

November 25, 2020

Water Docket  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

**RE: Vessel Incidental Discharge National Standards of Performance**

Docket #: EPA-HQ-OW-2019-0482

Dear Environmental Protection Agency,

On behalf of the undersigned organizations, we respectfully submit comments in response to the Environmental Protection Agency (EPA) Vessel Incidental Discharge National Standards of Performance proposed rule. Our organizations represent environmental, conservation, hunting and fishing organizations, all sharing a priority of ensuring that invasive species are not introduced into or spread throughout the Great Lakes and St. Lawrence River, with an adverse resource impact on their ecosystems, dependent communities and economies.

**The Aquatic Invasive Species Problem**

Aquatic Invasive Species (“AIS”) are a persistent and unique problem in U.S. coastal and inland waters, costing the United States billions of dollars annually.[1] Ship-borne invasive species cost the Great Lakes Region alone at least \$200 million dollars every year.[2] This is a dire problem that must be solved. The EPA estimates that approximately 67 non-indigenous species currently “pose high or medium risk for becoming established in the Great Lakes and for causing ecological harm.”[3]

AIS pose several dangers to aquatic ecosystems, including: outcompeting native species, threatening endangered species, damaging habitat, changing food webs, and altering the chemical and physical aquatic environment. Invasive species are thought to have been involved in 70% of this century's extinctions of native aquatic species, and 42% of current endangered species are impacted significantly by invasive species.[4]

AIS have caused substantial damage to recreational and commercial fisheries, infrastructure, and water based recreation and tourism. Invasive mollusks such as zebra mussels can also cause boat engines to overheat, and can cover shorelines, diminishing interest in visiting infested beaches.[5] Industrial facilities can be adversely affected by invasive mussels, which attach to surfaces of water intake structures, navigation dams, pumping stations, and gears, impacting the delivery of public services and resulting in significant industry costs.[6]

Pathogens can also be transported in ballast water.[7] Non-native strains of epidemic cholera, have previously been confirmed in U.S. waters.[8] Additional pathogenic bacteria identified in ballast water known to be associated with adverse human health impacts include *E. coli*,

enterococci, *Vibrio cholerae*, *Clostridium perfringens*, *Salmonella* spp. *Cryptosporidium* spp., and *Giardia* spp., as well as a variety of viruses.[9]

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[1] Nat'l Aquatic Nuisance Species Task Force, *Aquatic Nuisance Species Impacts*, ANS Task Force.gov (last visited Jan. 31, 2012), [http://www.anstaskforce.gov/more\\_impacts.php](http://www.anstaskforce.gov/more_impacts.php).

[2] U.S. Dep't of Agric., *Annual Losses to Great Lakes Region by Ship-borne Invasive Species at least \$200 Million*, National Invasive Species Information Center (July 2008), [http://www.glu.org/sites/default/files/lodge\\_factsheet.pdf](http://www.glu.org/sites/default/files/lodge_factsheet.pdf).

[3] U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, *Predicting Future Introductions of Nonindigenous Species to the Great Lakes*, at 1 (Nov. 2008). Modeling fourteen of the 58 potential invasive species showed that the shallower portions of the Great Lakes appear to be most vulnerable to invasion. *Id.* at 2.

[4] U.S. EPA, *Invasive Non-Native Species available at* <http://www.epa.gov/owow/watershed/wacademy/acad2000/invasive.html>

[5] See, e.g., *The Zebra Mussel Invasion*, NOAA: U.S. Dept. of Commerce available at [http://www.noaa.gov/features/earthobs\\_0508/zebra.html](http://www.noaa.gov/features/earthobs_0508/zebra.html); *Zebra Mussels*, National Atlas available at [http://nationalatlas.gov/articles/biology/a\\_zm.html](http://nationalatlas.gov/articles/biology/a_zm.html). Similarly, the fishhook water flea can “achieve high population densities, forming ‘clumps’ that can entangle the fishing lines of anglers. Indiana Department of Natural Resources, *Spiny and Fishhook Water Flea*, available at [http://www.in.gov/dnr/files/spiny\\_and\\_fishhook\\_water\\_flea.pdf](http://www.in.gov/dnr/files/spiny_and_fishhook_water_flea.pdf).

[6] The U.S. Geological Survey has estimated potential economic impact at \$5 billion from 2000 to 2010 to U.S. and Canadian water users within the Great Lakes region alone, USGS, Dept. of the Interior (2011) available at [http://www.glsc.usgs.gov/\\_files/factsheets/2000-6%20Zebra%20Mussels.pdf](http://www.glsc.usgs.gov/_files/factsheets/2000-6%20Zebra%20Mussels.pdf). Maintenance of pipes clogged with zebra mussels costs the power industry up to \$60 million per year while temporary shutdowns caused by reduced water flow can cost over \$5,000 an hour. It is estimated that the cost of the zebra mussel invasion to the US will be \$3.1 billion over the next ten years. Lynn Jackson, *Marine Biofouling: Ann Assessment of Risks and Management Initiatives*, Global Invasive Species Programme (2008) available at <http://www.gisp.org/publications/toolkit/BiofoulingGuidelines.pdf>.

