6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 139

EPA-HQ-OW-2019-0482; FRL-7218-03-OW

RIN 2040-AF92

Vessel Incidental Discharge National Standards of Performance

AGENCY: Environmental Protection Agency (EPA).

ACTION: Supplemental notice of proposed rulemaking.

SUMMARY: On October 26, 2020, the U.S. Environmental Protection Agency (EPA) proposed under the Vessel Incidental Discharge Act (VIDA) national standards of performance for marine pollution control devices for discharges incidental to the normal operation of primarily non-military and non-recreational vessels 79 feet in length and above into the waters of the United States or the waters of the contiguous zone (hereafter, "the proposed rule"). This supplemental notice presents ballast water management system type-approval data EPA received from the U.S. Coast Guard (USCG) since the proposed rule and supplements the proposed rule with supplemental regulatory options that EPA is considering for discharges from ballast tanks, hulls and niche areas, and graywater systems. These supplemental options are informed by comments received during the first public comment period and subsequent meetings with interested states, tribes, and other stakeholders held between August and November 2021. EPA solicits public comment solely about the information presented in this document; the Agency is not soliciting public comment on any other aspects of the proposed rule that are not addressed in this document. All comments on this document and the comments on the proposed rule will be considered during the development of the final rule.

DATES: Comments must be received on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: You may send comments, identified by Docket ID No. **EPA-HQ-OW-2019-**

0482, by any of the following methods:

- Federal eRulemaking Portal: https://www.regulations.gov/ (our preferred method). Follow the online instructions for submitting comments.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Office of Water Docket, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- Hand Delivery or Courier: EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue, NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. to 4:30 p.m., Monday through Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to https://www.regulations.gov/, including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the "Public Participation" heading of the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: Jack Faulk, Oceans, Wetlands, and Communities Division, Office of Water (4504T), Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: 202-564-0768; email address: faulk.jack@epa.gov.

SUPPLEMENTARY INFORMATION:

This supplementary information is organized as follows:

I. Public Participation

A. Written Comments

Submit your comments, identified by Docket ID No. **EPA-HQ-OW-2019-0482**, at https://www.regulations.gov (our preferred method), or the other methods identified in the **ADDRESSES** section. Once submitted, comments cannot be edited or removed from the docket. EPA may publish any comment received to its public docket. Do not submit any information you consider to be Confidential Business Information (CBI), Proprietary Business Information (PBI), or other information whose disclosure is restricted by statute to EPA's docket at https://www.regulations.gov. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). Please visit https://www.epa.gov/dockets/commenting-epa-dockets for

additional submission methods; the full EPA public comment policy; information about CBI, PBI, or multimedia submissions; and general guidance on making effective comments. EPA is soliciting comment on a subset of issues described in the proposed rule and is not requesting comment on issues not discussed in that document.

B. Virtual Public Meetings

EPA will be hosting two virtual public meetings to introduce the supplemental notice, highlight supplemental regulatory options that EPA is considering for the final rule, and provide information on the public comment submission process. The public meeting schedule and additional details regarding the meetings will be announced on EPA's website at https://www.epa.gov/vessels-marinas-and-ports/vessel-incidental-discharge-act-vida-stakeholder-engagement-opportunities. EPA will present the same material at both meetings. Please note that the virtual meetings will not be a platform for submitting comments.

II. Purpose of this Notice

On October 26, 2020 (85 FR 67818), EPA proposed under the Vessel Incidental Discharge Act (VIDA) national standards of performance for marine pollution control devices for discharges incidental to the normal operation of primarily non-military and non-recreational vessels 79 feet in length and above into the waters of the United States or the waters of the contiguous zone.[1] This document supplements the proposed rule.

Since publishing the proposed rule, EPA re-engaged with the states through the VIDA's Governors consultation process to discuss topics for which the states expressed an interest in further collaboration and conducted post-proposal outreach to states, tribes, and interested stakeholders from environmental organizations and the regulated community to obtain additional clarification regarding their concerns with the proposed rule. EPA also obtained and analyzed a significant amount of new data from the USCG related to ballast water management system

[1] "Discharges incidental to the normal operation of a vessel" are also referred to as "incidental discharges" or "discharges" in this rulemaking.

(BWMS) performance. With this document, EPA announces the availability of these new data, provides its analysis of the data, and solicits comment on supplemental regulatory options for the standards and definitions applicable to ballast tanks, hull and niche areas, and graywater systems. The supplemental regulatory options were developed based on EPA's analysis of the public comments received on the proposed rule and during additional post-proposal outreach. EPA solicits public comments regarding the information and issues presented in this document. EPA is not soliciting additional comment on other issues raised in the proposed rule.

III. Summary of Proposed Numeric Ballast Water Discharge Standard and Newly Acquired Ballast Water Management System Type-Approval Data

A. Summary of Proposed Numeric Ballast Water Discharge Standard

In 2020, EPA proposed to continue, as part of the ballast water discharge standard, the numeric discharge standard for biological parameters (expressed as instantaneous maximums) found in the 2013 Vessel General Permit (VGP) and the USCG regulations promulgated on March 23, 2012 (77 FR 17254) as follows:

- For organisms greater than or equal to 50 micrometers (μm) in minimum dimension: discharge must include less than 10 living organisms per cubic meter (m^3) of ballast water.
- For organisms less than 50 μm and greater than or equal to 10 μm: discharge must include less than 10 living organisms per milliliter (mL) of ballast water.
- For indicator microorganisms:
    - Toxicogenic *Vibrio cholerae* (serotypes O1 and O139): a concentration of less than 1 colony forming unit (cfu) per 100 mL.
    - *Escherichia coli*: a concentration of less than 250 cfu per 100 mL.
    - Intestinal enterococci: a concentration of less than 100 cfu per 100 mL.

