BEFORE THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

Petition for Rulemaking	)
Under the Clean Water Act	)
	)
Water Quality Criteria for Cyanotoxins	)
in the State of Florida	)

I. INTRODUCTION

The Center for Biological Diversity ("Center"), hereby petitions the U.S. Environmental Protection Agency ("EPA") to promulgate federal regulations applicable to the State of Florida, setting forth new human health water quality criteria for cyanotoxins in the state's Class I, II, and III surface waters. **Sanibel-Captiva Conservation Foundation ("SCCF"), Calusa Waterkeeper**, **Friends of the Everglades, Florida Wildlife Federation, and the City of Stuart, Florida,** join the Center in this petition.

We respectfully request that the Administrator invoke his authority under section 303(c)(4)(B) of the Clean Water Act ("CWA") to make a determination that a new standard for cyanotoxins is necessary to meet the requirements of the Clean Water Act. Federal standards are necessary because existing state standards and protocols are inadequate to protect public health from these pollutants. EPA must move swiftly amid state inaction and public policy counsels in favor of EPA exercising its authority when the state does not uphold its end of the bargain under the Act's framework of "cooperative federalism."

If there was ever the time for the EPA to determine that a new water quality standard is necessary to protect human health from harmful cyanobacteria blooms, it is now. Over the past two decades, Florida has experienced a proliferation of harmful algal blooms ("HABs") that, as recently as last summer, have been so massive that they can be observed from space.[1] These blooms have killed and injured wildlife, made people sick, and damaged local economies throughout the state. Domestic, industrial, and agricultural wastes, coupled with rising temperatures and changes in precipitation driven by climate change, are contributing to the increased frequency and magnitude of HABs and the production of cyanotoxins.[2] Water management decisions and operations further exacerbate HABs by interrupting natural flows and discharging algae-laden water into sensitive brackish estuaries and coastal marine waters. This is most evident in Lake Okeechobee, the "liquid heart" of America's Everglades, where the U.S.

[1] NASA. Earth Observatory. Algal Bloom in Lake Okeechobee, at https://earthobservatory.nasa.gov/images/151581/algae-bloom-in-lake-okeechobee.
[2] Rastogi, R.P., D. Madamwar, and A. Incharoensakdi. 2015. Bloom dynamics of cyanobacteria and their toxins: environmental health impacts and mitigation strategies. Front. Microbiol. 17 https://doi.org/10.3389/fmicb.2015.01254

Army Corps of Engineers often discharges billions of gallons of nutrient- and algae-laden water to the Caloosahatchee and St. Lucie Estuaries. Yet, the Corps can only do so much as water quality is primarily the state's responsibility under the Clean Water Act, subject to EPA oversight.[3] Unfortunately, as water quality continues to deteriorate and the climate becomes increasingly hotter, the damaging effects of these blooms to water quality, fisheries, recreation, economies, human health, and animals are only expected to increase.[4]

Concerned about the harm caused by cyanotoxins and no doubt keenly aware of the events unfolding in Florida over the past decade, the EPA released health advisory values for algal toxins in drinking water in 2015,[5] issued draft recommended human health recreational ambient water quality guidelines for the cyanotoxins microcystin and cylindrospermopsin in 2016,[6] and published final recommended values for these cyanotoxins in recreational waters in 2019.[7] These values are intended to guide states in adopting their own water quality standards. **It is worth noting that EPA took these actions under two different administrations.**

Microcystins are the most common cyanotoxins found worldwide and have been reported in surface waters in most states.[8] Environmental factors such as nutrient load, increased water temperature, salinity, pH, light intensity, and reduced mixing provide competitive advantages to Microcystis relative to other phytoplankton.[9] This cyanotoxin thrives in warmer temperatures.[10] Cylindrospermopsin can be produced by several cyanobacteria species and the highest concentrations tend to occur below the surface water.[11] Consequently, visible surface scums are not an accurate measure of their presence in the water column.[12]

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[3] *See* 33 U.S.C. § 1313.
[4] Preece, E.P., F.J. Hardy, B.C. Moore, and M. Bryan. 2017. A Review of microcystin detections in estuarine and marine waters: environmental implications and human health risk, Harmful Algae 61: 31-45.
[5] EPA, EPA Issues Health Advisories to Protect Americans from Algal Toxins in Drinking Water (May 6, 2015), at https://archive.epa.gov/epa/newsreleases/epa-issues-health-advisories-protect-americans-algal-toxins-drinking-water.html.
[6] U.S. Environmental Protection Agency. 2016. Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin, Draft. (EPA 2016).
[7] U.S. Environmental Protection Agency. 2019. Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin. (EPA 2019), at https://www.epa.gov/sites/default/files/2019-05/documents/hh-rec-criteria-habs-document-2019.pdf; EPA, Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin, Notice of Availability, 84 Fed. Reg. 26413-26414 (June 6, 2019).
[8] EPA (2016) at 25.
[9] *Id*. at 15.
[10] *Id*.
[11] *Id.* at 1.
[12] *Id*. at 1, 5.

On May 23, 2019, Petitioners Center, SCCF, and Calusa Waterkeeper submitted a petition for rulemaking to the Florida Department of Environmental Protection ("FDEP") requesting the state to promulgate recreational water quality criteria for the cyanotoxins microcystin and cylindrospermopsin (Exhibit 1). On June 24, 2019, FDEP issued an order granting the petition to initiate rulemaking "to the extent that it seeks the initiation of triennial review rule development process, which the Department has already commenced, and consideration during this process of adopting criteria for microcystins and cylindrospermopsin." (Exhibit 2). The Center, SCCF, and Calusa Waterkeeper submitted detailed comments to FDEP regarding their triennial review during the public comment period. (Exhibit 3).

Five years later, FDEP has still not completed its review and submitted the results to EPA. (Exhibit 4; Fla. Admin. Register, Vol. 45, No. 62 (Mar. 29, 2019).[13] Further, Florida has no water quality criteria for cyanotoxins in surface waters, no drinking water standards for cyanotoxins, and no quantitative guidelines for cyanotoxins in waters used for recreation. In fact, the state does not intend to establish water quality criteria for these cyanotoxins (Exhibit 5), despite EPA's issuance of Final Recommended Human Health Recreational Ambient Water Quality Criteria and the Florida Blue Green Algae Task Force's recommendations to adopt such criteria. (Exhibit 6). Instead, it intends to rely on criteria for chlorophyl-a as a "proxy," despite the numerous inadequacies associated with such an approach (as explained in more detail below).

While FDEP remains listless in its efforts to complete its triennial review—much less develop any water quality protections from cyanotoxins—Florida's residents, visitors, aquatic ecosystems, and local economies are continually harmed by the toxic effects of widespread harmful algal blooms that have ravished the state due in large part to inadequately managed nonpoint source pollution and a warming climate.[14]

This petition is brought pursuant to the Administrative Procedure Act ("APA"), 5 U.S.C. § 553(e), to request EPA to take the following actions: (1) make a determination pursuant to the Clean Water Act, 33 U.S.C. § 1313(c)(4)(B), that new water quality criteria for cyanotoxins are necessary for Florida to protect designated uses; and (2) promulgate federal regulations applicable to Florida, pursuant to 33 U.S.C. § 1313(c)(4), setting forth new water quality criteria for microcystins and cylindrospermopsin, as necessary to meet the requirements of the Act.

II. PETITIONERS

Center for Biological Diversity is a nonprofit, public interest environmental organization dedicated to the protection of imperiled species and the habitat and climate they need to survive.

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[13] *See also*, FDEP Triennial Review of Water Quality Standards, *at* https://floridadep.gov/dear/water-quality-standards/content/triennial-review-water-quality-standards.

[14] For an in-depth discussion of cyanotoxins, their impacts, and nutrient pollution, please see Petition for Rulemaking, From the Center for Biological Diversity, Sanibel-Captiva Conservation Foundation, and Calusa Waterkeeper to Florida Department of Environmental Protection and Environmental Regulation Commission to Establish Water Quality Standards for Cyanotoxins in Florida Surface Waters (May 23, 2019) (Exhibit 1).

The Center works to secure a future for all species, great or small, hovering on the brink of extinction. The Center also seeks to protect biodiversity and human health from toxic substances while promoting a deep understanding of the inextricable connection between the health of humans and all other species. The Center advances its mission through science, legal action, policy advocacy, creative media, and grassroots campaigning.

The Center has 4,116 members and 95,512 supporters in Florida, including hundreds of members who live in some of the most damaged areas of the state, including in Hendry, Lee, Martin, Okeechobee, Palm Beach, and St. Lucie counties. These areas have been directly impacted by the discharge of cyanobacterial blooms from Lake Okeechobee and the subject of emergency declarations resulting from harmful algae blooms.

Center members, supporters, and staff also engage in water based recreational activities such as fishing, kayaking, canoeing, bird watching, and nature observation on surface waters throughout the state, including Lake Okeechobee, the Caloosahatchee River and Estuary, the St. Lucie River and Estuary, and the Indian River lagoon.

Center members have been and continue to be impacted by harmful algal blooms throughout the state. The threat of exposure to cyanobacteria has prevented members and staff from recreating on or near affected waters. One member even developed respiratory issues from what was suspected as continued exposure to cyanobacteria while working on and near the Caloosahatchee River.

Founded in 1967, **Sanibel-Captiva Conservation Foundation** (SCCF) is a 501(c)(3) non-profit organization dedicated to the conservation of coastal habitats and aquatic resources on Sanibel and Captiva and in the surrounding watershed.

SCCF is the largest private landowner on Sanibel Island. The organization manages more than 1,200 acres on Sanibel and more than 600 acres on surrounding islands. SCCF has facilitated the acquisition and fundraising for an additional 470 acres currently managed by the State of Florida and the U.S. Fish and Wildlife Service. Some of SCCF's properties have public access hiking trails. SCCF also has a native landscapes and garden center.

For over fifty years, SCCF has maintained several program areas, including: wildlife and habitat management, sea turtle research and monitoring, environmental education, natural resource policy, and a marine research laboratory. SCCF members, staff, and board of directors also frequently boat, fish, kayak and engage in other recreational activities in and around Pine Island Sound and the Caloosahatchee River and Estuary.

SCCF members, staff, and volunteers have all been impacted by the algae blooms in the Caloosahatchee River and Estuary. During the algal blooms of 2018, members could not use these waters to recreate due to cyanotoxins being present and those members who live on or in close proximity to the Caloosahatchee River were also unable to recreate and enjoy their waterfront properties in fear of the health issues that accompany exposure to cyanotoxins.

Calusa Waterkeeper, Inc. is a Florida non-profit organization, with more than 300 members, dedicated to the protection of the Caloosahatchee River and Estuary from Lake Okeechobee to the

coastal waters.

Calusa Waterkeeper began in 1995 as Caloosahatchee River Citizens Association, Inc. Calusa Waterkeeper was admitted to the Waterkeeper Alliance in 2015 as an affiliate organization and in December 2016, became a full member in Waterkeeper Alliance,[15] adopting the new name Calusa Waterkeeper, Inc.

Calusa Waterkeeper members advocate for the protection of the Caloosahatchee River as their recreational and business interests, as well as their quality of life, are directly affected by cyanobacteria blooms. Several members have experienced health effects from exposure to cyanotoxins and the threat of being exposed to cyanotoxins have prevented Calusa Waterkeeper members from participating in environmental programs within and along waters impacted by the cyanobacteria blooms.

Founded in 1969 by writer and advocate Marjory Stoneman Douglas, **Friends of the Everglades** ("Friends") is a 501(c)(3) non-profit dedicated to preserving, protecting, and restoring the only Everglades in the world. Friends has three strategic goals:

1. Compel government agencies to comply with existing environmental laws, and resist any efforts to weaken such laws.
2. Encourage politicians to recognize the long consequences of their actions.
3. Spread awareness of the importance of the Everglades to the South Florida ecosystem.

The organization advances its mission and goals through grassroots advocacy, scientific research, litigation, and public outreach and education. Over the years, Friends has waged successful Clean Water Act litigation to enforce pollution limits in the Everglades.

Friends of the Everglades has more than 29,000 supporters, many of whom reside near or recreate in waterways and wetlands of the Greater Everglades region. In 2019, Friends of the Everglades moved its headquarters from Miami to Stuart, Florida, a community on the front lines of recurring cyanobacteria blooms that are fueled by nutrient-laden discharges from Lake Okeechobee to the St. Lucie River and Indian River Lagoon. Friends is deeply engaged in advocacy to improve water management and water quality in order to safeguard public health and environmental resources across the Greater Everglades.

Founded in 1936, the **Florida Wildlife Federation, Inc.** (Federation) is a private, statewide, non-profit citizens' conservation education organization dedicated to protecting and conserving Florida's iconic species, wild places, and water resources.

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[15] Waterkeeper Alliance is a 501(c)(3) nonprofit organization dedicated to protecting and restoring the nation's waterways through enforcement, fieldwork, advocacy, and environmental education for the benefit of communities that rely on these precious inland and coastal resources. Waterkeeper Alliance unites more than 300 waterkeeper organizations and affiliates. These organizations and affiliates patrol and protect more than 2.5 million square miles of rivers, lakes, and coastal waterways on six continents. Waterkeeper Alliance has 13 membership organizations overseeing separate water basins throughout Florida.

The Federation's mission is to conserve Florida's wildlife, habitats, and natural resources through education, advocacy, and science-based stewardship. Statewide, over 35,000 members and supporters are active participants in protecting, restoring, and connecting our remaining wildlife habitats, safeguarding water quality and quantity, and addressing ongoing climate change.

For over eight decades, the Federation has been at the forefront of efforts to conserve and protect Florida's iconic species, wild places, and precious natural resources. With a diverse coalition of supporters, the Federation empowers Floridians to act on the most pressing issues facing the health and sustainability of our wildlife and habitats.

The Federation's members, supporters, and staff have been and continue to be impacted by harmful algal blooms throughout the state, specifically related to the waterbodies of the St. Lucie, St Johns, and Caloosahatchee Rivers and Lake Okeechobee. As a recreation and conservation-focused organization, the environmental and public health implications of harmful algal blooms jeopardize the ability of the Federation's members, supporters, and staff to participate in recreational activities that connect them with Florida's land, water, and fish and wildlife.

The regulation of cyanobacteria is crucial for **Stuart, Florida**, due to its profound impact on our community. Toxic algae blooms in the St. Lucie Estuary pose significant health risks to residents and wildlife. In the past, we have had fatalities among animals where our resident's dogs have died from the exposure to the rotting algae.

Because the St. Lucie River is used as a storm water discharge for Central Florida and Lake Okeechobee, Stuart is often forced to accept millions of gallons of polluted water which would not naturally occur or flow into the St. Lucie estuary. When this nutrient rich fresh water containing unimaginably high levels of Cyanobacteria is pumped into the tropical waters of the St. Lucie estuary it causes algae blooms that destroy the sea grass, the riverbed and virtually all wildlife in its path. Environmentally, these blooms lead to dead zones by depleting oxygen levels, resulting in fish kills and damaging the delicate ecosystem. Economically, the presence of harmful algae deters tourism and recreational activities, directly affecting local businesses and reducing property values. Sadly, the polluted water has left a stained waterway in its wake. To both the north and south of Stuart, the waters are azure blue with white sands and sea grass supporting extensive tropical ecosystems. In Stuart the water is a cloudy brown color that oozes out of the inlet and follows the tide along the beaches. The residents and tourists have become reluctant to get near it.

Implementing stringent regulations and proactive measures to control nutrient pollution and manage water quality is essential to safeguard Stuart's natural beauty, promote public health, and ensure the community's economic vitality.

Accordingly, Petitioners have a substantial interest[16] in a rule establishing water quality standards for cyanotoxins, which would help protect people (including the Petitioners' members) from recreational exposure to these harmful constituents. By promulgating water quality criteria for cyanotoxins, the EPA would establish clear numeric baselines for Florida's waters, which are used as sources of drinking water, places to recreate, areas to propagate and harvest shellfish, and habitat for the state's abundant and diverse wildlife. These criteria would form the basis of water quality monitoring and help identify which waters are impaired by cyanotoxins. Routine monitoring (not dependent on the observation of a bloom) would also provide state environmental and health officials with critical information to notify the public of the health and safety risks of recreating in waters with high cyanotoxin levels.