[7] Lisa A. Drake et al, Potential Microbial Bio-invasions via Ships' Ballast Water, Sediment, and Biofilm, *55 Marine Pollution Bulletin* 333-341(2007).

[8] Centers for Disease Control (CDC). *Isolation of Vibrio Cholera 01 from Oysters – Mobile Bay, 1991, 1992*. Morbidity and Mortality Weekly Report, Feb. 12, 1993, Vol. 42(05); 91-93.

[9] Reynolds, K.A., I.T. Knight, C.S. Wells, I.L. Pepper, and C.P. Gerba. 1999. Detection of Human Pathogenic Protozoa and Viruses in Ballast Water Using Conventional and Molecular Methods. Presented at the General Meeting of the American Society for Microbiology, Chicago, IL, Abstract Q-318, p. 594. Ballast water is also a vector for the microorganisms associated with the “red tide” or harmful algal bloom phenomenon. This phenomenon occurs when certain species of algae release toxins into an aquatic environment, which adversely impacts aquatic life and can also impact human health if fish contaminated with the toxin are consumed. See Hallegraeff, G. M., and C. J. Bolch, Transport of diatom and dinoflagellate resting spores via ship's ballast water: implications for plankton biogeography and aquaculture. *Journal of Plankton Research* 14:1067-1084 (1992).

Protecting the Great Lakes from invasive species discharged in the ballast tanks of ships is vital, as they “comprise approximately eighty-seven percent of the fresh surface water on the continent,” and are clearly vulnerable to damaging species invasion. Our organizations carefully reviewed EPA’s proposed rule implementing VIDA and found numerous and substantial flaws which will interfere with and undermine Great Lakes protection, and which are not allowable by the underlying statutes. In the interest of assisting the Environmental Protection Agency(EPA) in fulfilling its Great Lakes protection mission, we outline our concerns below.

We conclude that:

- **EPA must consider the International Maritime Organization (IMO) standard for ballast discharges from transoceanic ships as a starting point, consistent with VIDA.** EPA must not consider uniformity with global shipping as a reason for constraining the US standard to the IMO standard. Availability of treatments is the only allowed consideration;
- The Scientific Advisory Board (SAB) assessment on which the proposed rule determinations were made were outdated, and the conclusions drawn were overly simplistic. **EPA must base its determination of Best Available Technology (BAT) for transoceanic ships on the most recent information.** For example, technology has dramatically improved since the SAB report was issued. It should also examine available technology capacity improvement increments of less than an order of magnitude in revising its standard. Such an assessment will result in higher standards for transoceanic ships as technologies continue to improve;
- **Lakers should be regulated.** EPA used misguided reasoning in taking an all-or-nothing approach to setting BAT relative to Laker ships. The BAT proposed in the rule was specifically and explicitly designed for ocean-going ship circumstances. If that standard is not appropriate or achievable for Lakers, EPA must design and apply in this rule-making a separate BAT standard for Lakers. Such a BAT could target specific taxa and high-risk voyage routes and would support identification and cost-effective application of available treatments. Data and data bases are immediately available to support such an approach; and
- **The Best Management Practices requirement that ships “minimize or avoid uptake of ballast water in areas known to have infestations or populations of harmful organisms and pathogens” should be retained and modified.**

Our detailed comments follow:

- 1. The United States Environmental Protection Agency (EPA) failed to properly evaluate Best Available Technology (BAT) and determine ballast water standards for transoceanic ships in the proposed rule.**

EPA failed to properly evaluate BAT and determine ballast water standards for transoceanic ships in the proposed rule. In particular, EPA should not have promulgated BAT standards for

transoceanic ships based on its stated interest in conformance with International Maritime Organization (IMO) D-2 standards. Further, EPA used overly dated assessments of available ballast water treatment technology to develop BAT and incorrectly based performance assessment of available technologies on discrete rather than continuous measures of performance potential.