In the proposed rule, EPA noted that the 2013 VGP requirements and the USCG type-approval process are effective and promote the development of highly efficient technologies

despite ongoing challenges associated with the installation, operation and maintenance, and monitoring of those systems. The proposed rule additionally described type-approval testing data quality concerns and challenges associated with ballast water test methods and monitoring. Specifically, in 2016, the USCG announced in the *Federal Register* the availability of its Practicability Review, as established in 33 CFR 151.2030(c), finding that technology and testing protocols cannot be practically implemented to comply with a performance standard more stringent than that required by the existing regulations (81 FR 29287, May 11, 2016) because there were no data demonstrating that ballast water management systems (BWMSs) could meet such a standard. As such, the USCG could not evaluate whether testing protocols exist that can accurately measure efficacy of treatment against a more stringent performance standard. The following three subsections summarize the International Maritime Organization (IMO) and USCG type-approval data considerations, testing methodology limitations, and monitoring challenges described in the proposed rule.

1. International Maritime Organization (IMO) and USCG Ballast Water Management System Type-Approval Data Proposed Rule Considerations

The proposed rule described the Agency's rationale for discounting the IMO BWMS test data detailed in the 2011 Scientific Advisory Board (SAB) report that the United States Court of Appeals for the Second Circuit referenced in its decision on the 2013 VGP. *See Nat. Res. Def. Council v. U.S. EPA*, 808 F.3d 556, 566-67 (2d Cir. 2015). EPA noted that, after publication of the SAB report, the USCG found that systems type-approved under the original IMO guidelines were unlikely to meet the USCG discharge standard and that testing during that type-approval did not necessarily follow, or at least did not document, adequate quality assurance and quality control (QA/QC) procedures. In fact, every BWMS vendor with an IMO type-approval that requested USCG type-approval had to undergo a new round of testing according to USCG standards to demonstrate system performance meeting USCG type-approval requirements. The IMO has since updated and codified new type-approval test requirements (IMO, 2018) that

address many of the issues that limited the reliability of the IMO type-approval data assessed in the 2011 SAB report.

Notwithstanding the data quality deficiencies of the IMO dataset, the proposed rule included EPA's evaluation of three ultraviolet (UV)/filtration systems from the 2011 SAB report that the Second Circuit Court of Appeals identified as being able to meet a more stringent standard (Hyde Marine Guardian, Optimarin, and Alfa Laval/Alfa Wall Pure Ballast). *Nat. Res. Def. Council v. U.S. Envtl. Prot. Agency.*, 808 F.3d 566, 570 n.11 (2d Cir. 2015). The proposed rule summarized how the court mischaracterized the effectiveness of those three systems in achieving a more stringent standard. Although there were some data from these systems showing organism reductions greater than the proposed standard, those differences were minor and within the margin of error inherent in measuring aquatic organisms in the natural environment due to the variability in ballast water uptake and testing. Hence, the data cited by the Second Circuit Court of Appeals did not reflect substantial improvement in organism removal beyond the proposed standard.

The proposed rule also described EPA's evaluation of BWMS USCG type-approval data available to the Agency at the time. EPA stated that a more stringent numeric discharge standard was not reliably achievable because test results were within the same order of magnitude as the proposed standard and fell within the margin of error expected due to the great variability associated with the characteristics of ballast water and challenges associated with monitoring, analyzing, and enumerating organisms in the different size classes.

2. Ballast Water Test Methods Do Not Allow for Establishing a More Stringent or "No Detectable Organisms" Standard

The proposed rule described the practical and statistical challenges associated with performing the tests that would be necessary to show that a well-operated BWMS is able to reliably meet a more stringent or "no detectable organisms" standard. There are no performance data available at concentrations of less than one organism per volume of ballast water for the two

largest organism size classes. The Agency noted that test methods (and associated method detection limits) prevent demonstrating that any BWMS can achieve a standard more stringent than the 2013 VGP numeric discharge limit. EPA highlighted that, consistent with findings of the SAB, it was unreasonable to assume that a test result showing zero living organisms using currently available test methods demonstrates complete sterilization, if for no other reason than a sample taken represents a very small portion of the overall discharge and the collection of that sample may miss the few live organisms present in the discharge. Collecting larger volumes of ballast water to address this uncertainty also becomes impractical. For example, the SAB estimated that anywhere from 120 to 600 cubic meters of ballast water would have to be collected to adequately assess whether the discharge meets a standard 10 times more stringent (U.S. EPA, 2011).

3. Monitoring Challenges Associated with Measuring Live Organisms in Ballast Water

The proposed rule also described the challenges associated with collecting and analyzing ballast water to detect and quantify organisms at levels lower than the proposed standard. These challenges gave EPA low confidence in the ability of a vessel to demonstrate compliance with a lower numeric discharge standard. Even in the 2013 VGP, the three-component self-monitoring program[2] excluded monitoring for the two largest organism size classes because of the extreme difficulties with directly monitoring living organisms in ballast water discharges. Rather, the 2013 VGP established a monitoring program that serves as an indicator of system performance while operating as the system was designed (and type-approved). The proposed rule pointed out that demonstrating a higher level of treatment effectiveness would require testing of a different parameter that can be monitored. This would reasonably require a comprehensive monitoring program to gather necessary data on which to perform the Best Available Technology Economically Achievable (BAT) analysis. EPA generally sets a BAT standard based on data

[2] The 2013 VGP included functionality, biological organism, and residual biocide and derivative monitoring for ballast water discharges from any BWMS.

demonstrating the candidate BAT technology's performance, accounting for variability of a properly operating system. Without a way to detect and quantify organisms at those levels, EPA does not have a basis to evaluate the performance of the technology or set limits that represent the performance.

