21A.667). The Departments of Ecology and Health held regional meetings to obtain input on structuring the program based on local health jurisdiction and lake managers' needs. Funds for toxicity tests, development of a grant program, and establishment of uniform signs linked to a tiered management plan were prioritized, implemented and updated in 2021 following the publication by EPA of nationally recommended recreational criteria guidance values for two of the four cyanotoxins of concern in the state. While the state program has had some success in protecting human and animal health from exposure to HABs, there is still unacceptable exposure of the public, as evidenced by the incidents documented in 2021 in Table 1. Increased funding is needed to

provide toxicity tests throughout the year (at present the funds are only available for testing from April through October and toxins have been detected in Washington lakes in all months of the year) and additional public outreach and education.

Management of an environmental and human health problem with multiple causes and effects, like HABs, requires a whole-of-government approach to ensure an efficient and effective response. HAB management is often site specific and requires a flexible management strategy that is informed by current scientific understanding and risk (Erratt et al., 2022). HAB prevention and management in Washington is hampered by lack of adequate monitoring and funding. While some agencies have cooperated in addressing the HABs problem in the state, others are only marginally engaged. State agencies differ in their statutory responsibilities with respect to HABs, although all agencies, especially natural resource agencies, have some role in preventing, responding to, or addressing the consequences of HABs (Table 2).

Table 2. Current roles and responsibilities of state agencies in responding to HABs.

Department of Health	Provide technical support to local health jurisdictions on HABs
	Create and distribute signs for risk communication as part of the state lake management protocol
	Environmental epidemiology - investigate human and animal illness incidents
	Health impacts of climate change
	Create, review, and update guidance values for cyanotoxins
	Protect drinking water (Safe Drinking Water Act implementation)
Parks and Recreation Commission	Manage public access to water bodies in state parks
Department of Agriculture	Manage nonpoint nutrient runoff from dairy facilities
Department of Fish and Wildlife	Manage fish and wildlife populations
	Respond to animal mortality events
	Maintain recreational opportunities
	Manage public access on WDFW owned sites
	Permitting process for in-water projects
	Technical assistance in aquatic and terrestrial ecology
Department of Ecology	HAB assessment, management planning, and permitting
	Aquatic weed management
	Manage Freshwater Algae Control Program and grants
	Funds toxin analysis through King County Environmental Laboratory Clean Water Act Implementation
State Conservation Commission	Conserve natural resources in Washington State, through voluntary and incentive-based programs, in collaboration with conservation districts and other partners

HAB Management Recommendations

Following input from state and federal agencies with HAB responsibilities and from a neighboring state with an active HAB program, the workgroup identified several gaps in Washington's response to HABs including:

- Lack of a whole-of-government approach to HABs management
- Lack of adequate and dedicated funding to address fundamental questions about the causes and management of HABs in the state
- Lack of funding for prevention, monitoring, and response to freshwater HABs
- Inadequate communication of the risks of HAB exposure with the public

To address these gaps, the workgroup recommends the following actions:

<u>Lack of whole-of-government approach</u>

- Form a Washington State HAB Coordinating Committee consisting of representatives from each state agency with HAB monitoring and response responsibilities for the production of a biennial report to the legislature on the status of HABs and the state's response.
    - Committee coordinated by the Washington State Conservation Commission (WSCC)
        - Requires 0.3 FTE + $75,000/biennium to fund meetings and agency participation
- Form a Technical Assistance and Program Review Committee consisting of nongovernmental experts in HAB biology, ecology, and management to advise state agencies on their freshwater HAB response, and provide additional recommendations to improve the state's response as conditions are modified in the future with climate change.
    - Committee coordinated by WSCC
        - Requires 0.2 FTE + $100,000/biennium to fund meetings and participation
- Hire individuals with limnology expertise at all levels of government to ensure effective implementation of the HAB program

<u>Lack of adequate and dedicated funding to address fundamental questions about the causes and management of HABs</u>

- Form a HAB Research Program to provide dedicated grant funding for addressing current and future questions about HAB management in the state.
    - Program run by WSCC
        - Requires 0.25 FTE + $1,000,000/biennium for grants

<u>Lack of funding for prevention, monitoring, and response to freshwater HABs</u>

- Increase grant funding for outreach / education and nutrient source management in agriculture to be planned and implemented by Washington conservation districts.
    - Funded through WSCC
        - Requires 0.25 FTE + $3,000,000/biennium for grants
- Access of Public Trust Fund Loans from the Department of Ecology to local agencies for prevention, treatment and response to HABs.
- Advocate for federal support for addressing HABs in large rivers and reservoirs managed by federal agencies with costs that exceed the ability of the state to implement.