- a) **EPA incorrectly tied its BAT standards for transoceanic ships to an interest in conformance with IMO D-2 standards.** The Vessel Incidental Discharge Act, 33 U.S.C. § 1322 (2018), defines the IMO/USCG standard as a minimum performance standard and provides for stricter US standards for ships based on BAT. Yet the rule indicates that conformance with international norms was a paramount reason for choosing the standard proposed. This justification for standard-setting is consistent with neither the technology-forcing mandate set forth in the CWA nor the Second Circuit's holding in NRDC v. EPA. There, the court held the EPA's decision to issue a VGP under the CWA to regulate ballast water was arbitrary and capricious. The court held that, when setting BAT standards for ballast water, EPA should "first look at available ballast water technologies." Then, if those technologies can exceed the IMO standard, EPA should adjust the standard accordingly or "explain[] why it should not." Here, EPA acts in a manner inconsistent with the court's holding: it focuses its BAT assessment not on the capabilities of available technology, but on the implications of ballast water standards on "the entire universe of vessels that may operate in waters of the U.S. and waters of the contiguous zone." EPA justifies this focus by claiming that ballast water management systems must "be available to the global shipping industry." However, in weighing international harmony over the capabilities of available technology, EPA has "relied on factors which Congress has not intended it to consider." The CWA sets out factors to be considered in assessing best available technology. That international harmony does not appear on this list indicates Congress did not intend it to factor into the BAT analysis. Absent explicit Congressional intent, EPA is not justified in sacrificing the CWA's technology-forcing mandate in favor of preserving international uniformity.

Furthermore, a more careful BAT analysis would likely reveal technologies which make performance to a standard stricter than the international standard level of performance possible for transoceanic ships. For example, one study using all available data on ballast water management systems found that at least 13% of the 60 treatment standards met the 10x IMO D-2 standard for larger organisms, 42% met the 10x IMO D-2 standard for smaller organisms, and 12% met the 10x IMO D-2 standard for both. The same study then analyzed only data available to and deemed reliable by the SAB, and still found at least 22% of the treatment systems met the 10x IMO D-2 standard for the larger organism group, at least 44% for the smaller organism group, and at least 22% for both groups. In February 2011, the New York State Department of Environmental Conservation found that at least one treatment system was "at or near the confidence level needed to demonstrate compliance" with New York's Clean Water Act Section 401, which requires vessels to meet standards at least 100x more stringent than those in the IMO. The California State Lands Commission also found there are at least ten commercially available treatment systems that have the potential to meet

California's standards, which are also at 100x IMO D-2. The European Maritime Safety Agency 2010 Report similarly observed that ballast water management systems are achieving at least 10x the IMO level of treatment.

- b) **EPA incorrectly based its BAT assessment on informal data sets provided from an industry trade group, rather than the most complete and rigorous data sets received by the USCG in support of the type approval determinations for BWMS.** In making its determination of available treatment capacity, EPA did not access the best and most relevant information available regarding performance of 11 BWMS subject to type approval testing. Instead it relied on less controlled and less complete information from BWMS manufacturers, stating "The USCG treats all type-approval submissions as proprietary information; however, EPA was provided anonymous data for 9 manufacturers (11 different BWMS) from the Ballast Water Equipment Manufacturers Association (BEMA). EPA analyzed the data and determined the data submission requirements of the USCG type-approval regulations at 46 CFR 162.060 provides data of sufficient quality for EPA to evaluate system effectiveness for a BAT determination (Ballast Water Equipment Manufacturers Association, 2020)." Within the last five years, the USCG has granted type approval certificates to thirty-eight BWMS, many of which were updated and improved versions of original prototype systems. These data are directly relevant and should be available to EPA for review for purposes of setting BAT.
- c) **EPA incorrectly used an overly-dated SAB assessment in its BAT assessment.** VIDA requires the standards of performance to be reviewed, and if necessary, revised every 5 years to allow EPA to adequately assess the availability and effectiveness of ballast water management systems. This period of time between reviews is logical given the rapid pace of technology and information development. Yet, EPA relied on the 2010/2011 SAB report, a technology review which was compiled more than 10 years ago in issuing BAT for transoceanic ships. The review was analogous to that examined in Southwestern Electric Power Co. v. EPA, in which EPA acted arbitrarily and capriciously by setting BAT limits for legacy wastewater equal to outdated best practicable control technology currently available standard of surface impoundments. In setting a standard based on older information, EPA is "arbitrarily set[ting] BAT . . . using the same archaic technology" assessed, in this case, in the 2010/2011 SAB report. EPA declined to update the 2010/2011 SAB study in light of the "short timeframe" and extent of discharges to be addressed, and EPA appears to claim a more updated study was not "necessary or appropriate" given "there have not been meaningful changes in technology or practice since EPA last undertook a BPT/BCT/BAT analysis." However, studies have shown that there have been meaningful changes since the SAB report. A 2011 report conducted by California Public Lands Commission noted that there had already been "significant activity concerning performance standards implementation and ballast water technology assessment at the state, federal and international levels" since the SAB report was completed in 2010. If such substantial changes in implementation and assessment occurred in a year's span, it is highly likely technological changes continued to occur in the 9 years since a BAT analysis was conducted. As noted previously, within the last

five years alone, thirty-eight BWMS have submitted documentation for review by the USCG and have received certification.