B. Relevant Comments Received on Numeric Ballast Water Discharge Standard

EPA received numerous comments on the proposed rule during the public comment period and stakeholder meetings about its BAT analysis for the numeric ballast water discharge standard. Commenters stated that EPA only reviewed less than one-quarter of the USCG BWMS data and that these data were supplied to EPA by an industry group with a conflict of interest in the standard setting process. Other comments expressed concerns that EPA:

- Used outdated information when it relied on the 2011 SAB report and 2011 National Academy of Sciences' National Research Council report;
- Rejected data from IMO type-approval testing based on an incomplete, undocumented, and questionable "independent review," and that the USCG type-approval data EPA did review could very well have the same QA/QC concerns as the IMO data;
- Established the standard first and then worked backwards toward the 2013 VGP standard rather than evaluating the data to determine what standard could be achieved independent of the existing standard;
- Relied inappropriately on international consistency;
- Failed to consider whether a more stringent standard could be met by reasonable and feasible modifications to existing BWMS designs; and,
- Asserted incorrectly that:
    - Available information does not justify a more stringent numeric discharge standard, be it 100 times, 10 times, or even 2 to 9 times more stringent than the proposed standard;

- A more stringent numeric discharge standard would represent an insignificant improvement in treatment system effectiveness;
- Limitations in the monitoring of organisms in ballast water do not support establishing a more stringent standard; and,
- Comparing type-approval data for different systems would only be appropriate if all other variables were held constant or under complete control during the test.

While EPA received comments on the proposed rule on several other topics associated with establishing the ballast water discharge standard, those comments are outside the scope of this supplemental notice. Comments that are outside the scope of this document will be addressed in the final rule.

C. Ballast Water Type-Approval Data Acquired Since the Proposed Rule

As a result of concerns raised during the comment period that EPA reviewed insufficient BWMS data, EPA requested USCG BWMS type-approval data directly from the USCG. EPA requested that the data be provided in a form that would allow EPA to conduct a transparent and comprehensive assessment of the performance of BWMS and to share those data and EPA's analysis of those data with the public. Acknowledging that the USCG continues to receive new data packages, the Agency requested data for all systems type-approved by the date of the proposed rule (85 FR 67818, October 26, 2020). EPA does not expect that more time or additional applications would meaningfully alter the results of the analysis. Additionally, recognizing the statutory deadline for finalizing this standard and the significant effort required to extract, transcribe, and validate test data, EPA focused on obtaining the most important and relevant data to perform its BAT analysis. For example, EPA determined that it was unnecessary to obtain data from the USCG regarding the number and size of subsamples, or system operating parameters such as flow rates, disinfectant dosages, or turbidity. The complete set of USCG BWMS land-based and shipboard type-approval data provided to EPA by the USCG and the Agency's comprehensive Ballast Water BAT Data Analysis of these data are included in the

docket for this rulemaking (U.S. EPA, 2023).

The USCG provided EPA with non-confidential/non-proprietary test data for the 37 BWMSs[3] that had been type-approved as of the date of the proposed rule (85 FR 67818, October 26, 2020) as well as 16 sets of amendment test data for those type-approved systems. EPA considered the amendments as additional independent systems because the original BWMS remains type-approved even when an amendment is submitted and approved for that system. EPA excluded two sets of amendment data from the analysis due to incomplete data. EPA also identified and excluded two duplicate data sets from the analysis to prevent weighing the same results twice in the statistical methodology. This resulted in a total of 49 data sets for the statistical analysis.

The data provided by the USCG included both land-based and shipboard testing results (uptake, discharge, and control) for all valid tests[4]. For land-based testing, the USCG provided test results for organisms less than 50 μm and greater than or equal to 10 μm in minimum dimension (referred to here as the "medium" organism size class) and organisms greater than or equal to 50 μm in minimum dimension (referred to here as the "large" organism size class), the three small organism size class parameters, and other water quality data, such as salinity and total suspended solids (TSS). For shipboard testing, the USCG provided test results for medium and large organism size classes and salinity.

The USCG masked the data to exclude information the USCG deems to be proprietary, such as the vendor, make, and model of the BWMSs and the type of treatment technology used by each BWMS. However, the USCG developed a labeling system to allow EPA to analyze the performance data and its treatment technology type classification for each BWMS without disclosing the details of the BWMS or identifying the technology.

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[3] As of July 24, 2023, the USCG had type-approved 51 BWMS (https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Commercial-Regulations-standards-CG-5PS/Marine-Safety-Center-MSC/Ballast-Water/).

[4] A test is considered valid if it met all uptake and testing challenge requirements of the ETV Protocol (EPA/600/R-10/146, *Generic Protocol for the Verification of Ballast Water Treatment Technologies, version 5.1*, (dated September 2010)), as incorporated by reference in USCG BWMS type-approval regulations at 46 CFR 162.060.5.

The data provided to EPA is the result of an approximately yearlong effort by the USCG to transcribe information from BWMS type-approval application test reports, standardize terms to facilitate analysis, and perform a quality assurance review of the data provided by as many as six USCG-approved independent laboratories, located in five different countries, each supported by no fewer than six approved sub-laboratories. Importantly, this means that the values are not all reported with the same precision (i.e., the number of digits or significant figures). This is especially relevant to values based on calculations or averages, where the calculated value (e.g., 0.333 or 7341 organisms per milliliter) is reported at a higher precision than could be supported based on the counting method. Values are reported without confidence intervals, so the values represent a mean of a range of likely estimates.