By setting numeric limits, Florida will be able to identify waters impaired by cyanotoxins and develop better total maximum daily loads (TMDLs), basin management action plans (BMAPs), best management practices (BMPs), and other nonpoint source controls to specifically prevent HAB outbreaks. Establishing these water quality criteria would further help optimize watershed planning, protection, and restoration in watersheds like Lake Okeechobee, the St. Lucie River and Estuary, Caloosahatchee River and Estuary, St. Johns River, and Lake Worth Lagoon by establishing a specific performance measure that is tied to protecting human health through primary contact recreational exposure, as well as fish and wildlife and the aquatic environment. These protections would in turn help protect and restore the waters the Petitioners and their members advocate for, use, and enjoy.

III. LEGAL FRAMEWORK

A. Clean Water Act

Congress passed the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[17] The Clean Water Act provides a comprehensive framework for protecting our nation's water quality from both point source[18] and nonpoint source pollution.[19]

This framework turns in large part on the implementation of water quality standards. To that end, Section 303 of the Act directs states, subject to EPA approval, to develop and enforce comprehensive water quality standards establishing water quality goals for all intrastate waters.[20]

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[16] *See* 5 U.S.C. § 553(e) (providing an "interested person" the right to petition for the issuance, amendment, or repeal of a rule"). The term "person" includes "an individual, partnership, corporation, association, or public or private organization other than an agency." *Id*. § 551(2).
[17] 33 U.S.C. § 1251(a).
[18] A "point source" is "any discernable, confined and discrete conveyance… from which pollutants are or may be discharged. 33 U.S.C. § 1362(14).
[19] Non-point source pollution is "the type of pollution that arises from many dispersed activities or large areas, and is not traceable to any single discrete source." *Nw. Envtl. Def. Ctr. v. Brown*, 640 F.3d 1063, 1080 (9th Cir. 2011).
[20] 33 U.S.C. §§ 1311(b)(I)(C), 1313; *PUD No. 1 of Jefferson Cty v. Washington Dept. of Ecology*, 511 U.S. 700, 704 (1994).

These standards must "protect the public health or welfare, enhance the quality of water and serve the purposes of the [Clean Water Act]."[21]

Water quality standards are central to the design and plan of the Clean Water Act and are at the heart of each strategy of pollution control under the Act. A water quality standard "defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria that protect the designated uses."[22] Uses are typically specified as part of a classification system, with the highest class consisting of potable water supplies.[23] The Clean Water Act requires that the classification system provide water quality for the protection and propagation of fish, shellfish, and wildlife and provide for recreation in and on the water where attainable.[24] Any existing use and water quality necessary to continue supporting that use must also be protected and maintained.[25] Criteria then build on these "uses," fleshing out state water quality standards. These criteria may be expressed as numerical constituent concentrations, narrative statements, or both,[26] and represent a quality of water that supports a particular use.[27] States are encouraged to adopt numeric values based on EPA guidance[28] and water quality criteria must "accurately reflect[] the latest scientific knowledge."[29] "Water quality standards play an important role in maintaining and improving the cleanliness and safety of the nation's waterbodies, because they are designed to determine which waterbodies are safe enough to support their designated uses."[30]

In addition to identifying designated uses and establishing criteria to protect these designated uses, states must also develop and adopt a statewide anti-degradation policy and identify the methods for implementing such a policy as part of their state water quality standards.[31] Pursuant to Florida's "antidegradation" policy, "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."[32]

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[21] 40 C.F.R. § 131.2. *See also* 33 U.S.C. § 1313(c)(2)(A).
[22] 40 C.F.R. § 131.2 (emphasis added).
[23] *See* Fla. Admin. Code. R. 62-302.400 (listing seven classes of water in Florida with associated designated uses).
[24] 40 C.F.R. § 130.3.
[25] *See id.* § 131.10(h)(1) (stating that a state may not remove an existing use unless it replaces it with more stringent criteria).
[26] *Id*. § 131.11(b)
[27] *Id*. § 131.11(a). Water quality criteria can include several types of parameters to support both a designated and existing use, including for example, minimum water flows. *See PUD No. 1 of Jefferson Cty*, 511 U.S. 700.
[28] *See id.* § 131.6.
[29] 33 U.S.C. § 1314(a)(1).
[30] *Fla. Pub. Interest Research Group Citizen Lobby, Inc. v. EPA*, 386 F.3d 1070, 1074 (11th Cir. 2004).
[31] *See* 40 C.F.R. § 131.12(a).
[32] *Id*. § 131.2(a)(2) (emphasis added).

When criteria are met, water quality will generally protect the designated use.[33] EPA regulations require states to "adopt those water quality criteria that protect the designated use" and that such criteria "must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use."[34] "In designating uses of a waterbody and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters."[35]

States are required to review their water quality standards at least once every three years and if appropriate, revise or adopt new standards.[36] This is known as the "triennial review" process. The process requires public participation, and the state must submit the results of the review, any supporting analysis for the use-attainability analysis, the methodologies used for site-specific criteria development, any general policies applicable to water quality standards, and any revisions of the standards to the Regional Administrator for review and approval, within 30 days of the final state action to adopt and certify the revised standard. If no revisions are made as a result of the review, the state must submit its results within 30 days of the competition of the Review.[37] "In addition, if a State does not adopt new or revised criteria for parameters for which EPA has published new or updated CWA section 304(a) criteria recommendations, then the State shall provide an explanation when it submits the results of its triennial review to the Regional Administrator…"[38]

Any new or revised water quality standards must be submitted to EPA for review and approval or disapproval.[39] After the state submits its officially adopted revisions, the Regional Administrator shall either: 1) notify the State within 60 days that the revisions are approved, or (2) notify the State within 90 days that the revisions are disapproved.[40] If the EPA disapproves of a state's revisions, the notification must specify the changes needed to ensure compliance with the requirements of the Act and the implementing regulations, and explain why the State standard is not in compliance with these requirements.[41] Any new or revised State standard must be accompanied by supporting analysis.[42] If the State does not adopt the changes specified by the

[33] *Id.* § 131.3(b).
[34] *Id*. § 131.11(a)(1).
[35] *Id*. § 130.10(b). States must develop and adopt a statewide anti-degradation policy and identify the methods for implementing such a policy as part of their state water quality standards. *See* 40 C.F.R. § 131.12(a).
[36] 33 U.S.C. § 1313(c)(1).
[37] 40 C.F.R. § 131.20 (b) and (c).
[38] 40 C.F.R. § 131.20(a).
[39] 33 U.S.C. § 1313(c)(2)(A).
[40] 40 C.F.R. § 131.21 (a)(1)-(2).
[41] *Id*. § 131.21 (a)(2).
[42] *Id*. The Regional Administrator's approval or disapproval of a State water quality standard shall be based on the requirements of the Act as described in 40 C.F.R. §§ 131.5 and 131.6. 40 C.F.R. § 131.21(b).

Regional Administrator within 90 days after notification of disapproval, the Administrator must promptly propose and promulgate such standard.[43]

EPA may determine, even in the absence of a state submission, that a new or revised standard is needed to meet the requirements of the Clean Water Act.[44]

33 U.S.C. § 1313(C)(4) provides in full:

> The Administrator shall promptly prepare and publish proposed regulations setting forth a revised or new water quality standard for the navigable waters involved-
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> (A) If a revised or new water quality standard submitted by such State under paragraph (3) of this subsection for such waters is determined by the Administrator not to be consistent with the applicable requirements of this chapter, or
>
> (B) In any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of this chapter.[45]

Under the implementing regulations, this determination must be signed by the Administrator, or his or her duly authorized delegate, and contain a statement that the document constitutes an Administrator's determination under section 303(c)(4)(B) of the Act.[46] "In promulgating water quality standards, the Administrator is subject to the same policies, procedures, analyses, and public participation requirements established for States in these regulations."[47] The Administrator has exercised their discretion to issue section 303(c)(4)(B) necessity determinations on several occasions.[48]

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[43] 40 C.F.R. § 131.22(a).
[44] 33 U.S.C. § 1313(c)(4)(B); 40 C.F.R. 131.22(b).
[45] *Id*. (emphasis added).
[46] 40 C.F.R. § 131.22(b)(1)-(2).
[47] 40 C.F.R. § 131.22(c).
[48] *See* EPA, Proposed Rule, Water Quality Standards to Protect Aquatic Life in the Delaware River, 88 Fed. Reg. 88315, 88336 (Dec. 21, 2023); EPA, Final Rule, Water Quality Standards for the State of Florida's Lakes and Flowing Waters, 75 Fed. Reg. 75,762, 75,763, 75,711 (Dec. 6, 2010); EPA, Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 65 Fed. Reg. 31,682, 31,687 (May 18, 2000); EPA Decision Letter on New Water Quality Standards for St. Louis Segment of the Mississippi River from Peter S. Silva, U.S. Envtl. Prot. Agency, Assistant Adm'r for Water, to Mark N. Templeton, Dir. MO Dep't of Nat. Res. (Oct. 9, 2002); EPA, Final Rule, Water Quality Standards for the Colville Indian Reservation in the State of Washington, 54 Fed. Reg. 28,622, 28,624 (July 6, 1989); EPA, Final Rule, Water Quality Standards for the Surface Waters of the Commonwealth of Kentucky, 52 Fed. Reg. 9102, 9102-03 (Mar. 20, 1987).

Thus, while states play a lead role in establishing water quality standards, "EPA serves as a backstop."[49] As the Court in explained in *Northwest Environmental Advocates v. U.S. Envtl. Prot. Agency*:

> Not only does EPA have to review state-adopted WQS, but it must also 'promptly prepare and publish' new WQS for a state 'in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of this chapter.' **While this 'necessity determination' is discretionary, it exists to ensure EPA has a mechanism to meet the CWA's goals to protect and enhance water quality where a state fails to uphold its part of the bargain.[50]**

B. APA

Under the Administrative Procedure Act ("APA"), interested persons have the right to petition for the "issuance, amendment, or repeal" of an agency rule.[51] A "rule" is the "whole or part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy."[52]

After receiving a petition for rulemaking, the EPA must consider the petition "within a reasonable time,"[53] which courts have found is "typically counted in weeks or months, not years."[54] In addition, "prompt notice shall be given of the denial in whole or in part of a written application, petition, or other request of an interested person made in connection with any agency proceeding."[55]

Petitioners can challenge an agency's refusal to promulgate rules under Section 706(2)(A) of the APA.[56] This includes a decision by EPA to deny a petition for rulemaking under section 303(c)(4)(B) of the Clean Water Act.[57]

IV. EPA'S RECOMMENDED CRITERIA FOR CYANOTOXINS

In consideration of the human health effects of cyanotoxins resulting from recreational exposure, EPA in 2016 published draft recommended values for microcystins and cylindrospermopsin under section 304(a) of the Clean Water Act for states to consider as the basis for swimming

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[49] *Northwest Environmental Advocates v. U.S. Envtl. Prot. Agency,* 577 F. Supp. 3d 1190, 1198 (W.D. Wash.), vacated in part by, *Northwest Env't Advocates v. U.S. EPA*, 2022 U.S. Dist. LEXIS 160035, 2022 WL 3867419 (W.D. Wash. Aug. 30, 2022) (granting joint motion to amend and modifying the Court's December 29, 2021 Order on Cross-Motions for Summary Judgment).
[50] *Id*. at 1198-99 (emphasis added).
[51] 5 U.S.C. § 553(e).
[52] *Id*. § 551(4).
[53] *Id*. § 555(b).
[54] *In re Am. Rivers & Idaho Rivers United*, 372 F.3d 413, 419 (D.C. Cir. 2004).
[55] 5 U.S.C. § 555(e).
[56] *See Massachusetts v. EPA*, 549 U.S. 497, 527, 127 S. Ct. 1438, 167 L. Ed. 2d 248 (2007).
[57] *See Gulf Restoration Network v. McCarthy*, 783 F.3d 227, 232-42 (5th Cir. 2015); *Nw. Envtl. Advocates v. United States EPA*, 2021 U.S. Dist. LEXIS 102761 (W.D. Wash. June 1, 2021)

advisories for notification purposes in recreational waters to protect the public.[58] In developing these recommended values, EPA noted that states may also consider using these values when adopting new or reviewed water quality standards.[59] The EPA explained that if adopted as water quality standards and approved by the agency under section 303(c) of the Clean Water Act, these water quality standards could be used for all Clean Water Act purposes.[60] States could also use these values as both swimming advisory values and/or water quality standards.[61] EPA envisioned that if states decided to use the values as swimming advisory values they would do so in a manner similar to their current recreational water advisory programs.[62]

Based on available noncancer health effects information,[63] EPA recommended values protective of primary contact recreation for microcystins at 4 micrograms per liter and for cylindrospermopsin at 8 micrograms per liter.[64] The values are based on overall exposure to children at the 90th percentile.[65] If used as a swimming advisory to protect swimmers at a beach, the values are not to be exceeded on any single day.[66] If used as water quality criteria for assessment and listing purposes, EPA recommended that states consider the number of exceedances of no more than 10 percent of days per recreational season up to one year.[67]

On May 22, 2019, EPA issued its final recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin.[68] EPA's final recommended values are 8 µg/L for microcystins and 15 µg/L for cylindrospermopsin.[69] EPA published these recommended values under Section 304(a) of the Clean Water Act for states to consider as the basis for swimming advisories for notification purposes in recreational waters to protect the public.[70] States may also consider using these values when adopting new or revised water quality standards.[71]

Although a state is not required to adopt new or revised criteria for parameters for which EPA has published new or updated CWA section 304(a) criteria recommendations, the state must provide an explanation for not adopting the criteria when it submits the results of its triennial review to the Regional Administrator of the EPA consistent with Section 303(c)(1) of the Clean Water Act and the requirements of 40 C.F.R. §131.20(c).[72] As explained earlier, Florida has

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[58] EPA (2016) at 1.
[59] *Id*.
[60] *Id*.
[61] *Id.*
[62] *Id.*
[63] EPA concluded that for microcystins and cylindrospermopsin that there was inadequate information at the time to assess carcinogenic potential of cyanotoxins. EPA may revise its recommendations if additional information becomes available. *Id*. at 2.
[64] *Id*.
[65] *Id.*
[66] *Id.*
[67] *Id.*
[68] EPA (2019).
[69] *Id*. at 16-17.
[70] *Id*. at 4.
[71] *Id*.
[72] 40 C.F.R. § 131.20(a).

neither completed its triennial review, nor has it explained to EPA why it will not adopt criteria for cyanotoxins.