- d) **EPA’s BAT determination was made against an overly categorical view of “best available.”** The proposed rule justifies a stagnant BAT standard because “the SAB concluded that no current BWMS can meet a standard beyond 10× more stringent than the current standard (*e.g.*, 100× or 1,000×).” In essence, the EPA constrained its finding of availability to technology meeting standards at least an order of magnitude (10x) stricter than IMO standards. Whether or not technology could meet a more moderately but still significantly stricter standard was not evaluated. By restricting its focus to discrete, seemingly arbitrary, degrees of compliance, EPA fails to consider an important aspect of the problem. A technology that may be capable of reducing discharges as little as 2 and as much as 9 times more effective than IMO D-2 could deliver significant benefits to achieving programmatic goals of preventing new introductions of harmful species. Further, in so categorically restricting the BAT assessment, the IMO D-2 standards in the proposed rule are not technology-forcing as CWA, a technology-forcing statute.

***Recommendation:*** *EPA should not constrain its determination of BAT for transoceanic ships based on an international standard, and should base its determination of BAT on recent information (less than 5 years old) as the technology has dramatically improved since the SAB report. EPA should reevaluate its determination of BAT for transoceanic ships to consider available technology capable of meeting standards stronger than IMO D-2 by less than an order of magnitude. Such assessment improvements will assure BAT reflects higher standards for transoceanic ships as technologies continue to improve, consistent with the requirements of the CWA.*

**2. EPA improperly declined to regulate Laker discharges to BAT. It can and must apply and require compliance with an appropriate BAT standard for the Laker fleet.**

Ballast water discharges from Lakers account for over ninety-five percent (billions of gallons annually) of ballast water volumes transferred in the Great Lakes. Lakers play a significant role in spreading invasive species. In 2017, UW-Superior tested the ballast water tanks of eight U.S. and Canadian Lakers travelling to western Lake Superior. Their 2018 report documented several species of zooplankton never previously recorded in Lake Superior in Laker ballast water destined for discharge in Lake Superior ports. Canada has proposed regulations that would require Laker vessels in waters under Canadian jurisdiction to develop and implement a ballast water management plan and comply with a performance standard that would limit the number of organisms discharged by 2024. Transport Canada’s proposed regulations would apply the same standards to Canadian and U.S. ships that do business in Canadian waters of the Great Lakes. Similar regulation is appropriate for the United States to require of Canadian and U.S. Lakers.

VIDA expressly requires the Administrator to “promulgate Federal standards of performance for marine pollution control devices for each type of discharge incidental to the normal operation of a vessel.” Yet, in the proposed rule, EPA exempts all Lakers from a BAT standard

EPA chose to apply to them and justifies its decision to exempt Lakers based on lack of available technology to meet the EPA-selected standard. EPA departs from the VGP in doing so, claiming it made a material technical mistake in regulating post-2009 Lakers in the VGP. However, EPA was not mistaken in regulating some Lakers in the VGP; rather, EPA erred in not regulating all Lakers from the outset, and should do so in the proposed rule. Any infeasibility of Laker compliance with the IMO standard cannot hold up application of an actionable and effective alternative standard in the near term. The all-or-nothing imposition of the IMO/USCG standard to Laker ships such that no treatment is possible is circular, inappropriate, and runs contrary to the purpose of the CWA and EPA regulation. With appropriate technology assessment and treatment objectives, a BAT analysis will yield productive and feasible treatment options for Lakers.

For example:

- a) **EPA incorrectly applies the IMO/USCG standard to Lakers, when other approaches to a standard for Laker are available and more applicable.** In the explanation of its proposed rule, the EPA explicitly justifies application of the IMO/USCG standard to ships generally by qualities of saltwater ships which Laker ships do not share. Specifically, Section 2 (II) of the EPA-proposed rulemaking justifies applying the IMO/USCG discharge standard approach by the “INTERNATIONAL NATURE OF VESSEL OPERATIONS”. Section 2 (iv) further justifies the use of the IMO/USCG discharge standard because “The record demonstrates that the proposed standard reflects BAT in that the current technology, USCG type approved BWMS, are technologically available, safe, effective, reliable, and commercially available for shipboard installation.” However, the rule later points out Lakers are explicitly not engaged in transoceanic trade, and there is no technology meeting the IMO/USCG standard currently available to Lakers. VIDA provides for unique standards for unique classes of ships.