1. Data Validation and Processing

a. Data Validation

EPA considers these USCG data to be relevant, accurate, reliable, and representative, and the Agency performed a quality control review of the data provided. EPA validated USCG-provided type-approval data to ensure that these data are fit for use for calculating a numeric discharge standard for the two largest organism classes (using Stata software; StataCorp, 2021). Data validation consisted of checks for completeness, range, and logic. Completeness checks included ensuring that type-approval data included all valid test cycles (pass and fail), each test cycle had both influent (challenge water, treatment uptake, or control uptake) and effluent (treatment discharge) data that included both medium and large organism size classes, and there was no instance of multiple results for the same test cycle. Range and logic checks confirmed the validity and magnitude of all treatment discharge results that exceeded the discharge standard, that challenge water and control or treatment uptake organism concentrations were greater than discharge concentrations, and that uptake and control discharge organism concentrations met the criteria for a minimum concentration of living organisms, per Tables 4 and 7 of the EPA

Environmental Technology Verification Program's *Generic Protocol for the Verification of Ballast Water Treatment Technologies* ("ETV Protocol")(U.S. EPA, 2010).

Most instances of incomplete data were resolved by USCG through database corrections; however, some incomplete data could not be resolved because the data were not reported in the test reports. BWMSs with biological efficacy data available for only one organism size class were excluded from this analysis since the data omissions precluded EPA from assessing those systems' performance.

b. Data Processing

EPA evaluated the USCG type-approval data and addressed extenuating circumstances, including samples with missing results, no detected organisms, and gaps in salinity classifications, to ensure consistent analysis of the USCG type-approval data.

In instances where organism concentration data were missing from the testing results or marked as "NR (not reported)," the sample/data were removed because their values were unknown.

For the samples/data sets with no detectable organisms in the treated discharge, EPA represented these non-detects (NDs) as their method detection limits (MDLs) that were determined and provided by the USCG where available. The volume of water used in the analytical methodology determines the MDL because units are in organisms per volume of water. The USCG calculated MDLs based upon the test facilities' written protocols that defined minimum sample volumes and ranges of volumes analyzed. Specific volumes sampled and analyzed for each analysis were not available, so the MDL for each sample was not known. Because USCG transcribed type-approval data "as written," NDs were expressed using a variety of formats. EPA substituted, or imputed, given organism concentrations with their corresponding MDL if the original values were reported as "0" or non-numeric (such as "Below Detection Limit (BDL)"). Any detected values greater than zero but below their given MDL were used as-is in this analysis. Further details of this step are provided in the comprehensive Ballast Water

BAT Data Analysis in the docket for this rulemaking (U.S. EPA, 2023).

The USCG provided land-based data to EPA categorized by salinity type as marine, brackish, or fresh; however, the same categorization was not provided for the shipboard data. Salinities in shipboard data were provided as quantitative readings that EPA used to classify into types defined by <1 Practical Salinity Unit (PSU) for fresh, ≥28 PSU for marine, and measurements in between for brackish. For shipboard trials in which a salinity was provided for only the treatment discharge sample, EPA applied that salinity to the uptake sample for that trial because salinity values were consistent across samples for all other trials that reported salinities for both uptake and discharge. Shipboard trials without any reported salinity (in any of the sampling locations) were omitted from this analysis because the statistical methodology requires classification of sets by salinity category.

2. Analysis of New Data

EPA's analysis focused on the two largest organism size classes (medium and large) . These two size classes are the two key parameters EPA uses to assess invasion potential from ballast water discharges and for which EPA determined type-approval test data are adequate for purposes of evaluating performance capabilities of these systems.

EPA obtained USCG type-approval data for the three smallest indicator microorganisms tested but did not assess those data as part of this analysis because the data do not provide an appropriate basis for calculating a numeric ballast water discharge standard for the two largest organism class sizes, nor did EPA receive any comments on the proposed rule standard for the indicator microorganisms.

The Agency used the newly acquired data to analyze whether a different standard from the proposed rule should be established for medium and large organism size classes. EPA considered all BWMS type-approval data provided by the USCG for these two organism size classes. In all, EPA used 1,820 treatment discharge results from 49 BWMS type-approval data sets. Type-approval applicants tested systems in two platforms (land-based or shipboard;

shipboard testing not required for amendments) and in up to three salinity categories (marine, brackish, or fresh). For purposes of this analysis, EPA classified the results into 384 "sets" each defined by a unique combination of individual BWMS, salinity category (fresh, brackish, or marine), organism size class (medium or large), and test platform (land-based or shipboard).

In performing the analysis, EPA defined sets of trials, tested for correlations, identified a distribution shape and distribution parameters, combined land-based and shipboard trials, identified best available technology, and calculated the numeric discharge standard. Analyses were performed using "R" software (R Core Team, 2023). Although type-approval testing is based on counts of organisms and is therefore discrete (i.e., results are integers), test facility reporting of results were generally reported as averages of subsamples and standardized to common water volumes of medium organisms/mL and large organisms/m^3, thus making the values continuous (that is, many values reported as fractions of organisms per volume). After testing several distributions, EPA determined the inverse Gaussian (IG) distribution to be the shape that best described the most sets and therefore was the distribution applied for the final analysis. Using this distribution, EPA calculated the 99^{th} percentile and mean of each data set; the ratio of the two defined the variability factor (VF). Means and VFs were summarized across all sets for each of the two organism size classes. Further details are provided in the comprehensive Ballast Water BAT Data Analysis in the docket for this rulemaking (U.S. EPA, 2023).

EPA considered whether BAT should be based on any specific individual BWMS(s) or on any specific treatment technology type(s) into which the USCG categorized these BWMSs. As noted above, EPA did not have access to proprietary or business confidential information linking these data to design and operating details of each type-approved system to assess whether any of the systems should have been excluded from EPA's analysis; thus, EPA used an inclusive approach that considered data from all systems.