Despite inaction by the State of Florida, other states severely impacted by HABs are taking action to protect their residents and visitors from cyanotoxins. As of 2019, twenty-one states have implemented HAB response guidelines in the event of a significant bloom in recreational waterways. These include specific criteria for analyzing the severity of a bloom and the actions—public advisories, posted warnings, waterway or beach closures, among others—that correspond to a bloom that meets a certain threshold.[73] Since then, it appears more states have implemented HAB response guidelines, with twenty-six states using cyanotoxin guidance values for microcystins as a basis for issuing advisories according to a 2021 survey.[74] California, Illinois, Indiana, Iowa, Kansas, Massachusetts, Nebraska, Ohio, Oklahoma, Oregon, Rhode Island, Texas, Vermont, Virginia, and Washington, all have a numeric component of their recreational water guidelines that require their respective state environmental and public health agencies to issue alerts, advisories, and closures.[75] For example, in Virginia, the presence of a blue-green algal scum or mat on the water surface *or* the presence of microcystin levels above 6 ppb, triggers a series of actions including immediate public notification and weekly sampling.[76]

In addition to these recommended recreational water quality criteria for cyanotoxins, in 2015, the EPA released health advisory values for algal toxins in drinking water.[77] Health advisory values identify the concentration of a contaminant in drinking water at which adverse health effects are not expected to occur over specific exposure deadlines (e.g. ten-days).[78] They serve as information technical guidance for Federal, State, and local governments and water system managers in protecting public health when emergency spills or contamination events occur.[79] Health advisory values provide information on the environmental properties, health effects, analytical methodology, and treatment for removal of drinking water contaminants.[80] There are health advisory values for more than 200 contaminants.[81]

Citing gastroenteritis and liver and kidney damage as potential health effects from longer exposure to higher levels of algal toxins in drinking water, the EPA recommended 0.3 micrograms per liter for microcystin and 0.7 micrograms per liter for cylindrospermopsin as

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[73] EPA, Guidelines and Recommendations, at https://19january2017snapshot.epa.gov/nutrient-policy-data/guidelines-and-recommendations_.html.
[74] Hardy, F. Joan, Preece, E. and Backer, L. 2021. Status of state cyanoHAB outreach and monitoring efforts, United States, Lake Reserv. Manag. 2021 Feb; 37(3): 246-260.
[75] *Id*.
[76] *Id*.
[77] EPA, EPA Issues Health Advisories to Protect Americans from Algal Toxins in Drinking Water (May 6, 2015), at https://archive.epa.gov/epa/newsreleases/epa-issues-health-advisories-protect-americans-algal-toxins-drinking-water.html.
[78] EPA. 2015. Drinking Water Health Advisory for the Cyanobacterial Microcystin Toxins, EPA Doc. Number 820R15100, p. 3, June 15, 2015, at https://www.epa.gov/sites/default/files/2017-06/documents/microcystins-report-2015.pdf.
[79] *Id*.
[80] *Id*.
[81] *Id*.

levels not to be exceeded in drinking water for children younger than school age.[82] These health advisory values are based on exposure for ten days.[83]

Florida similarly lacks any standards or guidelines for cyanotoxins in drinking water.[84] In contrast, as of 2019, several states have implemented guidance values including Minnesota, Ohio, Oregon, and Vermont. Ohio, which like Florida, experiences some of the most widespread and harmful blooms in the country, has explicit "do not drink" action levels for several cyanotoxins, including microcystin and cylindrospermopsin.[85] Oregon and Ohio have had health advisories for cyanotoxins in drinking water since 2011. Comparatively, Florida indicated in response to a 2021 survey that it does not have a state outreach program to address cyanotoxin exposure in drinking water.[86]

V. CYANOBACTERIA BLOOMS HAVE CAUSED WIDESPREAD HARM THROUGHOUT THE STATE.

Harmful algae blooms have inflicted damage across Florida, from the St. Johns River to Florida Bay. In 2005, a *Microcystis* bloom in the Lower St. Johns River covered a 100-mile stretch from Jacksonville to Crescent City.[87] In 2009, a 14-mile long algal bloom, linked to surface water runoff of nutrients and pollutants, impacted Tampa Bay.[88] In 2010, algal blooms and fish kills once again hit the St. Johns River.[89] From 2005-2008 and again in 2013 and 2015, widespread HABs killed marine life throughout Florida Bay.[90]

Some of the largest and most destructive HABs in Florida have occurred in Lake Okeechobee, where they have been documented since the early 1980s but have increased in their frequency,

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[82] EPA News Release, at https://archive.epa.gov/epa/newsreleases/epa-issues-health-advisories-protect-americans-algal-toxins-drinking-water.html.
[83] *Id*.
[84] It also appears that Florida does not enforce EPA health advisories for cyanotoxins in drinking water, leaving it up to the public utility to decide their own policy. *See* American Water Works Association, Cyanotoxins in US Drinking Water: Occurrence, Case Studies and State Approaches to Regulation (Sep. 2016).
[85] EPA, Guidelines and Recommendations, at https://19january2017snapshot.epa.gov/nutrient-policy-data/guidelines-and-recommendations_.html.
[86] Hardy, F. Joan, Preece, E. and Backer, L. 2021. Status of state cyanoHAB outreach and monitoring efforts, United States, Lake Reserv. Manag. 2021 Feb; 37(3): 246-260.
[87] *See* Environmental Protection Agency, Water Quality Standards for the State of Florida's Estuaries, Coastal Waters, and South Florida Inland Flowing Waters, Proposed Rule, 77 Fed. Reg. 74924, 74935 (Dec. 18, 2012).
[88] *See id*.
[89] *See id*.
[90] *See* Hubbard, K. Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute. 2018. Harmful Algae Blooms and Implications for the Florida Keys, at https://nmsfloridakeys.blob.core.windows.net/floridakeys-prod/media/docs/20181016-habupdate.pdf.

intensity, and duration over the last decade.[91] The lake's shallow depth, along with nutrient runoff and warm water temperatures provide ideal conditions for HABs.[92] Much of this nutrient and algae-laden water is discharged into the St. Lucie and Caloosahatchee estuaries, resulting in widespread destruction in 2005, 2008, 2013, 2016 and 2018.

In 2005, following several strong tropical storms, toxic *Microcystis aeruginosa* blooms formed in Lake Okeechobee and were discharged downstream into the St. Lucie estuary.[93]

In mid-June 2008, a toxic blue-green algae bloom occurred north of the Franklin Lock on the Caloosahatchee River and forced the temporary shut-down of the Olga Water Treatment Plant, which obtains its source water from the Caloosahatchee and provides drinking water for 30,000 people.[94]

In 2013, after additional tropical storms, the Corps once again discharged *M. aeruginosa* blooms in Lake Okeechobee into the St. Lucie estuary.[95] More than 5,000 people attended a rally at Phipps Park and the St. Lucie Locks in Martin County in response.[96]

In 2016, a 239-square mile HAB occurred in Lake Okeechobee, during an almost-year long period of releases to the St. Lucie and the Caloosahatchee.[97] Beaches were closed and then Gov. (now Senator) Rick Scott declared a state of emergency in Martin, St. Lucie, Palm Beach, and Lee Counties.[98]

In 2017, heavy rain from Hurricane Irma and above-average rainfall in May 2018 set the stage for possibly the largest ever summer algal bloom in Lake Okeechobee; the Corps discharged toxic algae filled water into the St. Lucie and Caloosahatchee estuaries.[99] Finding the "release of

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[91] Rosen, B. H., T.W. Davis, C.J. Gobler, B.J. Kramer, and K.A. Loftin. 2016. Cyanobacteria of the 2016 Lake Okeechobee and Okeechobee Waterway Harmful Algal Bloom.
[92] Havens, K. 2013. Deep Problems in Shallow Lakes: Why Controlling Phosphorus Inputs May Not Restore Water Quality. IFAS Extension. University of Florida; Havens, K, et al. 2016. Natural Climate Variability Can Influence Cyanobacteria Blooms in Florida Lakes and Reservoirs. IFAS Extension. University of Florida.
[93] Preece, et al. (2017).
[94] Environmental Protection Agency, Water Quality Standards for the State of Florida's Lakes and Flowing Waters, Final Rule, 75 Federal Register 75762, 75769 (Dec. 6, 2010).
[95] Preece, et al. (2017).
[96] *See* Crystal Vander Weit and Eric Hasert, Photos: A look back at Lake O discharges and toxic algae blooms over the last 20 years, TC Palm, (April 4, 2024), at www.tcpalm.com /picture-gallery/news/2024/04/04/a-look-back-at-toxic-algae-blooms-from-lake-o-discharges-since-2005/73197475007/.
[97] EPA (2016) at 20, 28.
[98] *Id.* at 29.
[99] Krimsky, L., Havens, K., and Phlips, E. 2018. A response to frequently asked questions about the 2018 Lake Okeechobee, Caloosahatchee and St. Lucie rivers and estuaries algal blooms, University of Florida, IFAS, Blogs, at http://blogs.ifas.ufl.edu/extension/2018/07/10/algal-blooms-faq/.

water from Lake Okeechobee and increase in algae blooms, including overwhelming amounts of cyanobacteria (blue-green algae) which can produce hazardous toxins, has unreasonably interfered with the health, safety, and welfare of the State of Florida and its residents," Governor Scott again issued a state of emergency, this time in Glades, Hendry, Lee, Martin, Okeechobee, Palm Beach, and St. Lucie Counties.[100]

Following these discharges in 2018, researchers collected samples from the Caloosahatchee River at Fort Myers into Pine Island Sound and up to Boca Grande during an extended bloom of *Microcystis spp.* and a bloom of *Karenia brevis* in coastal waters of the Gulf of Mexico that coincided in the Fort Myers Area.[101] High concentrations of microcystin-LR, the most toxic of microcystins that can cause liver damage, were detected in a cyanobacteria bloom along with neurotoxic brevetoxins from marine samples.[102] High freshwater flows pushed the cyanobacterial bloom to barrier island beaches and microcystins could be detected in the marine environment at a salinity of 41 mS/cm.[103] The research suggested that under certain conditions such as high-water flows, cyanobacteria blooms may extend some distance into marine environments containing detectable cyanotoxins of known health concern.[104] This highlights the potential for multiple, potentially toxic blooms to co-exist in the marine environment.[105]

The damaging discharges from Lake Okeechobee in 2005, 2008, 2013, 2016, and 2018 had a significant impact on the ecology of the northern estuaries and inflicted significant economic losses in commercial fishing, recreation tourism, and the real estate sectors.[106] These HABs also

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[100] State of Florida, Office of the Governor, Executive Order Number 18-191 (Emergency Management-Lake Okeechobee Discharge/Algae Blooms), (July 9, 2018), available at https://www.flgov.com/wp-content/uploads/2018/07/EO-18-191.pdf.

[101] Metcalf, J.S., Banack, S.A., Wessel, R.A., Lester, M., Pim, J.G., Cassani, J.R., Cox, P.A. 2020. Toxin Analysis of Freshwater Cyanobacterial and Marine Harmful Algal Blooms on the West Coast of Florida and Implications for Estuarine Environments. Neurotoxicity Research, https://doi.org/10.1007/s12640-020-00248-3.

[102] *Id. See also*, National Library of Medicine, PubChem, Microcystin-LR, at https://pubchem.ncbi.nlm.nih.gov/compound/445434; Centers for Disease Control and Prevention, Emergency Preparedness and Response, Case Definition: Brevetoxin, at https://emergency.cdc.gov/agent/brevetoxin/casedef.asp#:~:text=Brevetoxins%20are%20a%20group%20of,oral%20ingestion%20of%20contaminated%20shellfish.

[103] Metcalf et al. (2020).

[104] *Id*.

[105] *Id.*

[106] South Florida Water Management District. 2018. Central Everglades Planning Project Post Authorization Change Report: Feasibility Study and Draft Environmental Impact Statement. (SFWMD 2018b).

sickened and killed family pets,[107] forced local businesses to close,[108] and diminished waterfront property values.[109]

Since then, these blooms have only continued. FDEP reported that blooms covered approximately 45% of the Lake in 2022, which was comparable to levels in 2020 and 2021.[110] In 2023, Lake Okeechobee experienced a cyanobacteria bloom that covered about 380 square miles (more half the area of the Lake).[111] The bloom threatened nearby towns[112] and the Department of Health issued public health warnings.[113] TCPalm recently published a photo report chronicling the damaging effects of toxic algae blooms and the toll it has taken on local coastal communities over the past twenty years.[114]

Harmful algal blooms are beginning to occur this spring within Lake Okeechobee and the coastal estuaries. According to FDEP's March 22-28, 2024 monitoring report, microcystin levels above the EPA's recommended levels were reported at the St. Lucie Canal-96th Street Bridge (17 ppb) and St. Lucie River-Four Rivers (11 ppb).[115] Local news sources are reporting on the situation.[116] And like all of FDEP's monitoring reports (as discussed in greater detail below), absent a general

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[107] Treadway, T. 2018. Toxic algae killed east coast dog after contact with St. Lucie River, owner says necropsy reveals, TC Palm (Sept. 17, 2018) at https://www.naplesnews.com/story/news/environment/2018/09/17/report-shows-dog-killed-toxic-blue-green-algae-st-lucie-river/1339559002/.

[108] *See* Hagan, Alex. 2018. Stuart business owner: 'Algae killed us,' Jul. 3, 2018, WPTV, at https://www.wptv.com/news/region-martin-county/stuart-business-owner-algae-killed-us-.

[109] *See* Ruane, Laura. 2018. Florida's algae crisis and lingering red tide hurt waterfront home sales, Jul. 13, 2018. Fort-Myers News Press, at https://www.news-press.com/story/news/2018/07/13/floridas-algae-crisis-and-lingering-red-tide-hurt-home-sales/769673002/.

[110] NASA Earth Observatory, "Blooming Lake Okeechobee," at https://earthobservatory.nasa.gov/images/150093/blooming-lake-okeechobee.

[111] NASA. Earth Observatory. Algal Bloom in Lake Okeechobee, at https://earthobservatory.nasa.gov/images/151581/algae-bloom-in-lake-okeechobee.

[112] Dan Egan, "It's Toxic Slime Time on Florida's Lake Okeechobee," New York Times (Jul. 9, 2023).

[113] Nathalie Vega, "Inundated with algae, Lake Okeechobee faced a slimy season," Sun-Sentinel (Oct. 9, 2023)

[114] Crystal Vander Weit and Eric Hasert, Photos: A look back at Lake O discharges and toxic algae blooms over the last 20 years, TC Palm, (April 4, 2024), at www.tcpalm.com /picture-gallery/news/2024/04/04/a-look-back-at-toxic-algae-blooms-from-lake-o-discharges-since-2005/73197475007/.

[115] FDEP, Blue-Green Algal Bloom Weekly Update, at https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20032824.pdf.

[116] *See* Ed Killer, Toxic algae in St. Lucie river and canal are in dangerous concentrations, DEP confirms, TCPalm (March 29, 2024), at www.tcpalm.com/story/news/local/indian-river-lagoon/health/2024/03/29/lake- okeechobee-discharges-bring-toxic-algae-to-st-lucie-river-c-44-canal-dep-water-samples/73143698007/.

disclaimer, the latest reports fail to include any discussion about the human health impacts that might result from levels that exceed EPA's recommended levels of 8 ppb.

A. Recent Monitoring Reports Reflect Widespread Cyanobacteria Blooms Throughout the Year.

The last few years has seen a proliferation of cyanobacteria blooms across the state. Since May 2019, which coincides with the time EPA issued its final recommended criteria for cyanotoxins and Petitioners filed their petition for rulemaking with the State of Florida, DEP has posted weekly blue-green algae bloom updates on its website.[117] More recently, these updates have included monitoring reports.[118] On numerous occasions, the state reported widespread and sustained algal blooms and cyanotoxin levels that greatly exceeded the 8 micrograms per liter (µg/L) and 15 µg/L (or 8 ppb and 15 ppb)[119] EPA recommended criteria for microcystins and cylindrospermopsin, respectively. Below are just some of the results across the state and throughout the seasons, over a nearly five-year period:

- 32.0 ppb (unnamed but presumably microcystins) at the S351 rim canal location on Lake Okeechobee (July 19-July 25, 2019 update)[120]
- **192.9 ppb** total microcystins at Lake Okeechobee-SE, 71.75 ppb at Lake Okeechobee SW, 26.33 ppb at Lake Okeechobee South (August 23-29, 2019 update)[121]
- 34.75 ppb total microcystins at S5A in the C-51 Canal (September 6-September 12, 2019 update)[122]
- 28.25 ppb total microcystins at Cypress Lake Boat Ramp at Northwest Shore (December 13-19, 2019 update)[123]
- **560 ppb total microcystins** at Harbor Isle Lake, Southern Lobe, 150 ppb total microcystins at Lake Jenny Jewel and 34 ppb total microcystins at Lake Anderson (February 14-20, 2020 update)[124]
- **120 ppb** total microcystins at C44, S153 (downstream) (April 17-April 23, 2020 update)[125]

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[117] FDEP, Weekly Updates and Subscriptions, at https://floridadep.gov/sec/sec/content/weekly-updates-and-subscription.

[118] Previously, on several occasions these updates did not include any information regarding toxin levels. *See, e.g.,* FDEP, Blue-Green Algal Bloom Weekly Update, Reporting May 17-May 23, 2019, at https://floridadep.gov/sites/default/files/AlgaeBloomWeekly052319_1.pdf (reporting that there were "22 site visits" where microcystin toxins were detected but providing no information about the where these samples were collected or the levels that were reported).