Indeed, the risk posed by Laker ballast operations and associated treatment objectives are substantially different than that posed by transoceanic voyages, and arguably a different standard is justified even if treatments to the IMO/USCG standard were available to Lakers. For salty ships, the objective is to minimize risk of unknowable possible threats carried from unknown points overseas to US ports of call. As a result, the IMO/USCG standard attempts to suppress all live organisms in ballast water prior to discharge to a minimum. Most organisms subject to ballast transfer by Lakers are native. Those that are not, and potentially invasive, are knowable and more localized. Further, intra-basin ballast water is not the only vector of spread for nuisance species, as transoceanic ballast water movement is to US waters from overseas. The goal of Laker ballast treatment therefore is to avoid ballast-mediated spread throughout the Great Lakes of knowable established target invaders rather than to attenuate movement of any live organisms anywhere by ships. In most intra-basin voyage instances, the natural circulation of water and organisms within and between Lakes means that no amount of ballast treatment can prevent spread from occurring. However, in some defined intra-basin voyage instances, Laker ships move invasive species to places they would not naturally spread, specifically “upstream” particularly from the lower Great

Lakes to Lake Superior. Congress recognized this distinction in directing agencies to monitor target organism occurrences, locations and spread in VIDA's Great Lakes and Lake Champlain Program requirements.

- b. **The EPA erred in assessing availability of treatment options for Lakers using non-relevant research studies and treatment objectives oriented to transoceanic ships.** EPA claims it “assessed the best available technology that is economically achievable and determined that the challenges analyzed in the VGP remain true today.” However, the availability of treatment alternatives for Lakers to meet BAT were never properly analyzed. For example, potential use of chlorination and UV by Laker ships was determined unavailable in terms of: a) routine (every single voyage) treatment; b) to meet the IMO/USCG standard; c) research on treatment systems from Duluth-Superior Harbor. The rule states: “With regards to operational considerations, many inter-lake voyages are shorter than 72 hours (and even as short as 2 hours) and, in these cases, would not provide the required residence time for BWMS technologies that require extended holding times to be effective such as chemical addition, deoxygenation, or UV for many of the USCG type-approved UV-based BWMS (U.S. Army Corps of Engineers, 2017).” Tom Rayburn, director of environmental and regulatory affairs for the Lake Carriers Association, along with other experts, further notes the Laker's steel ballast tanks lack special coating to prevent corrosion from chlorine or other treatment chemicals, as well as the prohibitive cost of outfitting every American Laker.

Yet the specific instances in which Laker treatment is critical are accompanied by specific ballast water quality conditions, voyage frequencies and durations, and target organisms of concern more conducive to their successful application. Unfortunately, all Great Lakes-based ballast treatment technology performance assessments cited in the rule took place in a highly unique set of water quality challenges that are not at all relevant to attenuating risk associated with Laker ballast water. The tests cited, conducted by the Great Ships Initiative and Great Waters Research Collaborative, were specifically designed to be relevant to transoceanic ships which conduct ballast uptake in foreign harbors with water quality similar to Duluth Superior Harbor, such as in the Ponto-Caspian region, for discharge into the Great Lakes. Lakers, on the other hand, rarely load ballast water (the water subject to treatment) in Duluth Superior Harbor, they load cargo there and discharge ballast water. Most Laker ballast water uptake is drawn from southern Great Lakes harbors where very different and arguably easier to treat water quality conditions occur. In particular, dissolved organic material which interferes with chlorine and UV treatment, problems cited in the rule, is much lower than that in Duluth Superior Harbor, where it is extraordinarily high even from a global perspective. Water quality in the Great Lakes has only been clarified further by the presence of alien Zebra and Quagga mussels. The clarification trends are particularly evident in the southern Great Lakes. Indeed, BWMS performance assessments performed at the Maryland-based Maritime Environmental Resource Center, and the California-based Golden Bear BWMS likely better resemble water quality circumstances of the lower Great Lakes than the Great Ships Initiative/GWRC tests, which were by design most relevant to transoceanic ports of uptake for salty ships visiting the Great Lakes.



Further, EPA's BAT analysis was analyzed in terms of an application to all voyages, regardless of duration, also unnecessarily limiting determinations of available treatments. An all-voyage approach makes sense for achieving treatment objectives for transoceanic ships, but not Lakers. With Laker ships, the most relevant risk is movement of known invaders from the lower Great Lakes to Lake Superior. This objective is accompanied by holding times, and target organisms most amenable to effective treatment by Lakers. Concern about the practicability of filtration, for example, could be alleviated by consideration of the relatively coarse filtration (e.g., at 100 microns) which may be sufficient to remove a target macrozooplankton species of concern such as the Bloody Red Shrimp (*Hemimysis anomala*), as opposed to fine filtration (e.g., at 50 microns) associated with most IMO/USCG approved BWMS as a primary treatment step. The paramount importance to ballast-mediated species spread of voyage-routes in which ballast is transported from lower lakes to Lake Superior. The application of these technologies to relevant target voyage and species was never evaluated by EPA and would likely have revealed availability. Lower doses and selective voyage application of chlorine could enable a positive determinative relative to cost-effectiveness of chlorine treatment for Laker use despite a lack of anti-corrosion coating on the ballast water tanks.