EPA evaluated whether statistical differences in the treatment effectiveness of BWMSs

could help identify systems that perform significantly better, such that they could be considered as the basis for BAT. To do so, EPA compared treatment discharge concentrations of the 49 BWMSs within six groups defined by the two common organism size class and three salinity categories. Statistical tests showed significant differences among systems within each group, but frequent overlap in significances among systems prevented any clear stratifications of "best" or "worst" system groupings. Furthermore, the effectiveness of systems varied by organism size and/or salinity, such that systems had different relative comparisons depending on the group within which they were evaluated. For example, one system may have had lower concentrations in one organism size class than the other size class, making an overall determination of that system's treatment effectiveness compared to other systems uncertain. The complexity of these statistical results did not point to any clear identification of system(s) that stood out as representing BAT.

For limits calculations, EPA considered separating the three salinity categories for separate standard calculations; however, means and VFs, the two parameters used in the calculation of a numeric discharge standard, were insignificantly different among salinities. Therefore, EPA did not calculate a separate standard for each salinity category.

The results of this analysis are presented in Table 1 of this preamble. The standard is defined as the organism size class mean multiplied by the organism-size-class VF. This standard comprises the results of the analysis in units of medium organisms/mL and large organisms/m^3, not to be exceeded. It includes all BWMSs and amendments, and use MDLs as given to EPA by the USCG.

Table 1. Standard of organism concentrations in treatment discharge samples.

Organism Size Class	Numeric Discharge Standard
Large	6.01 organisms/m^3
Medium	6.66 organisms/mL

As described above, EPA's statistical analysis showed no clear stratifications of "best" or

"worst" system groupings. However, as part of a sensitivity analysis, EPA compared mean discharge concentrations for each system to identify those that performed poorly in any of the six organism size/salinity category groups. EPA excluded from consideration as "best" any of the 49 systems with a mean discharge concentration in the worst 10^{th} percentile for any of the six groups. Among the 49 systems, 25 were never in the worst 10^{th} percentile for any of the six groups and were therefore identified as "best." EPA calculated a national discharge standard for medium and large organism size classes using all BWMSs, and again using only this subset of "best" BWMSs, to quantify the impact of such a reduction in number of systems. In addition to this narrowing of systems to just those determined to be "best," EPA also analyzed the impact of its decision to combine the 14 BWMS amendment data with the 35 original BWMS data sets. Finally, EPA analyzed the implications of using MDLs as given to EPA by the USCG rather than selecting a baseline MDL, acknowledging the considerable number of discharge concentrations reported as below detection but with widely varying MDLs. Results of the analyses for all combinations are shown in Table 2.

Table 2. Sensitivity analysis of standard of organism concentrations in treatment discharge samples. Means and standards are in units of organisms/mL for the medium organism size class, and organisms/m^3 for the large organism size class.

Organism Size Class	Amendment Data Included	BWMSs Narrowed	MDLs Used	Numeric Discharge Standard (organisms/volume)
Large	Yes	All systems	Baseline	7.59
Large	Yes	Best only	As given	4.21
Large	Yes	Best only	Baseline	4.63
Large	No	All systems	As given	6.28
Large	No	All systems	Baseline	8.56
Large	No	Best only	As given	4.76
Large	No	Best only	Baseline	5.68
Medium	Yes	All systems	Baseline	6.94
Medium	Yes	Best only	As given	5.93
Medium	Yes	Best only	Baseline	6.76
Medium	No	All systems	As given	9.28

Medium	No	All systems	Baseline	9.65
Medium	No	Best only	As given	9.87
Medium	No	Best only	Baseline	9.78

As shown, test results for both the baseline and sensitivity analyses were within the same order of magnitude as the standard in the proposed rule and fall within the margin of error expected due to the variability associated with the characteristics of ballast water and challenges associated with monitoring, analyzing, and enumerating organisms in the different size classes.

D. The Need for Multiple BWMS Compliance Options

The variety of operational and environmental conditions under which BWMSs must operate supports EPA's position that it is critical that a range of BWMSs be available to the global shipping industry to reduce aquatic nuisance species (ANS) discharges. As described in the proposed rule, vessels have different treatment needs due to the size of the vessel, type of operations, and environmental challenges in different waterbodies. Establishing a uniform national numeric discharge standard and applying a type-approval process allows for the installation and use of various BWMS disinfection technologies (including UV, electro-chlorination, chemical addition, ozonation, deoxygenation, pasteurization, and others) to meet various vessel needs and comply with the BAT-based standard. Further, when selecting a BWMS, shipowners also need to consider costs related to both capital and operational expenditures, to include, among other things, financing, spare parts and other supplies, energy demands, crew responsibilities and training, and operation and maintenance activities. The combination of factors described above has guided both the U.S. and IMO BWMS type-approval process that establishes a procedure to ensure that a range of BWMSs are available to meet specific vessel characteristics. Ease of operation and maintenance requirements are also a consideration, with the understanding that more complicated systems may lead to more problems. As an example, shipowners may opt to select a single vendor across the company's entire fleet to simplify fleetwide operation and maintenance.

In addition to meeting the discharge standard, the USCG type-approval process

separately requires that the BWMS be practicable onboard a vessel (e.g., able to operate despite roll, pitch, and vibration considerations), compatible with other onboard systems, durable, and be supported by credible and sustainable system manufacturers, suppliers, and servicers. For example, to be installed on any U.S.-flagged vessel, the USCG must verify the system meets certain installation and engineering requirements specified in 46 CFR subchapters F and J. The majority of USCG type-approved BWMSs have not been verified to comply with these requirements, so these systems are not approved for use onboard U.S.-flagged vessels. EPA did not have the information necessary to correlate BWMS test data with onboard acceptance; therefore, some of the systems analyzed may not be approved for use on U.S.-flagged vessels.