[119] 1 microgram per liter (µg/L) is equal to 1 part per billion (1ppb).

[120] https://floridadep.gov/sites/default/files/AlgaeBloomWeekly072519.pdf

[121] https://floridadep.gov/sites/default/files/AlgaeBloomWeekly082919_0.pdf

[122] https://floridadep.gov/sites/default/files/AlgaeBloomWeekly091219_1.pdf

[123] https://floridadep.gov/sites/default/files/AlgaeBloomWeekly121919.pdf

[124] https://floridadep.gov/sites/default/files/AlgaeBloomWeekly022020.pdf

[125] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-042320.pdf

- **800ppb total microcystins** at northern portion of Lake Okeechobee (L004) (June 19-25, 2020 update)[126]
- 99.25 ppb total microcystins at Lake Okeechobee (LZ40 near surface sample) on June 30, 2020 and 290 ppb total microcystins at the same location on June 24, 2020 (June 26-July 1, 2020 update)[127]
- 28 ppb total microcystins at Harbor Isles Lake Southern Lobe and 45 ppb total microcystins at Harbor Isles Lake NW Lobe (August 21-27, 2020 update)[128]
- 62 ppb total microcystins at Lake Okeechobee (KBARSE station) (September 4-10, 2020 update)[129]
- 46 ppb total microcystins at Lake Okeechobee (NCENTER station) (September 18-24, 2020 update)[130]
- 57 ppb total microcystins at the Santa Rosa Sound-Laurel St. and Bay St. drainage; 52 ppb and 53 ppb microcystins at the POLE3S and PELBAY3 monitoring stations at Lake Okeechobee, respectively (September 25, October 1 2020) update[131]
- **610 ppb total microcystins** at Harbor Isle Lake-Southern Lobe (January 15-21, 2021 update)[132]
- **860 ppb total microcystins** at Lake Okeechobee Pahokee Marina (April 23-29, 2021 update)[133]
- **440 ppb total microcystins** at Lake Okeechobee (PALMOUT3 station) (April 30-May 6, 2021 update)[134]
- 77 ppb total microcystins at Lake Okeechobee-S352 (Lakeside station) (May 7-13, 2021 update)[135]
- 86ppb total microcystins at C51 Canal-S155A (upstream station) (May 14-20, 2021 update)[136]
- 36 ppb total microcystins at Lake Okeechobee (L004 station) (September 3-9, 2021)[137]
- 44ppb total microcystins at Lake Okeechobee (PALMOUT2 station) (October 1-7, 2021 update)[138]

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[126] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-062520.pdf
[127] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-070120_1.pdf
[128] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-082720.pdf
[129] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-091020_0.pdf
[130] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20092420.pdf
[131] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20100120_0.pdf
[132] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom%20WE%20012121.pdf
[133] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom%20WE%20042921.pdf
[134] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-050621_1.pdf
[135] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-051321.pdf
[136] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-052021.pdf. *See also* Scott Sutton and Matt Sczesny, Health alert sign posted at Lake Worth Beach park because of algae concerns, WPTV (May 14, 2021), at www.wptv.com/news/protecting-paradise/health-alert-sign-posted-at-lake-worth-beach-park-because-of-algae-concerns.
[137] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-090921.pdf
[138] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-100721.pdf

- **460 ppb of total microcystins** at Lake Okeechobee (Pahokee Marina) (November 26-December 2, 2021 update)[139]
- 50 ppb of microcystins at Lake Sue (February 25-March 3, 2022 update)[140]
- 20 ppb of microcystins at Lake Kinsale (with no algal sample collected) (July 29-August 4, 2022 update)[141]
- **950 ppb of microcystins** at Moody Lake (scum sample) (October 28-November 3, 2022 update)[142]
- **100 ppb of microcystins** at Georges Lake-Boat Ramp Rd. and 49 ppb microcystins at Georges Lake-Center (February 10-16, 2023 update)[143]
- **9000 ppb of microcystins** at Georges Lake-Boat Ramp Rd., (February 17-23, 2023 update)[144]
- **150 ppb of microcystins** at Lake Okeechobee (S352 Lakeside) (April 28-May 4, 2023 update)[145]
- 52 ppb of microcystins at Lake Okeechobee (S271 lakeside); 32 ppb and 27 ppb microcystins at Lake Okeechobee (S352 Lakeside) (June 9-15, 2023 update)[146]
- **233 ppb microcystins** at Lake Okeechobee (S308C lakeside); 50 ppb at Lake Okeechobee (EASTSHORE); 28 ppb microcystins at Lake Okeechobee (POLESOUT3) (June 16-22 update), 2023[147]
- **170 ppb microcystins** at Lake Okeechobee -S308C (lakeside) (July 7-13, 2023 update)[148]
- 59 ppb microcystins at Lake Okeechobee-S308C Lakeside (July 14-20, 2023 update)[149]
- **160 ppb microcystins** at Caloosahatchee-Jaycee Park; 57 ppb microcystins at C44 Canal-S308C (canal side); 48 ppb microcystins at Caloosahatchee River-Horton Park (July 21-27, 2023 update)[150]
- 25 ppb microcystins at Lake Grenada-Boat Ramp (November 17-30, 2023 update)[151]

Although only a snapshot, these monitoring results illustrate harmful blue-green algae blooms are occurring throughout the year and across the state. Perhaps most concerning, these levels often greatly exceed EPA's recommended criteria (by a multitude of more than 10, 100, and even

[139] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-120221_0.pdf
[140] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-030322.pdf
[141] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-080422.pdf
[142] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-110322.pdf
[143] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-021623.pdf
[144] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloomWeekly-022323.pdf
[145] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20050423.pdf
[146] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20061523.pdf
[147] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20062223.pdf
[148] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20071323.pdf
[149] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20072023.pdf
[150] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20072723.pdf
[151] https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20113023.pdf

1000) and there are no signs that there will be fewer occurrences any time soon. Health alerts are regularly being issued across the state.[152]

B. Cyanotoxins Threaten Florida's Drinking Water Supplies.

Cyanotoxins pose a threat to the state's drinking water. In May 2021, the City of West Palm Beach collected raw water samples from Clear Lake (a source of its drinking water) and finished water samples from its treatment plant showing cylindrospermopsin in the drinking water at levels above the 0.7 µg/L EPA health advisory.[153] The City issued a water advisory for vulnerable populations and established a point of distribution for the dissemination of bottled water to residents affected by the advisory.[154] Clear Lake receives its water in part from Lake Okeechobee.[155] Following the event, the City of West Palm Beach convened an expert panel that issued a report containing a series of recommended actions to reduce the risks to drinking water.[156]

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[152] Cheryl Smith, Lake O discharges: DOH issues health alert for more toxic algae in St. Lucie River, C-44 (April 2, 2024), at www.tcpalm.com/story/news/local/indian-river-lagoon/2024/04/02/doh-health-alert-toxic-algae-st-lucie-river-c-44-canal-lake-okeechobee-discharges-lake-o-releases/73180732007/; Florida Department of Health, Palm Beach County, Health Officials Issue Blue-Green Algae Bloom Alert for Lake Okeechobee Pahokee Marina (April 12, 2024), at https://palmbeach.floridahealth.gov/newsroom/2024/04/algae-okeechobee.html; Florida Department of Health, Lake County, Health Officials Issue Blue-Green Algae Bloom Alert for Lake County Lake Yale-Center (LYC) (April 22, 2024), at https://lake.floridahealth.gov/newsroom/2024/04/HEALTHOFFICIALSISSUEBLUE-GREENALGAEBLOOMALERTFORLAKECOUNTYLAKEYALE-CENTERLYC.html; Florida Department of Health, Orange County, Health Officials Issue Blue-Green Algae Bloom Caution for Lake Arnold -N. Sore (April 19, 2024), at https://orange.floridahealth.gov/newsroom/2024/04/blue-green-algae-lake-arnold.html; Florida Department of Health, Seminole County, Health Official Issues Blue-Green Algae Bloom Alert for Seminole County-Lake Jesup (April 26, 2024), at https://seminole.floridahealth.gov/newsroom/2024/04/algae-lake-jesup.html; Florida Department of Health, Lee County, DOH-Lee-Officials-Issue-Blue-Green-Algae-Bloom-Alert-at-Caloosahatchee River (April 26, 2024), at https://lee.floridahealth.gov/newsroom/2024/04/DOH-LEE-OFFICIALS-ISSUE-BLUE-GREEN-ALGAE-BLOOM-ALERT-AT-CALOOSAHATCHEE-RIVER.html.

[153] City of West Palm Beach, *Drinking Water Advisory* (May 28, 2021), https://www.wpb.org/Home/Components/News/News/1699/16.

[154] *Id*.; City of West Palm Beach. *Update on Vulnerable Populations Water Advisory* (June 3, 2021), *at* https://www.wpb.org/Home/Components/News/News/1722/16.

[155] *See* Kimberly Miller, *Look at this lake: Is West Palm's drinking water supply in danger?,* PALM BEACH POST (Jul. 23, 2019), *at* https://www.palmbeachpost.com/news/20190723/look-at-this-lake-is-west-palms-drinking-water-supply-in-danger.

[156] City of West Palm Beach, Cyanotoxin Expert Panel, at https://www.wpb.org/government/public-utilities/cyanotoxin-expert-panel.

In June 2008, a toxic algae bloom occurred east of the Franklin Lock on the Caloosahatchee River and forced the temporary shutdown of the Olga Water Treatment Plant, which obtains its source water from the Caloosahatchee and provides drinking water to more than 30,000 people.[157] The water treatment plant was shut down again on May 5, 2011 because of algae and high salinities.[158] In 2012, a toxic blue-green algae bloom was identified from the City of LaBelle to the S-79 structure and later reappeared at the Olga Water Treatment Plant.[159] In May to June 2013, cyanobacteria blooms eventually led to the temporary closure of the plant.[160] In June 2015, a potentially toxic algal bloom at the Franklin Lock and Dam caused Lee County to shut down the plant and the Florida Department of Health issued a health notice to avoid contact with the Caloosahatchee River due to potentially toxic blooms.[161] The plant then went offline on May 30, 2017 for about three weeks due to cyanobacteria concerns.[162] On May 11, 2021 it was reported that algae at the plant was "thickening and stringy,"[163] that the algae at the plant was becoming more prevalent on May 18, 2021,[164] and "algae around the plant are in a thick layer along the banks."[165] It was reported that the plant was offline during this time.[166]

Concerns about the potential threat of cyanotoxins to drinking water supplies are not limited to areas impacted by discharges or that receive water from Lake Okeechobee.[167]

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[157] Environmental Protection Agency, Water Quality Standards for the State of Florida's Lakes and Flowing Waters, Final Rule, 75 Federal Register 75762, 75769 (Dec. 6, 2010).
[158] *See* Crisis in the Caloosahatchee: Algal blooms in local waters, Sanibel Captiva Island Reportr, Islander, and Current (June 8, 2011), at https://www.captivasanibel.com/2011/06/08/crisis-in-the-caloosahatchee-algal-blooms-in-local-waters/
[159] South Florida Water Management District, C-43 West Basin Storage Reservoir, Water Quality Feasibility Study, Deliverable 2.2.: Final Information Collection Summary Report, 12 (April 3, 2020).
[160] *Id.*
[161] *Id.*
[162] *See* https://news.caloosahatchee.org/docs/Cyanobacteria1_170822.pdf
[163] Memorandum from Periodic Scientists Conference Call Participants, Caloosahatchee & Estuary Conditions Report (May 4-10, 2021).
[164] Memorandum from Periodic Scientists Conference Call Participants, Caloosahatchee & Estuary Conditions Report (May 11-17, 2021).
[165] Memorandum from Periodic Scientists Conference Call Participants, Caloosahatchee & Estuary Conditions Report (May 18-24, 2021).
[166] *See id.*
[167] *See* Ryan Ballogg, Is Manatee County tap water safe to drink with algae bloom? Environmental group concerned, Bradenton Herald (July 13, 2023), at www.bradenton.com/news/local/article277240498.html; Jim Waymer, Climate-fed algae puts Lake Washington, Florida drinking water at risk, Florida Today (April 27, 2023), at www.floridatoday.com/story/news/local/environment/2023/04/27/central-florida-lakes-rivers-face-more-algae-blooms-in-warming-world/70079378007/. *See also* Melaram R. and Lopez-Duenas, B. (2022) Detection and Occurrence of Microcystins and Nodularins in Lake Manatee and Lake Washington-Two Floridian Drinking Water Systems. Front. Water 4:899572. doi: 10.3389/frwa.2022.899572. The researchers performed a case study of two Florida lakes

Currently, there are no federal water quality numeric criteria or regulations for cyanobacteria or cyanobacterial toxins in drinking water under the Safe Drinking Water Act. In 2015, however, the EPA released health advisory values for algal toxins in drinking water.[168] Four states (Ohio, Oregon, Minnesota, and Vermont) have also published guidance values for microcystin concentrations in drinking water.[169] A 2000 survey conducted by Burns (2008), reported that microcystins were the most commonly found toxin in pre-and post-treated drinking water in Florida.[170] Finished water concentrations ranged from below detection levels to 12.5 µg/L.[171]

There is also no program in place to monitor for the occurrence of cyanotoxins (including microcystins and cylindrospermopsin) at surface-water treatment plants for drinking water in the United States.[172] Following EPA's issuance of health advisories for algae toxins in drinking water, however, the agency published "Revisions to the Unregulated Contaminant Monitoring Rule" (UCMR 4) for public water systems (PWS) in 2016. Pursuant to the Safe Drinking Water Act (SDWA),[173] EPA is required once every five years, to issue a new list of no more than thirty (30) unregulated contaminants to be monitored by public water systems (PWSs).[174] UCMR 4 is intended to provide EPA and others with data on the occurrence and levels of contaminants in drinking water.[175] This national survey, which ran from 2018-2020, is one of the primary sources of information on occurrence and levels of exposure that the EPA uses to develop regulatory decisions for contaminants in the public drinking water supply.[176] EPA's Contaminant Candidate List (CCL), which includes anatoxin-a, cylindrospermopsin, and microcystin, was the primary source of priority contaminants considered for UCMR 4.[177] Of the 30 chemicals monitored under

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supplying drinking water adjacent communities and reported that "although results indicate a low probable health risk from cyanotoxins, more research is needed to understand the intrinsic nature of MCs and NODs by examining their prevalence, distribution, and dynamics in surface drinking water supplies serving nearby communities."

[168] EPA, EPA Issues Health Advisories to Protect Americans from Algal Toxins in Drinking Water (May 6, 2015), at https://archive.epa.gov/epa/newsreleases/epa-issues-health-advisories-protect-americans-algal-toxins-drinking-water.html.

[169] EPA, Guidelines and Recommendations, at https://19january2017snapshot.epa.gov/nutrient-policy-data/guidelines-and-recommendations_.html.

[170] EPA (2015), at 13-14 (citing Burns, J., (2008). Toxic cyanobacteria in Florida waters. In: H.K. Hudnell, (Ed.), Proceedings of the Interagency, International Symposium on Cyanobacterial Harmful Algal Blooms (ISOC-HAB): State of the Science and Research Needs, Advances in Experimental Medicine and Biology. Chapter 5. Springer Press, New York, NY. Pp. 139-152).

[171] *Id.* at 14.

[172] *Id.* at 13.

[173] EPA, "Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 4) for Public Water Systems and Announcement of Public Meeting", 81 Fed. Reg. 92666 (Dec. 20, 2016).

[174] EPA. 2016. The Fourth Unregulated Contaminant Monitoring Rule (UCMR 4), General Information, 1, at https://www.epa.gov/sites/production/files/2017-03/documents/ucmr4-fact-sheet-general.pdf ("EPA 2016b").

[175] *Id*.