Finally, leading coating manufacturers such as Hempel, are developing solutions to try and meet industry needs. For example, Hempel's Hempadur Quattro XO range is a universal anticorrosive primer that ensures superior corrosion protection and reduced maintenance costs for owners and operators. This coating has been developed for water ballast tanks in new vessels to ensure long-term corrosion protection over the ship's lifetime and to minimize maintenance costs, but could be applied to older vessels as well. If Lakers ballast tanks could be coated, a wider range of BWMS technology that may be more cost-effective and meet even the IMO numeric discharge standards over time, could be achieved. At a minimum, such coatings, and associated ballast water treatments, should be required of any newly constructed US Lakers immediately.

- c. **EPA's reasons for declining to set an Alternative Standard for Lakers are flawed:** EPA uses flawed reasoning to justify its proposal not to apply an Alternative Standard for Lakers though it is clearly allowed, appropriate and required by the law.
- **EPA contention of insufficient data is untrue:** EPA claims there are "insufficient data at this time to establish an alternative standard or requirement for Great Lakes vessels that would reduce ANS discharges at a known effectiveness level". This contention is a poor rationale for inaction in a BAT context, and it is also not true. The Great Lakes, and the aquatic invasive species within them are some of the most studied in the world. For example, NOAA maintains the Great Lakes Aquatic Nonindigenous Species Inventory System. The inventory is geographically based supporting identification of target voyage routes based on awareness of locations of known invaders of concern. The Great Waters Research Collaborative is constructing a geographically based ballast treatment challenge water inventory to allow treatment developers to design, and ship owners to purchase ballast

treatments best suited to the Laker voyage routes. There is also enormous information available through national and international sources on practicability of treatment alternatives in terms of water quality conditions applicable to Laker voyages and water quality conditions of lower Great Lakes harbors of Laker ballast uptake (versus water quality in DSH, a port of discharge). As noted previously, the Maryland-based Maritime Environmental Resource Center, and the California-based Golden Bear BWMS performance assessments have freshwater estuarine-based tests, which would be highly informative of UV or oxidant-based BWMS performance to alternative standards in water quality similar to the lower Great Lakes. Meanwhile, the abundant and careful information developed by GSI/GWRC focused on the effectiveness of varying levels of filtration at removing various types of organisms found in the Great Lakes are also extremely relevant and have been long available. Relevant water quality parameters associated with ballast water subject to treatment are carefully monitored and analyzed throughout the Great Lakes. Water quality data are stored and retrievable through EPA's Storage and Retrieval (STORET) database and USGS's National Water Information System (NWIS) among many other sources. VIDA has only served to strengthen these Great Lakes specific and national information resources.

- **Enforcement challenges raised in the rule as an obstacle to an Alternative Standard for Lakers are not relevant or true.** The rule summary states: "it is not clear how such an inconsistent management regime would be evaluated for compliance with the standards and enforcement purposes" as a justification for inaction. This sort of challenge is exactly what agency officials are hired to resolve, and they have done so ingeniously over the decades, reviewing and revising as needed. In any case, this challenge falls to the USCG rather than the EPA, which is setting a standard for environmental protection. In addition, there are several known approaches to choose from. At a minimum, a Laker-specific alternative standard, even one that is applied for voyage-specific, and organism-specific objectives, could be evaluated in terms of whether the technology is on board and being operated. Empirical end of pipe samples can be taken and examined to determine if an alternative standard is being met just like they are for numeric standards in any case.
- d. **EPA is not warranted in removing all BAT standards for Lakers simply because loose standards in the original VGP failed to spur adequate technological progress.** As a technology-forcing statute, CWA requires ramping up standards with the ultimate goal of eliminating pollution — it “pushes all dischargers to achieve ever-increasing efficiencies and improvements in pollution control.” In exempting an even larger class of Lakers from BAT standards, the proposed rule impedes, rather than forces, the development of technology to eliminate pollution in the nation’s waterways. Exempting all Lakers from ballast water discharge standards also does not meet the “reasonable further progress” requirement of BAT. The Supreme Court has explained that BAT must achieve “reasonable further progress” towards the CWA’s goal of eliminating pollution. EPA seeks to substantiate the lack of a BAT standard for Lakers by claiming that retrofitting a vessel for a newer BWMS “may require a different