Multiple BWMS compliance options are also beneficial to shipowners with vessels subject to other requirements, most notably the IMO International Convention for the Control and Management of Ships' Ballast Water and Sediments (hereafter abbreviated as "BWM Convention") and any member state requirements promulgated pursuant to that state being a party to the BWM Convention. A vessel that voyages internationally may be subject to similar, but not necessarily identical, requirements that may shape the selection of an appropriate BWMS. As described in the proposed rule, over 75 percent of vessels discharging ballast water in waters of the United States spent 25 percent or less of their time in those waters, with more than 80 percent of these vessels also subject to the BWM Convention.

E. Data Fail to Demonstrate a More Stringent Numeric Discharge Standard is BAT

Public comments did not provide an alternative technology-based solution to EPA's BAT analysis in the proposed rule that addresses the breadth of issues associated with establishing a numeric ballast water discharge standard. Some commenters appeared to suggest that EPA should collect the universe of performance data, identify the perceived single, or top few, best performing system(s), and impose that perceived level of performance on the entirety of the universe of potentially affected entities, without considering whether such a system is workable for most vessels. EPA disagrees that such an approach would be scientifically sound or grounded

in the statutory considerations of the Clean Water Act (CWA). Among other shortcomings of that approach, test results that appear to indicate greater removal of organisms are not an indication that any particular BWMS can achieve a more stringent standard in all conditions. Rather, the test results are the product of a variety of situations where BWMS manufacturers are testing their systems in different environmental conditions and locations around the world, all with the goal of obtaining type-approval by demonstrating that the BWMS can consistently meet the 2013 VGP and 2012 USCG discharge standard. As such, EPA's analysis of the newly obtained USCG BWMS type-approval data retains the proposed rule rationale that the numeric ballast water discharge standard needs to preserve a level of flexibility for the shipowner to select a technology that is appropriate for the vessel.

Based on the data analysis of the USCG type-approval data and the need for multiple compliance options to suit different vessels and circumstances, EPA is not proposing a different discharge standard for consideration; however, the Agency is interested in obtaining feedback on the Agency's analysis of the data provided by the USCG.

IV. Supplemental Regulatory Options

Through this publication, EPA gives notice of supplemental regulatory options under consideration for ballast tanks (best management practices for ballast water uptake and an equipment standard for New Lakers), hulls and associated niche areas, and graywater systems and solicits public comments on these supplemental options.

A. *Ballast Tanks – Best Management Practices for Ballast Water Uptake*

1. Summary of Proposed Rule and Relevant Comments Received on Ballast Water Uptake

The proposed rule excludes the 2013 VGP and current USCG requirement (33 CFR 151.2050(b)) for vessel operators to minimize or avoid uptake of ballast water in the following areas and situations: (a) areas known to have infestations or populations of harmful organisms and pathogens (e.g., toxic algal blooms); (b) areas near sewage outfalls; (c) areas near dredging operations; (d) areas where tidal flushing is known to be poor or times when a tidal stream is

known to be turbid; (e) in darkness, when bottom-dwelling organisms may rise in the water column; (f) where propellers may stir up the sediment; and (g) areas with pods of whales, convergence zones, and boundaries of major currents.

EPA proposed to exclude these best management practices (BMPs) from the rule based on information that became available suggesting such measures are not practical to implement and enforce as individual standards because these conditions are usually beyond the control of the vessel operator during the uptake and discharge of ballast water. Several commenters requested that these BMPs be retained, arguing they are foundational, protective practices. Some commenters disagreed with EPA's explanation that such measures are not practical to implement, stating that vessel operators can be flexible, creative, and, given appropriate and timely knowledge of the problem, can adjust vessel operations to minimize or avoid environmental impacts from ballast water discharges. For example, operators cannot control light conditions but can plan their ballast water management to avoid or minimize uptake in darkness. Similarly, some commenters stated that although operators cannot control the location of sewage outfalls or dredging operations, operators should be aware and attempt to avoid the outfall locations and dredging operations. Commenters also stated that technology is available to detect benthic depths that should allow operators to avoid or minimize the uptake of ballast and disruption of sediment in shallow waters. Additionally, some commenters stated that the BMP requirement is not a prohibition and is not overly burdensome to regulated vessels. Lastly, one commenter suggested that EPA could incorporate BMPs as guidance for vessel operators to implement "if practical," rather than as mandatory requirements. Although commenters expressed support for inclusion of these BMPs, EPA did not receive any specific data or examples about how these BMPs have been or could be implemented as regulatory requirements.

2. Supplemental Regulatory Option for Ballast Water Uptake

In response to these comments, together with EPA and the USCG's understanding of the continued implementation challenges, EPA is considering a supplemental regulatory option to

require vessel operators to address and identify their uptake practices as part of the ballast water management plans, a requirement of the 2013 VGP and USCG regulation that was continued under the Agency's proposed rule. EPA does not expect that this option would result in a change to the compliance costs estimated in the Regulatory Impact Analysis accompanying the proposed rule.

Under this option, the required plan would describe the vessel-specific BWMSs and practices that minimize or avoid uptake of organisms and pathogens to further help reduce the spread of harmful organisms. For example, plans could describe coordinating with local authorities to identify areas/situations of concern and any opportunities to mitigate potential problems. Demonstrating that these important considerations were made by vessel operators could provide for environmental protection but allow vessel operators to tailor measures specific to their vessel operations and routes.