[176] *Id.*

[177] *Id*. at 2. Under SDWA, EPA publishes a list of unregulated contaminants every five years that are not subject to any proposed or promulgated national primary drinking water regulations,

UCMR 4, 9 are cyanotoxins and 1 is a cyanotoxin group.[178] They include: microcystin-LR, microcystin-LA, microcystin-LY, microcystin-RR, nodularin, microcystin-LF, cylindrospermopsin, microcystin-YR, anatoxin-a, and total microcystins.[179]

Under the SWDA, EPA is to consider the data from UCMR 4 and other sources, along with peer reviewed literature, to make a regulatory determination on whether to initiate the process to develop national primary drinking water regulations (NPDWR) for these contaminants.[180] The NPDWR are legally enforceable primary standards and treatment techniques that apply to public water systems and protect human health by limiting contaminant levels in drinking water.[181] EPA has not developed NPDWR for cyanotoxins as of the date of this petition.

States can establish their own drinking water standards, however, even if they are not regulated under the NPDWR. Such was the case for several states that previously promulgated standards for per-and polyfluoroalkyl substances (PFAS) in the absence of national primary drinking water standards.[182] Despite the repeated occurrence of wide-spread HABs, and concerning incidents like the ones previously discussed, the State of Florida has failed to issue any drinking water standards for cyanotoxins.

VI. CYANOBACTERIA BLOOMS HARM HUMAN HEALTH.

A. The Public is Exposed to Harmful Cyanotoxins While Recreating.

Scientists have expressed increasing concern about the long-term health effects of families being exposed to cyanotoxins in Florida's waters.[183] Cyanobacteria blooms can produce toxins

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which are known or anticipated to occur in public water systems, and which may require regulation. The "Contaminant Candidate List" (CCL) contains cyanotoxins, including anatoxin-a, cylindrospermopsin, microcystins, and saxitoxin in the most recent, 2022 CCL 5. *See* EPA. Contaminant Candidate List (CCL) and Regulatory Determination. CCL 5 Chemical Contaminants, at https://www.epa.gov/ccl/ccl-5-chemical-contaminants.

[178] EPA (2016b) at 1.

[179] *Id*.

[180] *Id*.

[181] EPA, Ground Water and Drinking Water, National Primary Drinking Water Regulations, at https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations.

[182] *See, e.g.*, *Contaminant Levels (MCLs)*, MICHIGAN PFAS ACTION RESPONSE TEAM, at https://www.michigan.gov/pfasresponse/0,9038,7-365-95571_99970---,00.html. Michigan cited the lack of enforceable federal standards for PFAS chemicals during the development of its state drinking water standards. *See Drinking Water Rule Promulgation*, MICH. DEP'T OF ENV'T, GREAT LAKES, & ENERGY, https://www.michigan.gov/egle/0,9429,7-135-3313_3675_3691-9647--,00.html.

[183] *See, e.g.,* Metcalf, J., S.A. Banack, J.T. Powell, F.J.M. Tymm, S.J. Murch, L.E. Brand, L.E., and P.A. Cox. 2018. Public health responses to toxic cyanobacterial blooms: perspectives from the 2016 Florida event, Water Policy 20 (5): 919-932.

containing hepatoxic, neurotoxic, and cytotoxic compounds.[184] Hepatotoxins include microcystins and cylindrospermopsin while neurotoxins include anatoxins and paralytic shellfish poisons.[185]

Exposure from recreational water sources can occur through incidental ingestion while recreating, contact with the skin during activities like swimming, wading, and surfing, and inhalation as waterborne cyanotoxins are aerosolized.[186] Researchers at Florida Gulf Coast University found toxins can be inhaled and reach deep into the lungs[187] and documented airborne particles of cyanobacteria have been documented more than a mile inland from any retention ponds and three miles from the Caloosahatchee River.[188] Non-recreational exposure can occur through the consumption of cyanotoxin-contaminated drinking water and food (including fish) and during bathing or showering.[189] Studies have demonstrated bioaccumulation of cyanotoxins in mussels, crustaceans, corals, and fish.[190] Cyanotoxins may transfer through the food chain, and

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[184] EPA (2016) at 15.
[185] *Id*. at 1; Williams, C.D., J. Burns, A. Chapman, M. Pawlowicz, and W. Carmichael. 2006. Assessment of Cyanotoxins in Florida's Surface Waters and Associated Drinking Water Resources, Final Report, 4, April 11, 2006.
[186] EPA (2016) at 29-30, 35.
[187] Williams, A.B. 2018. Algae toxins are airborne and can reach deep into human lungs, FGCU research shows, Fort Myers News Press, Nov. 29, 2018 at https://www.news-press.com/story/tech/science/environment/2018/11/27/blue-green-algae-toxins-can-penetrate-lungs-fgcu-research-shows/2120238002/.
[188] Williams, A.B. 2019. Algae crisis: Airborne particles of toxic cyanobacteria can travel more than a mile inland, new FGCU study shows, Fort Myers News Press, Mar. 15, 2019 at https://www.news-press.com/story/tech/science/environment/2019/03/15/new-health-questions-raised-fgcu-research-toxic-algae-dust/3176195002/.
[189] EPA (2016) at 1.
[190] *See* Miller, M.A., Kudela, R.M., Mekebri, A., Crane, D., Oates, S.C., Tinker, M., Staedler, M., Miller, W.A., Toy-Choutka, S.T., Dominik, C., Hardin, D., Langlois, G., Murray, M., Ward, K., Jessup, D.A. 2010. Evidence for a novel marine harmful algal bloom: cyanotoxin (microcystin) transfer from land to sea otters. PLoS ONE 5(9):e 12576. doi:10.1371/journal.pone.0012576 (citing Malbrouck, C., Kestemont, P. 2006. Effects of microcystins on fish. Environmental Toxicology and Chemistry 25: 72-85; Williams, D.E., Dawe, S.C., Kent, M.L., Andersen, R.J., Craig, M., et al. 1997. Bioaccumulation and clearance of microcystins from salt water mussels, Mytilus edulis, and in vivo evidence for covalently bound microcystins in mussel tissues. Taxicon 35: 1617-1625; Vasconcelos, V., Oliveira, S., Teles, F.O. 2001. Impact of a toxic and a non-toxic strain of Microcystis aeruginosa on the crayfish Procambarus clarkii. Toxicon 39: 1461-1470; Zimba, P.V., Camus, A., Allen EH, Burkholder, J.M. 2006. Co-occurrence of white shrimp, Litopenaeus vannamei, mortalities and microcystin toxin in a southeastern USA shrimp facility. Aquaculture 261: 1048-1055; Amorim, A, Vasconcelos, V. 1999. Dynamics of microcystins in the mussel Mytillus galloprovincialis. Toxicon 37: 1041-1052; Richardson LL, Sekar, R., Myers, J.L., Gantar M., Voss, J.D., et al. 2007. The presence of the cyanobacterial toxin microcystin in black band disease of corals. FEMS Microbiology Letters 272: 182-187).

there is a possibility that these toxins can reach humans through the consumption of fish.[191] Microcystin accumulation may also possibly occur in humans.[192]

Exposures can result in gastrointestinal, dermatologic, respiratory, neurologic, and other symptoms.[193] Some exposures have resulted in severe respiratory impairment (such as pneumonia and adult respiratory distress syndrome), as well as liver and kidney damage from ingesting contaminated drinking water.[194]

Young children, pregnant women, nursing mothers, the elderly, and immunocompromised individuals may be more susceptible to the ill effects of cyanotoxins than the general population.[195] Accordingly, EPA has issued drinking water health advisories for microcystins and cylindrospermopsin that are at lower levels for bottle-fed infants and preschool-aged children than school-aged children and young adults.[196] The EPA also suggests that as a precautionary measure, other more vulnerable populations may want to consider following the recommendations for preschool age children and younger.[197]

B. Several Studies Have Documented the Human Health Effects of Cyanobacteria Blooms.

The Centers for Disease Control and Prevention (CDC) investigated 11 waterborne disease outbreaks associated with HABs occurring in freshwater lakes across the United States between 2009 and 2010.[198] These HABs affected at least 61 individuals resulting in 2 hospitalizations.[199] Researchers concluded that the time to onset of effects might be rapid, that children might be at higher risk for illness, and that HAB-associated outbreaks occur during the warmer months.[200]

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[191] Zanchett, G. and E.C. Oliveira-Filho. 2013. Cyanobacteria and cyanotoxins: from impacts on aquatic ecosystems and human health to anticarcinogenic effects, Toxins 5(10): 1896-1917.
[192] Miller et al. (2010).
[193] EPA (2016) at 4.
[194] Hillborn, E.D. and V.R. Beasley. 2015. One health and cyanobacteria in freshwater systems: animal illnesses and deaths are sentinel events for human health risks, Toxins, 1374-1395.
[195] EPA. 2015. Drinking Water Health Advisory for the Cyanobacterial Microcystin Toxins, EPA Doc. Number 820R15100, June 15, 2015.
[196] *Id.*
[197] *Id*.
[198] EPA (2016) at 4 (citing Hilborn, E.D., V.A. Roberts, L.C. Backer, E. DeConno, J.S. Egan, J.B. Hyde, D.C. Nichohlas, E.J. Weigert, L.M. Billing, M. DiOrio, M.C. Mohr, F.J. Hardy, T.J. Wade, J.S. Yoder, and M.C. Hlavsa. 2014. Algal bloom-associated disease outbreaks among users of freshwater lakes-United States, 2009-2010. Morbidity and Mortality Weekly Report (MMWR), 63, 11-15).
[199] *Id*.
[200] *Id*. In 2019, the CDC also announced that it will study Lake Okeechobee fishing guides to understand the long-term effects of exposure to cyanotoxins. *See* Williams, A.B. 2019. CDC to study how inhaled algae toxins affect Lake Okeechobee fishing guides, Fort Myers News-Press (May 20, 2019), at https://www.floridatoday.com/story/news/2019/05/20/florida-toxic-algae-cdc-study-lake-o-fishing-guides-who-inhaled-toxic-algae/3742341002/.

The New York State Department of Health surveyed 16 counties and determined that 32 people became ill in 2015 after recreating in lakes affected by HABs.[201]

HAB-associated illness from recreational exposure may be underreported due to multiple possible exposure routes and the non-specific nature of potential health effects.[202]

According to the EPA, data indicates that the primary target organ for microcystins is the liver.[203] Studies in laboratory animals document liver, kidney, and reproductive effects following short-term and sub-chronic oral exposures to microcystin-LR.[204]

Cyanotoxins have also been linked to poisoning, cancer, and disease. The International Agency for Research on Cancer classified microcystin-LR as possibly carcinogenic to humans.[205] This was based on substantial evidence supporting a plausible tumor promoter mechanism for these liver toxins.[206] According to one leading expert, "[c]yanotoxins are among the most potent toxins known, far more potent than industrial chemicals."[207]

The harmful effects of cyanobacteria blooms may be having a significant and unique impact to Florida's residents and visitors. In a 12-year study, researchers at Ohio State University identified significant clusters of deaths attributable to non-alcoholic liver disease in coastal areas impacted by cyanobacterial blooms.[208] The cluster of deaths studied in Florida occurred in St. Lucie, Indian River, and Okeechobee counties, where based on data calculated by the CDC, there was a death rate from non-alcoholic liver disease that was nearly twice as high as the national rate.[209] The study, however, did not find a causal relationship between cyanobacterial blooms and liver disease, and it did not include blooms that coincide with the discharges in 2013 and 2016.[210]

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[201] Mary Figgatt et al., Harmful Algal Bloom-Associated Illnesses in Humans and Dogs Identified Through a Pilot Surveillance System-New York, 2015. Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report, Nov. 3, 2017.
[202] EPA (2016) at 4.
[203] *Id*. at 35.
[204] *Id*. at 45.
[205] EPA Drinking Water Health Advisory for Cyanobacterial Microcystin Toxins, at 34.
[206] *Id*.
[207] Harmful Algae Blooms: The Challenges on the Nation's Coastlines, Hearing Before the Subcommittee on Energy and Environment, Committee on Science and Technology House of Representatives, 103rd Cong. 110-113 (2008) (statement by Dr. Hilton Kenneth Hudnell, Vice President and Director of Science, SolarBee, Inc.).
[208] Zhang, et al. (2015); Treadway, T. 2017. Ohio State University study links toxic algae blooms, fatal liver disease, Naples Daily News, May 22, 2017, at https://www.naplesnews.com/story/news/local/indian-river-lagoon/health/2017/05/22/ohio-state-university-study-links-toxic-algae-blooms-fatal-liver-disease/100971180/.
[209] Treadway (2017).
[210] *Id*.

C. The Cyanobacteria-Derived toxin, BMAA, Has Been Linked to Neurogenerative Disease.

The non-protein amino acid neurotoxin β-N-methylamino-L-alanine (BMAA) is a cyanobacteria-derived toxin that has been linked to neurodegenerative diseases like Lou Gehrig's disease (amyotrophic lateral sclerosis, or "ALS"), Alzheimer's disease, and Parkinsonism Dementia Complex (ALS/PDC).[211] ALS is a debilitating and fatal neuromuscular disease affecting 2 of every 100,000 people worldwide.[212]Approximately 30,000 and 500,000 people suffer from ALS and Parkinson's Disease in the United States, respectively.[213] Alzheimer's disease inflicts another 5.4 million Americans.[214] Cases of these neurodegenerative diseases are on the rise.[215] Increased longevity alone may not account for all of this increase, and heritability of these diseases is low (less than 10% of all cases).[216]

BMAA has been documented in recreational waters throughout the world,[217] and is bioaccumulating in different organisms up the food chain, presenting an increased human health risk.[218] Brand et al. (2010) found BMAA bio-concentrated in crustaceans, mollusks, and some fish in South Florida.[219] High levels of BMAA have been found in fish in the Caloosahatchee River and Florida Bay.[220] Cox et al. (2005) recommended that BMAA concentrations be monitored in invertebrates, fish, and grazing animals used for human consumption that directly consume cyanobacteria or forage on plants or prey that may have accumulated cyanobacteria-produced BMAA.[221] Subsequent published articles by other researchers, including in the *Journal of the American Medical Association*, further support these recommendations.[222]

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[211] Banack, S.A. et al. 2010. The Cyanobacteria Derived Toxin Beta-N-Methylamino-L-Alanine and Amyotrophic Lateral Sclerosis, Toxins 2010, 2, 2837-2850; Bienfang, P.K. et al. 2011. Prominent Human Health Impacts from Several Marine Microbes: History, Ecology, and Public Health Implications. International Journal of Microbiology. Vol. 2011. Article ID 152815.
[212] *Id*.
[213] Holtcamp, W. 2012. The Emerging Science of BMAA. Environmental Health Perspectives. Vol. 120, No. 3.
[214] *Id*.
[215] Brand, L. et al. 2010. Cyanobacteria Blooms and the Occurrence of the neurotoxin beta-N-methylamino-L-alanine (BMAA) in South Florida Aquatic Food Webs. Harmful Algae. 2010 Sept. 1; 9(6): 620-635.
[216] *Id*.
[217] Banack, et al. (2010).
[218] Brand, L. 2009. Human exposure to cyanobacteria and BMAA. Amyotrophic Lateral Sclerosis, 2009, (Supplement 2): 85-95.
[219] Banack, et al. (2010); Brand (2009); Brand, et al. (2010).
[220] Brand, et al. (2010).
[221] Bienfang, et al. (2011); Cox, P.A., S.A. Banack, S.J. Murch et al. 2005. Diverse taxa of cyanobacteria produce B-N-methylamino-L-alanine, a neurotoxic amino acid, Proceedings of the National Academy of Sciences of the United States of America, vol. 102, no. 14, pp. 5074-5078, 2005.
[222] Bienfang, et al. (2011) (citing Kuehn, B.M. 2005. Environmental neurotoxin may pose health threat, Journal of the American Medical Association, vol. 293, no. 20, pp. 2460-2462, 2005; Ince,

VII. EPA SHOULD EXERCISE ITS AUTHORITY TO PROMULGATE HUMAN HEALTH CRITERIA FOR CYANOTOXINS IN FLORIDA.

State water quality standards "shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses."[223] These water quality standards "shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter."[224] The Clean Water Act's implementing regulations explain that to "serve the purposes of the Act,"

> Water quality standards should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value [for] public water supplies, propagation of fish, shellfish, and wildlife, recreation in and on the water, and agricultural, industrial, and other purposes including navigation."[225]

Pursuant to Section 303(c)(4)(B) of the Act, in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of the Act, the Administrator shall promptly prepare and publish proposed regulations setting forth a revised or new water quality standard for the navigable waters involved.[226]

EPA should exercise its authority under Section 303(c)(4)(B) to promulgate water quality criteria for cyanotoxins in Florida because a federal standard is necessary to meet the requirements of the Act. Existing nutrient standards are not aimed at protecting human health and recreation; the State's sampling, testing, and monitoring requirements are inadequate; the proposed use of chlorophyll-a as a proxy is not based on sound scientific rationale; and the State has failed to submit the results of its triennial review to the EPA as required under the Clean Water Act.