configuration that may be cost prohibitive and impede the deployment of more effective technologies in the future.” Again, this logic is circular. More effective technologies are unlikely to arise without standards to compel them. VIDA requires the EPA to set some sort of standard for lakers. EPA, however, claims it can move backwards - promulgating standards less stringent than those in the VGP - because it made a material technical mistake in exempting only pre-2009 lakers. This argument does not hold weight: the lack of technological progress since the VGP indicates the original standards were too loose, not that they should be abandoned wholesale. The lack of standards for lakers meet neither the CWA's technology-forcing mandate nor the "reasonable further progress" requirement of BATs.

- e. **EPA cannot use the presence of challenges to justify the Laker-wide exemption.** In any case, the EPA cannot use treatment challenges to justify inaction. The CWA’s technology-forcing mandate, the BAT’s “reasonable further progress” requirement, and responsibilities set forth in VIDA require EPA to implement a BAT standard for commercial ships, including Lakers. Yet, in the proposed rule, EPA does not provide one for the US Laker fleet, and in fact removes one for post-2009 Laker ships. EPA claims it “assessed the best available technology that is economically achievable and determined that the challenges analyzed in the VGP remain true today.” Even if determining the proper standard is difficult, EPA cannot simply refuse to issue specific guidelines. The court in American Paper. Institute, Inc. v. EPA held that even if creating permit limits is difficult, permit writers cannot just “throw up their hands, and contrary to the Act, simply ignore water quality standards including narrative criteria altogether when deciding upon permit limitations.” EPA then points to the existence of a research initiative, also contained in VIDA, as an excuse for delay in setting an appropriate BAT standard. Case law shows that “BAT also requires a commitment of the maximum resources economically possible to the ultimate goal of eliminating all pollution discharges.” EPA rationalizes its decision to exempt all Lakers by stating that “Congress clearly acknowledged that there are not currently practicable ballast water management solutions for Lakers and established the Great Lakes and Lake Champlain Invasive Species Program under the VIDA for EPA to develop such solutions.” This contention is conjecture and irrelevant in any case to applicability of an alternative standard which EPA is required to develop. To wit, Congress also provided for a BAT approach, and explicitly allowed EPA to distinguish across classes of ships in setting it.
- f. **EPA cannot justify its exemption of Lakers by claiming pollution control measures taken now would actually impede the development of better technologies in the future.** The proposed rule claims retrofitting a vessel for a newer BWMS “may require a different configuration may be cost prohibitive and impede the deployment of more effective technologies in the future.” Again, this problem is an outcome of EPA’s incorrect application of the IMO/USCG standard to Lakers. Also, this rationale generally is not allowed, and unlikely to result in the efficient development of effective treatments it contends. The Supreme Court has explained that BAT must achieve “reasonable further progress” towards the CWA’s goal of eliminating pollution. Consistent with the BAT approach more effective technologies

are likely to arise with efficiency only with standards to compel them, even in the context of federally funded research to explore treatment alternatives.

- g. **Remaining uncertainty is not an excuse for inaction.** Despite the availability of far more information than the EPA acknowledged in its proposed rule, scientific uncertainty in any case does not excuse EPA from devoting maximum resources towards eliminating the spread of non-indigenous species. The courts found, for example, the “EPA [cannot] avoid its statutory obligation by noting the uncertainty surrounding various features of climate change and concluding that it would therefore be better not to regulate at this time.” By failing to regulate Laker discharges at all, EPA allows these vessels to disperse and spread non-indigenous species and fails to protect the Great Lakes ecosystem. Further, we did not know empirically the effectiveness of the IMO/USCG standard when it was first imposed, and still do not.

*Recommendation: EPA should develop and apply in this rule-making an Alternative BAT Standard for Lakers, potentially applicable only to target taxa and high-risk voyage routes at this stage, due to unique environmental objectives associated with its trade pattern, as well as unique ship operational/construction circumstances.*