- Provide dedicated grant funding for development and implementation of Best Management Practices in watersheds of freshwater bodies currently experiencing HABs or that could experience HABs in the future.
    - Funded through Washington Department of Ecology
        - Requires 0.5 FTE + $2,000,000/biennium for grants
- Provide dedicated grant funding for treatment and prevention (e.g., nutrient inactivation and aeration) of HABs in freshwater bodies.
    - Funded through Washington Department of Ecology
        - Requires 0.5 FTE + $3,000,000/biennium for grants
- Create a program aimed at evaluation of freshwater HAB program effectiveness to include detailed characterization of individual water bodies needed to develop management and treatment plans.
    - Funded through, and coordinated by, Washington Department of Ecology
        - Requires 1 FTE + $1,500,000/biennium
- Create a volunteer program to provide basic long-term data on the condition of Washington water bodies through grants to conservation districts, counties, cities, and other local jurisdictions for outreach and education, equipment, technical assistance, and coordination of volunteers.
    - Funded through, and coordinated by, Washington Department of Ecology
        - Requires 1 FTE + $500,000/biennium for grants

<u>Inadequate communication of the risks of HAB exposure</u>

- Conduct risk assessments and provide technical support on epidemiology of HABs, drinking water treatment, and climate change impacts to local health jurisdictions to reduce recreational and drinking water exposure incidents, including prevention, investigation, and mitigation efforts.
    - Funded through the Washington Department of Health
        - Requires 1.5 FTE + $1,500,000/biennium for grants

Role of Conservation Districts in Washington HAB Management

The recommendations outlined above provide a comprehensive program for the citizenry of Washington to work in collaboration with state agencies to reduce the frequency and duration of HABs throughout Washington. Adequate funding for the program and interagency coordination are critical for its success. Conservation districts play a unique role in the whole-of-government HAB management strategy recommended here. They are managed by local boards with staff who provide on-the-ground, voluntary, non-regulatory, incentive-based environmental protection. Conservation districts provide a networking bridge between agencies and landowners for implementation of relevant best management practices, and could participate in reducing the frequency and duration of HABs in Washington in two important ways. First, as a trusted partner of agencies and landowners, conservation districts are ideally positioned to develop and help landowners implement nutrient management plans. The recommended funding for nutrient management planning, combined with conservation districts' access to state and federal cost-share funding to support landowners' implementations, would reduce nutrient runoff and input to water bodies that is the primary cause of HABs. Secondly, conservation districts are in regular contact with the citizenry in their district and are well positioned to provide education and outreach

materials and training and technical assistance to volunteer lake monitors through the recommended grant monitoring program for local agencies in the Department of Ecology. Regular contact with volunteers, which is necessary to maintain volunteer enthusiasm and participation, is best provided by a locally-based, trusted individual, such as city, county or conservation district staff. Staff expertise is critical for a successful HAB management program focused on protecting public health in Washington. Agencies responsible for HAB management, including conservation districts, must employ individuals with expertise in limnology for an effective program. A train-the-trainer program in the Department of Ecology for conservation districts, and other local agency staff participating in the monitoring program, is critical for generation of accurate and useful lake water quality data by volunteers.

Summary Whole-of-Government Biennial Costs for HABs Program

	Function	FTE	FTE Cost*	Grants and other costs	Total Cost*
WSCC	Coordination committee	0.3	$66,000	$75,000	$141,000
	Technical assistance	0.2	$44,000	$100,000	$144,000
	Research program	0.25	$55,000	$1,000,000	$1,055,000
	Agricultural Nutrient Source Reduction	0.25	$55,000	$3,000,000	$3,055,000
		1	$220,000	$4,175,000	$4,395,000
WDOE	Watershed BMPs	0.5	$110,000	$2,000,000	$2,110,000
	In-water treatment and prevention	0.5	$110,000	$3,000,000	$3,110,000
	Detailed characterization and planning	1	$220,000	$1,500,000	$1,720,000
	Volunteer monitoring	1	$220,000	$500,000	$720,000
		3	$660,000	$7,000,000	$7,660,000
WDOH	Environmental epidemiology of HABs	0.5	$110,000		$110,000
	Drinking water HABs and local assistance	0.5	$110,000	$1,500,000	$1,610,000
	Climate change impacts	0.5	$110,000		$110,000
		1.5	$330,000	$1,500,000	$1,830,000
Totals		5.5	$1,210,000	$12,675,000	$13,885,000

*Assumes $110,000 for salaries and benefits/FTE/year

References

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Hoyer, MV and DE Canfield. 2021. Volunteer-collected water quality data can be used for science and management. *Lake and Reservoir Management* 37: 235-245.

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