Promulgating such standards is good public policy, as Florida's residents and visitors desire such protections and EPA must provide a backstop when the state fails to uphold its end of the bargain under the principles of "cooperative federalism" that underpin the Clean Water Act. EPA should act swiftly amidst state inaction and promulgate cyanotoxin standards for all of Florida's Class I, II, and III waters.

A. A Federal Standard is Necessary to Meet the Requirements of the CWA.

P.G. and G.A. Codd. 2005. Return of the cycad hypothesis-does the amyotrophic lateral sclerosis/parkinsonism dementia complex (ALS/PDC) of Guam have new implications for global health? Neuropathology and Applied Neurobiology, vol. 31, no. 4, pp. 345-353, 2005; Esterhuizen, M. and T.G. Downing. 2008. B-N-methylamino-l-alanine (BMAA) in novel South African cyanobacterial isolates, Ecotoxicology and Environmental Safety, vol. 71, no. 2, pp. 309-313, 2008).

[223] 33 U.S.C. § 1313(c)(2)(A).

[224] *Id*.

[225] 40 C.F.R. § 131.2.

[226] 33 U.S.C. § 1313(c)(4)(B).

1. Florida's Numeric Nutrient Criteria Are Not Intended to Protect Human Health.

The state's position to forgo adopting cyanotoxin standards because, among other reasons, it has "already adopted numeric nutrient criteria designed to be protective of aquatic life use support, which was determined to be the most sensitive use"[227] is based on a misunderstanding of the different categories of water quality criteria and the unique roles they play under Clean Water Act.

There are two primary categories of water quality criteria: human health criteria (HHC) and aquatic life criteria.[228] "Human health water quality criteria protect any designated uses related to ingestion of water, ingestion of aquatic organisms, or other waterborne exposure from surface waters."[229] This *may* include, but is not limited to, consumption of fish or shellfish and the protection of sources of drinking water.[230] The derivation of human health criteria requires information about the toxicological endpoints of concern for water pollutants and the pathways of human exposure to those pollutants.[231] The two primary pathways that the EPA considers when it establishes human health 304(a) criteria recommendations, including those for cyanotoxins, are direct and indirect ingestion of water and consumption of fish or shellfish obtained from the waterbody.[232] The 304(a) recommended criteria are designed to minimize the risk of adverse effects on human health from chronic or lifetime exposure to pollutants through these two primary pathways of exposure.[233] EPA uses a number of different parameters in its human health criteria derivation equations including body weight, drinking water intake, fish consumption rate, bioaccumulation, and relative source contribution, and cancer risk levels.[234] Human health criteria can also include a subset of recreational water quality criteria that are designed to protect primary contract recreational uses like "swimming, bathing, surfing, water skiing, tubing, water play by children, and similar water contact activities where a high degree of bodily contact with the water, immersion and ingestion are likely."[235] This includes the recommended human health recreational ambient water quality criteria for microcystins and

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[227] DIV. OF ENV'T ASSESSMENT & RESTORATION, FLA. DEP'T OF ENV'T PROT., TRIENNIAL
REVIEW OF FLORIDA'S WATER QUALITY STANDARDS 84 (2021), available at https://publicfiles.dep.state.fl.us/DEAR/DEARweb/Standards/Triennial%20Review%202019-2021/May%202021%20Workshop%20Technical%20Documents/MayPublicWorkshop3_19_21_All_Slides-FINAL%20PDF.pdf

[228] Environmental Protection Agency, Water Quality Standards to Protect Human Health in Florida, Proposed Rule, 88 Fed. Reg. 85530, 85531 (Dec. 8, 2023).

[229] EPA, Water Quality Standards Handbook, Chapter 3: Water Quality Criteria, 9 (Dec. 2023).

[230] *Id*. (emphasis added).

[231] *Id*.

[232] *Id*.

[233] *Id*.

[234] *Id*. at 11-16.

[235] *Id.* at 17.

cylindrospermopsin that the EPA issued in 2019, which address recommended concentrations of cyanotoxins in recreational waters to protect primary contact recreational uses.[236]

In comparison, aquatic life water quality criteria protect designated uses such as survival, growth, and reproduction of fish, invertebrates, and other aquatic organisms.[237] These criteria "are necessary to support any designated uses related to protection and propagation of fish, shellfish, and wildlife."[238] Aquatic life criteria are derived by assessing the highest concentration of a substance in water that will not present a significant risk to the aquatic organisms in the water.[239] EPA has published aquatic life 304(a) criteria recommendations that represent specific levels of chemicals or conditions in a waterbody that are not expected to cause adverse effects to aquatic life.[240] States may also adopt site-specific aquatic life criteria.[241]

Florida's numeric nutrient criteria are based on protecting aquatic life rather than human health.[242] Moreover, while nutrient pollution can adversely impact aquatic life, impair recreational designated uses, and threaten human health, by fueling algal blooms,[243] these nutrient criteria are not primarily focused on protecting human health from cyanobacteria blooms but rather on reducing impacts to flora and fauna. Florida Department of Environmental Protection (FDEP) contends but provides no additional support for the notion that these numeric nutrient criteria "also protect human health."[244] For example, there is no indication that in adopting its numeric nutrient criteria, that the state ever used cyanotoxins as a risk metric with a human health assessment endpoint for recreational uses and drinking water sources.[245] Even if the state did consider the risk to human health from cyanotoxins in its development of the numeric nutrient criteria, nutrient criteria should not be viewed as a substitute for but as complementary to cyanotoxin criteria.[246] As such, the state's reliance on numeric nutrient criteria

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[236] *Id.*
[237] 88 Fed. Reg. 85530, 85531.
[238] EPA, Water Quality Standards Handbook, Chapter 3: Water Quality Criteria, 19 (Dec. 2023).
[239] *Id.*
[240] *Id.*
[241] *Id.* 21-24.
[242] DIV. OF ENV'T ASSESSMENT & RESTORATION, FLA. DEP'T OF ENV'T PROT., TRIENNIAL
REVIEW OF FLORIDA'S WATER QUALITY STANDARDS 81–94 (2021).
[243] Water Quality Standards Handbook at 25.
[244] DIV. OF ENV'T ASSESSMENT & RESTORATION, FLA. DEP'T OF ENV'T PROT., TRIENNIAL
REVIEW OF FLORIDA'S WATER QUALITY STANDARDS 84 (2021).
[245] *See* EPA, Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs (Aug. 2021) (using metrics based on EPA's 2019 Final Recommendations for Human Health Recreational Water Quality Criteria and Swimming Advisories for Cyanotoxins).
[246] *See* EPA, Frequently Asked Questions: Implementing the 2021 Recommended Clean Water Act Section 304(a) Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoris, 23 (Oct. 2023), at Final Frequently Asked Questions: Implementing the 2021 Recommended Clean Water Act Section 304(a) Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs (epa.gov) (explaining the relationship between EPA's

to justify its decision not to establish criteria for cyanotoxins does not include sufficient parameters and constituents to protect recreational waters and other designated uses from cyanotoxins.

A more comprehensive approach is necessary to combat harmful algal blooms. By establishing criteria for cyanotoxins and incorporating cyanotoxins as biological endpoints for setting nutrient discharge limits in TMDLs,[247] the state would be able to fully address the primary contributors to harmful algal blooms, which in addition to nutrient pollution, include water management decisions (e.g. water flow and water levels), and the effects of climate change. Water quality criteria for cyanotoxins would necessitate greater regulatory focus, transparency, and accountability because these criteria would serve as a clearly defined level of human health and environmental protection that pollution control measures must meet. Further, by identifying cyanotoxins independently of nutrients, the Department would be able to better address the connection between nutrients and HABs and account for other contributors to HABs, including the timing, volume, and distribution of water flows and levels by water managers, and rising temperatures and changes in precipitation fueled by climate change. In sum, exacting water quality criteria specifically for cyanotoxins sets a clear path forward for monitoring, assessing, and reducing HABs.

2. The State's Cyanotoxin Monitoring and Recreational Advisory Protocols Do Not Fully Inform and Protect the Public.

A central requirement of the Clean Water Act is that water quality standards protect the public health or welfare. In addition to relying on numeric nutrient standards that are not intended to protect public health and recreation, the state's reliance on a flawed qualitative approach to monitor for and warn the public of recreating in waters with high cyanotoxin levels also fails to meet the requirements of the Clean Water Act.

The Florida Department of Health (FDOH) purports to have established a "collaborative protocol" with the FDEP and the Fish and Wildlife Conservation Commission (FWC) for the monitoring and public notification of algae blooms in state waters.[248] FDOH has explained that FDEP conducts sampling and testing of freshwater for blue-green algae while FWC samples and

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2021 recommended criteria for nutrients in lakes and reservoirs to its 2019 recommended human health recreational ambient water quality criteria for cyanotoxins).

[247] *See* Williams, C.D., J. Burns, A. Chapman, M. Pawlowicz, and W. Carmichael. 2006. Assessment of Cyanotoxins in Florida's Surface Waters and Associated Drinking Water Resources, Final Report, 34, April 11, 2006 (recommending that "surface water management plans, Pollution Load Reduction Goals (PLRGs), and Total Maximum Load (TMDLs) goals for nutrient-impaired water incorporate cyanobacteria and specifically cyanotoxins as biological endpoints for setting nutrient discharge limits. This strategy would help protect aquatic ecosystems and water catchments that are used for drinking water supply.").

[248] FDOH, Our Program and Partners, Bloom Monitoring and Notification, at https://www.floridahealth.gov/environmental-health/aquatic-toxins/program-and-partners/index.html.

tests marine waters for red tide.[249] FDOH then gathers that data to develop a two-tiered notification process consisting of health cautions and health alerts.[250] Health Cautions are based on the presence of a bloom and Health Alerts are issued when a toxin is detected.[251] FDOH then distributes that information to affected county health departments.[252] From there, FDOH asserts the county health departments relay that information locally through certain "established notification channels."[253] FDOH explains that "with concurrence from DEP and input from Florida's Blue Green Algae Task Force, these conservative thresholds were selected over numeric criteria because they offer the greatest protection as conditions change."[254] FDOH submits that basing these notifications on the presence of cyanobacteria or their toxins, gives the public information in case conditions worsen.[255]

The state's approach misses the mark when it comes to providing full protections to its residents and visitors. Although at first blush, it may appear that the state is taking the most conservative approach because any detectable concentration of cyanotoxins triggers a health alert,[256] such action depends entirely on agency monitoring for cyanotoxins *when a visible bloom is present* or when members of the public notify FDEP that they believe a bloom is present.

In its November 4-7, 2019 Public Workshop Presentation on the Triennial Review of Florida's Water Quality Standards, FDEP explained, the visual presence of an algal bloom is "used as a trigger by the DEP to perform Algal Bloom Response Sampling (cyanotoxins, algal ID, Nutrients, and CHl a)."[257] While FDEP contends that it "frequently monitors" Florida's water quality with the state's water management districts, it only "routinely" collects algae bloom samples "as soon as they are observed as part of this effort."[258] This approach is fundamentally flawed because it fails to provide for actual, routine monitoring and does not account for the presence of cyanotoxins when there is no visible bloom. As a result, there could be significant delays between the time cyanotoxins first occur at concentrations greater than EPA

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[249] *Id.*
[250] *Id.*
[251] *Id.*
[252] *Id.*
[253] *Id.*
[254] *Id.*
[255] *Id.*
[256] FDEP, Progress to Date and Next Steps, Miami, Florida (Feb. 1, 2023), *available at* https://protectingfloridatogether.gov/sites/default/files/documents/Progress%20To%20Date%20And%20Next%20Steps_501.pdf.
[257] FDEP, Triennial Review of Florida's Water Quality Standards, Division of Environmental Assessment & Restoration, Nov. 4-7, 2019, p. 78, at https://publicfiles.dep.state.fl.us/DEAR/DEARweb/Standards/Triennial%20Review%202019-2021/November%202019%20Workshops%20Technical%20Documentation/NovPublicWorkshop10_29_19_Final%20Presentation.pdf.
[258] FDEP, Algal Bloom Contacts, at https://floridadep.gov/dear/algal-bloom/content/algal-bloom-contacts#Health. FDEP adds that "staff can be deployed to take additional samples in response to reported blooms-whether from a citizen, or other response team agencies or other sources."

recommended guidelines and the time these levels are reported to the public, given that some of the tests that are performed to measure the levels of toxicity may take days or even weeks to run.[259] Indeed, several Florida Department of Health press releases are dated almost a week after samples were taken and/or a bloom was reported.[260] Further, the FDEP's Weekly Blue Green Algae Report often has samples pending with no follow up as to whether they came back with cyanotoxins until the following week.[261]

The potential human health effects of failing to routinely monitor for cyanotoxins when blooms are absent are far from inconsequential. As EPA explained in 2016 when it issued its draft recommended criteria for cyanotoxins, microcystins can persist even after a bloom is no longer visible and cyanotoxin concentrations can be higher after the initial bloom fades.[262] Zastepa (2014) found that dissolved microcystin-LA was present in waters at a concentration of 20 µg/L or more for 9 ½ weeks even though the bloom was not visible after 5 weeks.[263] Further, cylindrospermopsin-producing cyanobacteria do not tend to form visible surface scums, and the highest concentrations occur below the water surface.[264] Accordingly, there is little support for FDEP's position that there is a "very low incidence of toxins in waters without a visible bloom present."[265]

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[259] Blue-green algae blooms are also not selecting of cyanotoxins, making it difficult if not impossible to differentiate a toxic blooming algae from a benign bloom. *See* Wisconsin Department of Health Services, Blue-Green Algae: Health Concerns Related to Blue-Green Algae, Are all blue-green algae dangerous?, at https://www.dhs.wisconsin.gov/algae/healthconcerns.htm#:~:text=Not%20all%20algal%20blooms%20produce,bloom%20is%20dangerous%20or%20not. Therefore, quick testing is important even if a visible surface bloom has been observed and testing is initiated.

[260] *See, e.g.,* Florida Department of Health, Lake County, Health Officials Issue Blue-Green Algae Bloom Alert for Lake County Lake Yale-Center (LYC) (April 22, 2024), at https://lake.floridahealth.gov/newsroom/2024/04/HEALTHOFFICIALSISSUEBLUE-GREENALGAEBLOOMALERTFORLAKECOUNTYLAKEYALE-CENTERLYC.html.

[261] *Cf.* FDEP, Blue-Green Algal Bloom Weekly Update, Reporting June 23-June 29, 2023 (reporting Lake Okeechobee-S352 (lakeside): 33 ppb Microcystis aeruginosa), at https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20062923.pdf; FDEP, Blue-Green Algal Bloom Weekly Update, Reporting June 16-June 22, 2023 (reporting that results are pending for samples collected at Lake Okeechobee-S352 (lakeside), at https://floridadep.gov/sites/default/files/Blue-Green%20AlgalBloom_WE%20062223.pdf.

[262] EPA (2016) at 1, 5, 31.

[263] Zastepa A. (2014). Fate and persistence of microcystin congeners in lakes and lake sediments. University of Ottawa, Ottawa, Canada.

[264] EPA (2016) at 1, 5.

[265] FDEP, Triennial Review of Florida's Water Quality Standards, Division of Environmental Assessment & Restoration, Nov. 4-7, 2019, p. 79, at https://publicfiles.dep.state.fl.us/DEAR/DEARweb/Standards/Triennial%20Review%202019-2021/November%202019%20Workshops%20Technical%20Documentation/NovPublicWorkshop10_29_19_Final%20Presentation.pdf.