- 3. **The rule (Subsection H) deletes BMP requirement that ships "minimize or avoid uptake of ballast water in areas known to have infestations or populations of harmful organisms and pathogens (e.g., toxic algal blooms)". This requirement should be retained and modified.**
  - a) **The justification that uptake/discharge decisions are not in the control of the vessel operator is incorrect.** The explanation for the wholesale deletion of a requirement in both the USCG and EPA regulations that ships use BMPs to "minimize or avoid uptake of ballast water in areas known to have infestations or populations of harmful organisms and pathogens (e.g., toxic algal blooms)" is nonsensical, and the stakes for the Great Lakes and other US waters are high. The explanation was that "(t)hese conditions are usually beyond the control of the vessel operator during the uptake and discharge of ballast water and thus it is not an available measure or practice to minimize or avoid uptake of ballast water in those areas and situations". However, quite clearly, whether or not to uptake and translocate ballast water in an untreated state is in the control of the vessel operator.
  - b) **The justification that uptake/discharge limitation is not "available" as a mitigation option for ships is unsupported and likely incorrect.** EPA’s contention that ship minimization of untreated uptake or discharge from specific locations in episodic emergency situations due a lack of available options also is unsupported. A wider array of suitable episodic detection and treatment options is likely available to ships for this targeted purpose, more so even than for routine treatments (see subsection d, below). In terms of cost/benefit analysis, costs to society of uncontrolled spread by ships of infestations of harmful organisms and pathogens likely far outweigh any costs to industry of implementing such

precautions on an episodic and site-specific basis. EPA did not adequately evaluate the full range of alternatives available in reaching this highly consequential conclusion.

- c) **The justification that uptake/discharge restrictions can and should be made via the state application for an Emergency Order is incorrect.** Prevention of spread of known harmful organisms and pathogens in interstate waters appropriately falls to federal regulation. States may not have the wherewithal, interest, or the capacity to act effectively either individually or together in an emergency situation. Further, the process for state application for an Emergency Order is vague, uncertain, and wholly incompatible with an emergency situation. In particular there is a requirement that "new information" be shown to exist "that could reasonably result in a change" without clarification of the kind of information or the kind of change that would be of interest to the EPA in making its decision. Further, even if states were to act, EPA's overt dismissal of a highly (perhaps the only) effective method of preventing spread of known harmful species from the required BMP list in this rule may undermine their capacity to do so.
- d) **A middle ground is available.** That said, the BMP requirement as originally worded was imprecise. First, the term "minimize or avoid" appears to relate to ballast water uptake generally. It should specify untreated ballast water. Targeted treatment options in these instances, such as limited applications of chlorine, could sufficiently minimize risk in instances in which ballast operations could not be avoided or minimized altogether. Treatment options in such instances are likely more technologically available for Laker use than routine treatment to the USCG numeric standard because it would be occasional and taxonomically targeted. For example, concentrations of chlorine necessary to treat toxic algae could be far lower than that necessary to effectively treat all organisms in ballast water, such that corrosion downsides associated with routine treatment to the USCG/IMO discharge standard could be avoided. Further, movement of ballast water from entire harbors with the mere presence of a population of harmful organisms and pathogens is potentially not as urgent a threat to the Great Lakes, for example, as doing so from berths in which the organism is present as an infestation. The NOAA Great Lakes Environmental Research Laboratory already conducts routine surveillance for harmful algal blooms which could support such determinations for this common harmful species. But target organism monitoring to support determinations of population presence and prevalence also is increasingly feasible and cost-effective through genetic analysis techniques for other nuisance species. Rey, et al (2017) reviewed available options and concluded that "Following an overview of the studies applying genetic tools to ballast water related research, we present metabarcoding as a relevant approach for early detection of Harmful Aquatic Organisms and Pathogens in general and for ballast water monitoring and port risk assessment in particular." Direct eDNA detection of target species through PCR probes is an even more sensitive and cost-effective option. Further, Congress recognized this growing capacity in authorizing federal funds for the refinement of methods to do so is already provided for elsewhere in the VIDA legislation.

***Request:*** EPA should retain but modify the requirement that EPA directly require ships as follows: "minimize or avoid uptake of [untreated] ballast water in [berth] areas known to have infestations or [increasing] populations of harmful organisms and pathogens (e.g., toxic algal blooms)." Timely minimization of uptake and movement of untreated ballast water from areas known to have infestations or increasing populations of harmful organisms and pathogens (e.g., toxic algal blooms) is the only way to protect the Great Lakes from ballast-mediated spread and direct order of the EPA is the only process compatible with doing so effectively.

## Conclusion

In conclusion, aquatic invasive species are the biggest threat facing the biodiversity of the Great Lakes and St. Lawrence River today. A strong federal program to prevent the introduction and spread of invasive species into the U.S. and Great Lakes is urgently needed. We believe the proposed EPA ballast standard falls short of protecting the country's natural resources, communities and economies. We urge the EPA to accept our recommendations to establish a much stronger federal program than that originally proposed. Please do not hesitate to contact Marc Smith from National Wildlife Federation ([msmith@nwf.org](mailto:msmith@nwf.org)) or Molly Flanagan from Alliance for the Great Lakes ([mflanagan@greatlakes.org](mailto:mflanagan@greatlakes.org)) if you have any questions or need clarification of our position.

Sincerely,

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