This tailored approach is important for several reasons. First, adherence to port area directives and schedules restricts the ability of a vessel operator to determine the location and timing of ballast water uptake in the most frequent ballasting areas (i.e., ports, harbors, offshore mooring stations, lightering areas, and designated entrance and exit sea lanes for a seaway). In addition, delays in ballasting to avoid the specific area or situations described in the BMP (e.g., darkness, dredging, or combined sewer overflow events) impact complex port and cargo operations and safety and are not always available to a vessel operator.

Second, in the limited circumstances when a vessel operator can adjust operations and control the location and timing of ballast water uptake, the information about specific areas or situations described in the BMP may not be readily known to the vessel operator. For example, locations of dredging operations are transient and sewage outfalls are not on navigational charts. The uptake practices described in the 2013 VGP and current USCG regulations were initially established by the IMO more than 25 years ago (i.e., prior to commercially available treatment systems) as considerations for port states to notify vessel operators of areas and circumstances of

concern where ballasting should be avoided or minimized as vessels traveled around the world. Given that more than 90 percent of vessels discharging ballast water in the United States are foreign-flagged, these vessel operators may not be aware of specific areas or situations beyond the information on navigational charts and each vessel's instrumentation detecting benthic depth.

Third, the uptake practices as described in the 2013 VGP and current USCG regulations contain subjective, imprecise terms that make them challenging to implement and enforce (e.g., areas "near" sewage outfalls, areas "known to have" infestations, areas "near" dredging operations, areas where tidal flushing is "known to be poor" or times when a tidal stream is "known to be turbid"). EPA is unaware of any existing data and resources to support objectively defining the terms or identifying these areas in each U.S. port, particularly in international ports where most uptake occurs. As described below, the VIDA contains several provisions that can help address areas and situations with harmful organisms and pathogens and other water quality concerns.

Incorporating these practices as part of the ballast water management plan is consistent with international vessel obligations established under the IMO BWM Convention. A general obligation of the BWM Convention (Article 2.8) is for Parties (i.e., nations that have ratified the Convention) to encourage ships to avoid, as far as possible, the uptake of ballast water with potentially harmful aquatic organisms and pathogens, as well as sediments that may contain such organisms. The BWM Convention requires vessels flying the flag of a Party and any vessel operating in the jurisdictional waters of that Party to have an approved ballast water management plan that takes into account the IMO Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (commonly referred to as "G4"). G4 provides guidelines for ballast water management and a ballast water management plan and includes precautionary practices for vessel operators specifying that every effort should be made to avoid the uptake of potentially harmful organisms, pathogens, and sediment that may contain such organisms. Importantly, the guidelines also point to the role of the port States to notify vessel

operators of areas where uptake should be minimized, or ballast water should not be taken up (G4 Part A Guidelines for Ballast Water Management Section 2.2).

To the extent that it becomes appropriate and necessary in the future, the VIDA contains other provisions, outside the standard-setting context, that empower EPA and the USCG to address specific situations that may arise with harmful organisms and pathogens and other water quality concerns. For example, EPA, working with the USCG and states, can establish emergency orders requiring BMPs for regions or categories of vessels to address specific concerns related to ANS or water quality. CWA section 312(p)(4)(E)(i), 33 U.S.C. 1322(p)(4)(E)(i). EPA solicits comment on this supplemental regulatory option to address ballast water uptake concerns via a vessel's ballast water management plan.

B. Ballast Tanks – Equipment Standard for New Lakers

1. Summary of Proposed Rule and Relevant Comments Received on Vessels Operating Exclusively in the Great Lakes

In 2020, EPA proposed to subcategorize vessels operating exclusively on the Great Lakes, regardless of when they were built, and exempt these vessels from the numeric ballast water discharge standard but continue to require these vessels to implement certain best management practices (BMPs). These vessels, commonly referred to as "Lakers," were also subject to regulatory subcategorization under the 2013 VGP and were there defined as those that operate exclusively upstream of the waters of the St. Lawrence River west of a rhumb line drawn from Cap de Rosiers to West Point, Anticosti Island, and west of a line along 63 W. longitude from Anticosti Island to the north shore of the St. Lawrence River. The proposed rule would be a change from the VGP, which requires Lakers constructed after January 1, 2009 (post-2009 Lakers) to meet the numeric ballast water discharge standard. The exemption of all Lakers (including post-2009 Lakers) in the proposed rule was based on a lack of data demonstrating that any available technology was economically achievable that could consistently meet a numeric discharge standard due to the unique set of circumstances that make ballast water management

especially challenging for these vessels. The challenges identified include issues related to the unique nature of the waters of the Great Lakes including extremely low salinity and high levels of suspended solids, turbidity, icing, filamentous bacteria, and dissolved organic carbon from tannins and humic acid. These environmental conditions can clog filters and inhibit BWMS treatment effectiveness. These conditions pose unique challenges to U.S. Lakers because, unlike other vessels operating in challenging water conditions, U.S. Lakers cannot leave the Great Lakes and thus do not have the option to perform ballast water exchange and saltwater flushing. In addition, the operational profile (e.g., short voyages) and design of these freshwater vessels (e.g., uncoated ballast tanks and piping systems that cannot withstand corrosive ballast water treatment chemicals) are not conducive to certain BWMSs. The proposed rule noted that the few U.S. Lakers that have been built since 2009 are not operating BWMSs to meet the numeric discharge standard due to these challenges.

In the proposed rule, EPA explained that it had considered an equipment standard approach for all Lakers that would have required Lakers to install, operate, and maintain a USCG type-approved BWMS, but not to meet a numeric discharge standard. The proposed rule rejected this approach, stating that such a requirement was not economically achievable and significant uncertainty existed as to the availability of technology to meet such a requirement based on the environmental, operational and technical considerations as described above. The proposed rule stated that the advantage to an equipment standard approach is that, although treatment may not consistently meet a numeric discharge standard due to the Great Lakes conditions, some reduction in the discharge of organisms would likely occur.