Because FDEP does not sample for cylindrospermopsin unless the agency or concerned citizens observe an active bloom, the state's water quality monitoring program is likely underreporting the occurrences of cylindrospermopsin levels in state waters exceeding EPA's recommended criteria. As a result of the state's reliance on qualitative criteria to sample and test for cyanotoxins, people could be exposed to harmful levels of cyanotoxins while recreating in waters that are not the subject of a health advisory. While FDEP contends that the visual presence of a bloom is used as a threshold because it "allows the public to make decisions about recreating in a water at the time of use,"[266] the public cannot make fully informed decisions without being notified that high levels of cyanotoxins may still be present despite the absence of a visible surface bloom.

Moreover, even if cyanotoxins are detected following this qualitative "trigger," DOH merely "*encourages* local county health units to issue an alert advisory."[267] The FDOH website does not explain what "established notification channels" county health departments utilize. There do not appear to be any written assurances, in state regulations or policies, that these advisories will be issued in every instance in a timely and consistent manner at the local level. It is our understanding that FDOH notifies the local county health department in the affected area and recommends options for the county health department to communicate to the local community that a Health Caution or Health Alert has been issued by FDOH. These options may include press release templates and signage. The county health department, however, appears to be under no obligation to communicate this information to the public, much less through any particular channel. Some counties may not even issue a press release for a Health Caution or a Health Alert. Indeed, it has been petitioners' collective experience, that often county health departments take no action at all.

It also appears that in addition to FDOH, the County Health Departments and FDEP, the United States Army Corps of Engineers and South Florida Water Management District have indicated that they also communicate health risk, monitoring, and reporting to the public through various different means and capacities.[268] Yet, in the case of the Corps and Water Management District, their respective websites do not appear to provide the public with the opportunity to receive email notifications of these reports and the distribution list is largely by word of mouth. Moreover, there is no health risk information that accompanies these reports, only statements about blooms occurring at structures with a narrative index describing the size of visible blooms (ranging from a "car" to "larger than a football field" and the severity from "low" to "high").[269] This is an inefficient and unnecessarily complicated process that could be simplified with easily identifiable numeric state water quality standards for cyanotoxins.

Since FDOH began posting press releases on its website regarding harmful algal blooms, it issued 73 blue-green algae alerts" in 2022, 139 blue-green algae alerts in 2023, and more than 40

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[266] *Id.*
[267] *Id.* at 78.
[268] *See* https://www.saj.usace.army.mil/Algae/.
[269] *See* USACE BGA Report (Sunday, April 7, 2024).

cautions and alerts already this year (2024).[270] Unfortunately, such alerts lack full transparency, as the public is not notified in these press releases which cyanotoxins have been detected in these waters, much less the levels that are present. To find out what cyanotoxins were identified and at what levels, the public must visit FDEP's website or subscribe to email updates and comb through weekly monitoring reports to obtain that information, as Petitioners have done here.[271] FDOH's failure to widely disseminate this information contemporaneously with the issuance of a health alert, coupled with the lack of cyanotoxin standards for which these levels could be compared to, deprives the public of important information regarding the toxicity of these blooms.

This is a critical deficiency in the state's program that cannot be overlooked. As the monitoring reports discussed above reveal, in many instances cyanotoxin levels exceed the EPA's recommended criteria ten, fifty, hundred, or even **a thousand-fold**. Cyanotoxin levels this high pose not only a risk to those who may ingest water while recreating, but also to those who have contact with the water through their skin or breath in the aerosolized toxins while visiting the affected area. **For example, some of the highest levels recorded were taken near a marina, a boat ramp, and a public park.**

Therefore, the assumption that by merely alerting the public to stay out of the water is adequate to protect public health, does not consider these other risks and pathways to exposure, much less give the public sufficient information to fully appreciate the severity of the problem and make fully informed decisions prior to recreating. Without this information, the public may also be unable to fully appreciate the severity of Florida's toxic algae crisis and communicate these concerns to state and local decisionmakers. There must be greater transparency and accountability and the public must be better informed as soon as cyanotoxins are detected in the state's waters.

Instead, the state should adopt quantitative standards, because they establish levels that can be routinely monitored for and serve as clear trigger points for public health officials to act, regardless of whether a bloom is present.[272] Further, from a public health research perspective, quantitative standards would also provide publicly available data for studies to draw more definitive conclusions due to routine monitoring.[273] Contrary to FDEP's assertion that a

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[270] FDOH, *Where are HABs*?, at https://www.floridahealth.gov/environmental-health/aquatic-toxins/where-are-habs.html.

[271] *See* FDEP, *Weekly Updates and Subscriptions*, at https://floridadep.gov/sec/sec/content/weekly-updates-and-subscription.

[272] As previously discussed, such is the case in numerous states that have numeric values in their recreational water guidelines, which require their respective state environmental and public health agencies to engage in frequent monitoring and issue alerts, advisories, and closures when these levels are exceeded.

[273] *See* Guzman, E.A., Peterson, T.A., Winder, P.L., Francis, K.T., McFarland, M., Roberts, J.C., Sandle, J. and Wright, A.E. An assessment of potential threats to human health from algae blooms in the Indian River Lagoon (USA) 2018-2021: unique patterns of cytotoxicity associated with toxins. Toxins 2023 15(11), 664; https://doi.org/10.3390/toxins15110664; Schaefer, A.M., Yrastorza, L., Stockley, N., Harvey, K., Harris, N., Grady, R., Sullivan, J., McFarland, Reif, J.S. Exposure to microcystin among coastal residents during a cyanobacteria bloom in Florida. 2020. Harmful Algae 92: 101769 https://doi.org/10.1016/j.hal.2020.101769; Florida Atlantic

qualitative trigger is adequate and consistent with the precautionary principle,[274] an approach that is not dependent on the observation of a bloom before assessing the risk to human health is far more consistent with the precautionary principle, which counsels in favor of taking action even if some cause and effect relationships are not fully established scientifically.[275] While FDEP may be concerned about the high spatial and temporal variability in algal cell and toxin concentrations in addition to the potential lag time between sample collection and the dissemination of results,[276] quantitative standards do not prevent the state from promptly notifying the public of a bloom when it is first observed.

Quantitative standards also demand a greater level of accountability from state agencies who must routinely monitor and report baseline conditions and assess whether state waters meet their designated uses and develop pollution control measures. Thus, numeric water quality criteria for recreational waters are necessary not only to provide the most informed human health advisories, but also to maintain and restore the quality of the state's waters.

Accordingly, EPA should adopt cyanotoxin criteria for the state of Florida. If the state truly has concerns regarding EPA's derivation of cyanotoxin thresholds, there is nothing preventing the state from adopting the more protective draft standards that were issued in 2016 or working with EPA to develop criteria that are best suited for the state's waters based on site-specific conditions or other scientifically defensible methods.[277]

University, FAU Seeks Participants for Study on Effects of Harmful Algal Blooms, at www.fau.edu/newsdesk/articles/habs-cape-coral-study.php.

[274] *See* FDEP, Triennial Review of Florida's Water Quality Standards, Division of Environmental Assessment & Restoration, Nov. 4-7, 2019, 79, at https://publicfiles.dep.state.fl.us/DEAR/DEARweb/Standards/Triennial%20Review%202019-2021/November%202019%20Workshops%20Technical%20Documentation/NovPublicWorkshop10_29_19_Final%20Presentation.pdf.

[275] *See* Kriebel, D., Tickner, J., Epstein, P., Lemons, J., Levins, R., Loechler, E.L., Quinn, M., Rudel, R., Schettler, T., Stoto, M. 2001. The Precautionary Principle in Environmental Science, Environmental Health Perspectives, 109(9): 871-876. A 1998 consensus statement on the precautionary principle listed four central components of the principle: 1) taking preventative action in the face of uncertainty; 2) shifting the burden of proof to the proponents of an activity; 3) exploring a wide range of alternatives to possibly harmful actions; and 4) increasing public participation in decision-making. *Id.* (citing Raffensperger C, Tickner J, eds. Protecting Public Health and the Environment: Implementing the Precautionary Principle. Washington, DC: Island Press, 1999.).

[276] *See* FDEP, Triennial Review of Florida's Water Quality Standards, Division of Environmental Assessment & Restoration, Nov. 4-7, 2019, 79, at https://publicfiles.dep.state.fl.us/DEAR/DEARweb/Standards/Triennial%20Review%202019-2021/November%202019%20Workshops%20Technical%20Documentation/NovPublicWorkshop10_29_19_Final%20Presentation.pdf; FDOH, Our Program and Partners, Bloom Monitoring and Notification, at https://www.floridahealth.gov/environmental-health/aquatic-toxins/program-and-partners/index.html.

[277] *See* 40 C.F.R. § 131.11(b)(1).

3. The Proposed Use of Chlorophyll-a as a Proxy Does Not Meet the Requirements of the Act.

In failing to adopt water quality criteria for cyanotoxins, Florida's Department of Environmental Protection stated in 2021 during its triennial review that chlorophyll-a could be used as a proxy instead.[278]

Water quality standards must contain "[w]ater quality criteria sufficient to protect the designated uses."[279] These criteria must "be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use."[280]

Chlorophyll is not an appropriate proxy for cyanotoxins or for characterizing impairment because the conditions that promote or suppress chlorophyll in water are different than the conditions that allow for cyanotoxins such as microcystin from cyanobacteria.

Studies have described the competitive advantage cyanobacteria have over phytoplankton under a variety of conditions, especially those being influenced by climate change and warming waters.[281] Cyanobacteria have adapted to maximize available light near the surface utilizing vacuoles for buoyancy whereas most phytoplankton contributing to chlorophyll concentration do not have this advantage.[282] Additionally, the presence of mat-forming cyanobacteria or very high cell densities in the water column would likely contribute to light limitation of co-occurring phytoplankton that may ultimately suppress sample chlorophyll concentrations.

High levels of tannins and other macrophyte-derived allelochemicals are found to inhibit phytoplankton that contribute to water column chlorophyll.[283] Conversely, cyanobacteria proliferate in Florida waters such as the Caloosahatchee River and Lake Okeechobee with high

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[278] *See* DIV. OF ENV'T ASSESSMENT & RESTORATION, FLA. DEP'T OF ENV'T PROT., TRIENNIAL
REVIEW OF FLORIDA'S WATER QUALITY STANDARDS 81–94 (2021), available at https://publicfiles.dep.state.fl.us/DEAR/DEARweb/Standards/Triennial%20Review%202019-2021/May%202021%20Workshop%20Technical%20Documents/MayPublicWorkshop3_19_21_All_Slides-FINAL%20PDF.pdf.

[279] 40 C.F.R. § 131.6(c).

[280] *Id*. § 131.11(a)(1).

[281] Paerl, H.W., Fulton R.S. 2006. Ecology of Harmful Cyanobacteria. In: Graneli E., Turner J.T. (eds) Ecology of Harmful Algae. Ecological Studies (Analysis and Synthesis), vol 189. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-32210-8_8; Pearl, H.W. and J. Huisman. 2009. Climate change: a catalyst for global expansion of harmful cyanobacterial blooms. Environ Microbiol Rep. 2009 Feb; 1(1):27-37 https://enviromicro-journals.onlinelibrary.wiley.com/doi/10.1111/j.1758-2229.2008.00004.x; Zhang et al. 2020 Alteration of dominant cyanobacteria in different bloom periods caused by abiotic factors and species interactions, J. Environ. Sci (China). 2021 Jan:99:1-9.

[282] Paerl and Fulton (2006).

[283] Mulderij, G. 2006. Chemical warfare in freshwater-allelopathic effects on macrophytes on phytoplankton. ISBN: 90-9019798-2.

tannins, allelochemicals, and other dissolved organic compounds (CDOM) derived from plant decomposition. Additionally, microcystin-producing *Microcystis* have been shown to have some resistance to macrophyte-derived allelochemicals that more negatively affect other phytoplankton species.[284]

Thus, *Microcystis* avoids light limitation by forming surface mats and appears to have some resistance to the same allelochemicals found in water bodies with relatively high tannins and dissolved organic plant derivatives that would more negatively impact groups of eukaryotic planktonic algae without similar adaptive strategies for dominance as cyanobacteria. In the example described, cyanobacteria would likely dominate the aquatic community and indirectly suppress or outcompete phytoplankton, indirectly reducing water-column chlorophyll. In such a scenario chlorophyll would under-represent the potential impairment of recreation as a designated use.

For these reasons, the state's reliance on chlorophyll-a as a proxy for cyanotoxin is not based on "sound scientific rationale," does not "contain sufficient parameters or constituents to protect the designated use;" and does not "support the most sensitive designated use of the water body."[285] The state's reliance on chlorophyll-a is therefore inconsistent with the requirements of the Act, and the EPA should make a determination that federal cyanotoxin standards are warranted.

4. The State Has Failed to Update Criteria as Required by Section 303(C)(2)(B) in its Triennial Review and Otherwise Explain Why Adoption of EPA Recommended Criteria is Not Warranted.

Section 303(C)(2)(B) of the Act requires all states to initiate and complete a triennial review of their water quality standards and submit their reviews to EPA. Five years after initiating its triennial review, the State of Florida has still not completed the process, much less explained to EPA why cyanotoxin standards should not be adopted. As the EPA points out in its Water Quality Handbook, it is important to explain the state's rationale to the public and to be transparent in its decision-making process.[286]

As the EPA explained in its 1992 decision to promulgate a final rule to establish water quality standards for priority toxic pollutants in 14 states," excessive delay subverts the entire concept of the triennial review cycle which is intended to combine current scientific information with the results of previous environmental control programs to direct continuing progress in enhancing water quality."[287] Since at least the early 1990's, it has been EPA's position that Sections

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[284] Dziallas, C. and Grossart, H.P. 2011. Increasing oxygen radicals and water temperature select for toxic Microcystis sp PLoS One 2011 6 e25569; Zilleges, Y. et al. The cyanobacterial hepatoxin microcystin binds to proteins and increases the fitness of Microcystis under oxidative stress conditions PLoS One 2011 6 e17615; Leunert, F. et al. 2014. Phytoplankton response to UV-generated hydrogen peroxide from natural organic matter. J Plankton Res. 2014 36 185 97.
[285] 40 C.F.R. § 131.11(a)(1).
[286] EPA, Water Quality Standards Handbook, Chapter 3: Water Quality Criteria, 3 (Dec. 2023).
[287] U.S. Envtl. Prot. Agency, Water Quality Standards; Establishment of Numeric Nutrient Criteria for Priority Toxic Pollutants; States' Compliance, 57 Fed. Reg. 60848 (Dec. 22, 1992).

303(c)(1)("triennial reviews") and 303(c)(4)(B)("necessity" determinations) should be read and used in concert to eliminate state delays and compel action.[288]

Although Florida may believe that delay is excusable because EPA's recommended criteria may not cause any additional waters in Florida to be listed as impaired in the short term,[289] cyanotoxin standards are necessary not only to restore and protect these waters but to also ensure that the state's remaining waters will not be impaired in the future. Given the crisis gripping the state, it is not an issue of "if" but "when" more waters will become impaired unless water quality standards are adopted. Thus, the adoption of cyanotoxin standards is necessary to meet the requirements and fulfill the purposes of the Act (i.e., to both restore those waters already impaired by cyanotoxins as well as *maintain* the chemical, physical, and biological integrity of those waters that are not currently impaired).[290]

B. Promulgating a Federal Standard is Good Public Policy.

1. Florida's Residents and Visitors Must be Fully Protected from Cyanotoxins.

According to a 2021 Gallup poll, water pollution remains the top environmental concern in the United States and the majority of those polled express a "great deal" of worry about the pollution of both drinking water and rivers, lakes and reservoirs.[291]

Human health-based water quality criteria serve as an informational resource for the public to better understand the types of pollution impacting our country's waterways and the risks they pose to human health. These criteria represent a quality of water that supports a particular use, such as for human consumption or for recreation. When certain criteria are exceeded, such as when there are elevated levels of bacteria or toxic pollutants, these waters can pose a threat to human health. Multiple studies present evidence linking the presence of these harmful cyanobacterial blooms with numerous public health maladies, including gastrointestinal distress, liver diseases, and neurological disorders. Given the dangers posed by cyanotoxins, the lack of water quality criteria for cyanotoxins obscures the harm inflicted on people (including Petitioners' members) using these waters to recreate. In consideration of these threats, conservation organizations, members of the

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[288] *Id.*

[289] *See* FDEP, Triennial Review of Florida's Water Quality Standards, Division of Environmental Assessment & Restoration, Nov. 4-7, 2019, 79, at https://publicfiles.dep.state.fl.us/DEAR/DEARweb/Standards/Triennial%20Review%202019-2021/November%202019%20Workshops%20Technical%20Documentation/NovPublicWorkshop10_29_19_Final%20Presentation.pdf.

[290] *See* 33 U.S.C. § 1251(a).

[291] Megan Brenan, Water Pollution Remains Top Environmental Concern in U.S. (April 19, 2021), at https://news.gallup.com/poll/347735/water-pollution-remains-top-environmental-concern.aspx. A 2016 survey of Florida residents also reported that respondents found water quality to be an issue of high importance and believed water quality had not changed, with the quality of bays getting worse. *See* Leal, A., Rumble, J.N., Lamm, A.J. (2015). Setting the Agenda: Exploring Florida Residents' Perceptions of Water Quality and Quantity Issues," Journal of Applied Communications: Vol. 99; Iss. 3. https://doi.org/10.4148/1051-0834.1058.

public, local governments, a U.S. Congressman, and the state's very own Blue-Green Algae Task Force, have voiced their support of water quality criteria for cyanotoxins.[292]

For example, on May 30, 2019, Martin County wrote to the FDEP requesting that it include EPA's final recommended criteria for microcystins and cylindrospermopsin in its rulemaking during the triennial review process. The County explained:

> As a local government with Class III and designated Outstanding Florida Waters (Jensen Beach to Jupiter Inlet and North Fork St. Lucie River Aquatic Preserves), the County needs to be able to communicate with the public about the quality of the water that is of vital importance to the health and wellbeing of its residents, visitors, and the sustainability of the overall economy. Our residents and visitors expect a high and consistent level of protection in our surface waters. Martin County believes that surface water quality standards help to achieve those protections. (Exhibit 8).

Given the inadequacies of the existing monitoring and public notification frameworks, water quality criteria would provide much needed transparency and accountability to the state's water quality program.

2. Improved Water Quality Will Result in Substantial Economic Benefits.

In addition to providing much stronger protections for human health, the promulgation of water quality criteria for cyanotoxins will lead to improved water quality, which carries with it significant recreational and economic benefits to the state. Outdoor recreation, including recreational fishing, hunting, and wildlife-viewing generate $10.1 billion annually for Florida's

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[292] *See, e.g.,* Letter from Center for Biological Diversity, Sanibel-Captiva Conservation Foundation, Calusa Waterkeeper, Sierra Club, Natural Resources Defense Council, Surfrider Foundation, Friends of the Everglades, Waterkeeper Alliance, and Bullsugar (now VoteWater), to Kaitlyn Sutton, Florida Department of Environmental Protection (Nov. 18, 2019) (Exhibit 7); Letter from Don Donaldson, Deputy County Administrator, Martin County, Florida to Kaitlyn Sutton, Florida Department of Environmental Protection, (May 30, 2019) (Exhibit 8); Florida Blue Green Algae Task Force Consensus Document #1 (Exhibit 6). U.S. Representative Brian Mast has also referenced the 2019 Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin in his comments on the dangers posed by toxic algae blooms in Lake Okeechobee. *See* Amy Bennett Williams, How much algae toxin is too much? Environmental groups urge EPA to adopt stricter guidelines for recreational exposure, The News-Press (May 23, 2019), at https://www.news-press.com/story/tech/science/environment/2019/05/23/how-much-blue-green-algae-toxin-too-much-epa-issues-guidelines-recreational-exposure-two-common-vari/1203815001/. In a July 2020 Blue Green Algae Task Force meeting, Rep. Mast asked the Task Force to recommend that the State adopt EPA's Final Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins. *See* Department of Environmental Protection Blue-Green Algae Task Force Part 1 (July 29, 2020), at https://thefloridachannel.org/videos/7-29-20-department-of-environmental-protection-blue-green-algae-task-force-part-1/.

economy.[293] Nutrient pollution and HABs can have significant impacts to state and local economies, including loss of recreational revenue, impacts to commercial fisheries, recreational fishing, and tourism, decreased property values, and increased drinking-water treatment costs.[294]

For example, harmful algal blooms may be responsible for a significant decline in the number of spotted sea trout caught by commercial fisherman and recreational anglers in Florida waters, particularly in areas most impacted by the discharges of algal laden water from Lake Okeechobee.[295] According to statewide commercial landing data, the combined catch dropped from 79,274 pounds in 2012 to 21,926 pounds in in 2017.[296] The commercial value of trout plummeted from $174,087 in 2012 to $62,801.[297] Far fewer fish are being caught per trip, with 49.5 pounds per trip in 2012 to 18.5 pounds per trip in 2017.[298] The most alarming losses are along the East coast from Volusia to Martin Counties, which experienced an 82% catch decline from 2012 to 2017 and in Lee and Charlotte Counties, where the catch suffered a 96% loss from 2012 to 2018.[299] The precipitous decline in the harvest of spotted sea trout, which reside year-round in Florida's coastal estuaries, prompted FWC staff to recommend a reduction in bag limits for recreational anglers.[300]

Harmful cyanobacteria blooms may also have a significant adverse impact on property values throughout the state. In 2015, a Florida Realtor's study found changes in the water quality of the St. Lucie Estuary, Loxahatchee Estuary, and a portion of the Indian River Lagoon north of the St. Lucie Inlet, as measured by changes to one-year average Secchi disk depth,[301] resulted in an estimated $488 million reduction in Martin County's aggregate property value between May 1, 2013 and September 1, 2013.[302] The study further found that a one-foot loss of Secchi disk depth in Lee County would be associated with an estimated loss of $541 million.[303]

A 2023 study found that if Charlotte, Lee, and Collier Counties experienced another harmful algal bloom similar to the HABs experienced in 2005 and 2018, the area would lose over $460

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[293] Florida Fish and Wildlife Conservation Commission, Economic Impact of Outdoor Recreation, at https://myfwc.com/conservation/value/outdoor-recreation/.
[294] Graham, et al. (2016); Dodds, W.K., W.W. Bouska, J.L. Eitzmann, T.J. Pilger, K.L. Pitts, A.J. Riley, J.T. Schloesser, and D.J. Thornbrugh. 2009. Eutrophication of U.S. Freshwaters: Analysis of Potential Economic Damages. Environmental Science and Technology 43(1):12-19.
[295] Killer, E. 2019. Trout trouble? Statewide water issues likely to result in reduced bag limit for spotted seatrout. TC Palm (Apr. 26, 2019).
[296] *Id*.
[297] *Id*.
[298] *Id*.
[299] *Id*.
[300] *Id*.
[301] A Secchi disk is an 8-inch disk that is slowly lowered into the water until it is no longer visible to the naked eye, at which point the depth of the disk is recorded. Florida Realtors. 2015. The Impact of Water Quality on Florida's Home Values, Final Report, v, March 2015, available at https://www.floridarealtors.org/sites/default/files/2018-11/FR_WaterQuality_Final_Mar2015_1.pdf.
[302] *Id*.
[303] *Id*.

million in commercial and recreational fishing, over 43,000 jobs, $5.2 billion in local economic output, $17.8 billion in property values with an associated $60 million in property tax revenue, and $8.1 billion in the value of outdoor recreation.[304]

While EPA does not need to evaluate the economic impacts of promulgating water quality criteria for cyanotoxins in Florida before determining under section 303(c)(4)(B) of the Act that such standards are warranted, these and other studies demonstrate the quantifiable benefits of improving water quality for the state's wildlife, inland and coastal communities, and local economies.

3. EPA Must Provide a Backstop When the State Fails to Uphold its End of the Bargain.

The Clean Water Act operates within a framework wherein the EPA and states work together to clean the nation's waters.[305] Under this framework, federal money is made available to the state contingent on its creation of a regulatory scheme that is at least as stringent as federal requirements. States can tailor federal standards like water quality criteria, establish compliance strategies, implement permitting programs, and enforce rules.[306]

A carrot-and-stick approach, however, is fundamental to cooperative federalism, as the federal government can offer significant incentives to states for implementing the Act but can also impose federal requirements when state regulations do not meet the requirements of the Act.[307] Congress made federal oversight a key component of the cooperative federalism framework embodied by the Clean Water Act because, prior to the passage of the statute, water pollution strategies were left up to the states with the federal government providing financial assistance.[308] For twenty-five years leading up to the 1972 amendments to the Clean Water Act, few states set water quality standards, much less enforced them.[309]

Thus, the Clean Water Act's goal to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters"[310] is dependent on a cooperative relationship between EPA and the State of Florida. State inaction results in unnecessary delays in achieving this goal.[311] Here, the state has failed to uphold its end of the bargain and follow the requirements of the Clean

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[304] Impacts of Water Quality on the Southwest Florida Economy, Final Report, vi, Green Economics (Dec. 20, 2023), available at Economic Impact of Water Quality Study | Sanibel-Captiva Conservation Foundation (sccf.org).
[305] *American Farm Bureau v. Fed'n v. United States EPA*, 792 F.3d 281, 288 (3rd Cir. 2015).
[306] *See* Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. Envtl. L. J. 179, 189 (2005).
[307] *See id.*
[308] Oliver A. Houck, *Cooperative Federalism, Nutrients, and the Clean Water Act: Three Cases Revisited*, 44 ENVTL. L. REP. 10426, 10426 (2014).
[309] *Id.*
[310] 33 U.S.C. § 1251(a).
[311] Bonnie A. Malloy, *Testing Cooperative Federalism: Water Quality Standards Under the Clean Water Act*, 6 Envt'l & Energy L. & Pol'y J. 63, 100 (2011).

Water Act. It has been five years since the state was required to perform its triennial review of water quality criteria and five years since EPA issued final recommended criteria for cyanotoxins. As of today, EPA has still not received the state's triennial review, nor an adequate explanation as to why cyanotoxin standards should not be adopted by the state. All the while, Florida's waters continue to be harmed by wide-spread harmful algal blooms.

It is in circumstances like these that Congress envisioned the EPA exercising its oversight responsibilities and promulgating federal standards where state standards are absent and other pollution controls remain inadequate.[312] To do so, would not only protect the state's residents and visitors from the toxic health effects of microcystins and cylindrospermopsin, but also maintain the *balance* of the cooperative federalism framework of one of our nation's landmark environmental laws.

4. EPA Must Move Expeditiously in Establishing Cyanotoxin Standards for Florida.

Petitioners submit that EPA must act expeditiously and that it is unnecessary to support the criteria in a rule on a water-body-by-water-body basis.[313] Florida has failed to fulfill its obligations to complete a triennial review of its water quality standards and submit its findings to

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[312] In its decision to promulgate a final rule establishing numeric nutrient criteria for priority toxic pollutants for 14 states, EPA explained:

> A second strong argument against requiring EPA to shoulder a heavy burden to exercise section 303(c)(4)(B) authority is that it would invert the traditional statutory scheme of EPA as national overseer and States as the entity with the greatest local expertise. CWA provides States the flexibility to tailer water quality standards to local conditions and needs based upon their wealth of first-hand experience, knowledge and data. *However, this allowance for flexibility is based on an assumption of reasoned and timely State action, not an abdication of State responsibility by failure to act*.

U.S. Envtl. Prot. Agency, Water Quality Standards; Establishment of Numeric Nutrient Criteria for Priority Toxic Pollutants; States' Compliance, 57 Fed. Reg. 60848 (Dec. 22, 1992) (emphasis added).

[313] EPA's decision not to engage in such a cumbersome, costly, and time-consuming process when it established numeric criteria for priority toxic pollutants for the State of California is instructive. As the EPA explained in its Final Rule, "To conduct research and studies of each stream segment or water body across the State of California to demonstrate that for each toxic pollutant for which EPA has issued CWA section 304(a) criteria guidance there is a 'discharge or presence' of that pollutant which could reasonably 'be expected to interfere with' the designated use would impose enormous administrative burden and would be contrary to the statutory directive for swift action manifested by the 1987 addition of section 303(c)(2)(B) to the CWA." Moreover, because these criteria are ambient criteria that define attainment of the designated uses, their application to all water bodies will result in additional controls on dischargers only where necessary to protect the designated uses. *See* Environmental Protection Agency, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 65 Fed. Reg. 31682, 31687 (May 18, 2000) (emphasis added).

EPA. Further, it has failed to act upon EPA's 304(a) recommended criteria for cyanotoxins and has offered no other scientifically defensible criteria in their place. The state has offered no indication when it intends to complete its review, much less issue any criteria aimed at reducing the presence of cyanotoxins in state waters. To ignore the state's failure to adhere to the requirements of the triennial review process set forth in 303(c)(1) and require additional studies, would simply reward inaction. Accordingly, EPA should promulgate a rule that applies to all Class I, Class II, and Class III waters in the state.

VIII. CONCLUSION

More than five years ago, Petitioners Center, SCCF, and Calusa Waterkeeper made a plea to the State of Florida to establish water quality standards for cyanotoxins. Our request, and similar requests from numerous conservation organizations, concerned citizens, local governments, elected officials, and others have gone unanswered.

Petitioners urge the EPA to honor the years of work the agency has dedicated to researching and developing its recommended criteria, appreciate the gravity of the crisis that is unfolding in Florida, and exercise its Congressionally delegated powers to make a determination pursuant to the Clean Water Act, 33 U.S.C. § 1313(c)(4)(B), that:

(1) new water quality criteria for cyanotoxins are necessary for Florida to protect designated uses, and
(2) promulgate federal regulations applicable to Florida, pursuant to 33 U.S.C. § 1313(c)(4), setting forth new water quality criteria for microcystins and cylindrospermopsin, as necessary to meet the requirements of the Act.

Doing so will undoubtedly help protect residents and visitors from the wide-spread harm being inflicted by harmful algal blooms across our state.

Sincerely,

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List of Exhibits

Exhibit 1: Petition for Rulemaking, From the Center for Biological Diversity, Sanibel-Captiva Conservation Foundation, and Calusa Waterkeeper to Florida Department of Environmental Protection and Environmental Regulation Commission to Establish Water Quality Standards for Cyanotoxins in Florida Surface Waters (May 23, 2019).

Exhibit 2: State of Florida, Department of Environmental Protection, In Re: Petition to Initiate Rulemaking to Establish Water Quality Criteria for Cyanotoxins, OGC Case No. 19-0419, Order (June 25, 2019).

Exhibit 3: Letter from Center for Biological Diversity, Sanibel-Captiva Conservation Foundation, Calusa Waterkeeper and Conservancy of Southwest Florida to Florida Department of Environmental Protection, Re: Comments on Triennial Review of Water Quality Standards (Cyanotoxin Criteria) (May 19, 2021).

Exhibit 4: Florida Department of Environmental Protection, Notice of Development of Rulemaking (Fla. Admin. Register, Vol. 45, No. 62).

Exhibit 5: Florida Department of Environmental Protection, Triennial Review of Florida's Water Quality Standards, Division of Environmental Assessment & Restoration (May 5, 2021).

Exhibit 6: Florida Blue Green Algae Task Force Consensus Document #1.

Exhibit 7: Letter from Center for Biological Diversity, Sanibel-Captiva Conservation Foundation, Calusa Waterkeeper, Sierra Club, Natural Resources Defense Council, Surfrider Foundation, Friends of the Everglades, Waterkeeper Alliance, and Bullsugar (now VoteWater), to Kaitlyn Sutton, Florida Department of Environmental Protection (Nov. 18, 2019).

Exhibit 8: Letter from Don Donaldson, Deputy County Administrator, Martin County, Florida to Kaitlyn Sutton, Florida Department of Environmental Protection, (May 30, 2019).