The proposed rule also addressed three alternative regulatory options for Great Lakes vessels: require filtration only, require open lake exchange of highly turbid water taken up in river ports, and exempt the use of a BWMS for certain voyages when the operational parameters of an installed BWMS cannot be met. The proposed rule stated that these three alternatives would not reliably meet the numeric discharge standard, and there was insufficient data at that

time to establish an alternative standard or requirement for Lakers that would reduce discharges of organisms at a known effectiveness level. The proposed rule stated that additional research is needed to explore these options and pointed to Congress' acknowledgement that practicable ballast water management solutions are needed for Lakers. Specifically, the VIDA directed EPA to establish the Great Lakes and Lake Champlain Invasive Species Program in part to develop such solutions.

The discharge of ballast water from vessels operating exclusively on the Great Lakes was one of the most heavily commented-upon subjects in the proposed rule. Many commenters opposed the exemption of Lakers from the ballast water discharge standard. Specifically, many commenters stated that the exemption of post-2009 Lakers in the proposed rule was inconsistent with the VIDA requirement that the discharge standards be no less stringent (with some exceptions) than the requirements under the VGP that required post-2009 Lakers to meet the numeric ballast water discharge standard.

Several commenters urged EPA to evaluate and establish the discharge standard based upon BAT for categories and classes of vessels or to target specific taxa and high-risk voyages from lower lakes to Lake Superior to reduce the discharge of organisms. Some commenters stated that EPA should further consider a lesser standard or practice, such as installation of a BWMS without that system having to meet the discharge standard, or just components (e.g., filtration) of a full system. Some commenters supported regulations similar to Canada's equipment standard for "deemed compliance." Some commenters argued that the market for BWMSs will not develop, and future treatment will not be possible, unless EPA and the USCG create an incentive for additional systems and testing.

One commenter stated that the only technology that can support operations in the Great Lakes for an extended time would be UV-based treatment because other technology types have operational limitations. Another commenter requested that EPA reevaluate the finding that chemical addition technologies cause excessive corrosion in uncoated ballast tanks and that

technologies using chlorine dioxide do not cause excessive corrosion in uncoated carbon steel ballast tanks. Commenters advocated for EPA to identify cost-effective application of available treatments, such as lower doses and selective voyage application of chlorine, despite a lack of anti-corrosion coating on the ballast water tanks.

Other commenters supported the proposed Laker exemption based on the vessel technical and operational challenges identified in the proposed rule. Commenters stated that current USCG type-approved BWMSs do not meet the operational profiles of vessels operating exclusively on the Great Lakes. Several commenters stated that BWMS manufacturers have largely ignored testing their systems in the Great Lakes (the few tests conducted failed to meet the numeric discharge standard) or building BWMSs to meet the challenging waters and organism assemblages and community composition in the Great Lakes. They stated that the high cost of testing and small market for BWMS sales are not conducive to increasing testing. Further, they stated that testing in freshwater in other locations is dissimilar to the Great Lakes.

2. Equipment Standard Authority and Rationale

After further deliberation, EPA is now considering a supplemental regulatory option to establish an equipment standard for ballast water discharges from New Lakers, described below as those Lakers built after the effective date of the USCG rulemaking to implement EPA's discharge standards. The requirement would potentially result in reduced discharges of organisms, even if the numeric discharge standard cannot be met. Given the unique characteristics of Lakers and the challenging environmental conditions of the Great Lakes, EPA has been unable to identify any available BWMS technology that would enable Lakers to reliably achieve the numeric ballast water discharge standard. Lakers, more so than seagoing and coastal vessels that operate in the Great Lakes only for a portion of the year, have fewer contingency measures available to address challenging environmental conditions of the Great Lakes, notably because Lakers are unable to leave the Lakes to conduct ballast water exchange and saltwater flushing.

This document describes EPA's authority and rationale for considering an equipment standard, Great Lakes BWMS testing data that demonstrate organism reductions, and the equipment standard regulatory option in relation to Canada's new ballast water regulation (Canada Gazette, Part 11, Volume 155, Number 13, SOR/2021-120, June 4, 2021). This document describes why EPA is now considering whether an equipment standard for New Lakers may be technologically available, economically achievable, and have acceptable non-water quality environmental impacts. This document further describes why EPA is not considering an equipment standard for existing Lakers, given in particular the anticipated retrofit costs for existing vessels, the Great Lakes and Lake Champlain Invasive Species Program, and the significance of the VIDA's "period of use" (or BWMS legacy) provision at CWA section 312(p)(6)(C) which generally provides that when a regulated vessel installs a USCG type-approved BWMS, the vessel will remain in compliance for the life of that system.

a. Best Available Technology

"Best Available Technology" generally represents the most stringent technology-based standard under the CWA for controlling direct discharge of toxic and nonconventional pollutants. Courts have referred to this as the CWA's "gold standard" for controlling discharges from existing sources. *Southwestern Elec. Power Co. v. EPA*, 920 F.3d 999, 1003 (5th Cir. 2019). More specifically, BAT represents the best available, economically achievable performance of facilities in the industrial subcategory or category. As the statutory phrase intends, EPA considers the technological availability and the economic achievability when it determines what level of control represents BAT.

The BAT standard requires standards of performance "to be based on technological feasibility rather than on water quality." *Southwestern Elec. Power Co.*, 920 F.3d at 1005. It is "technology-based rather than harm-based" insofar as it requires EPA to set standards that "reflect the capabilities of available pollution control technologies to prevent or limit different discharges rather than the impact that those discharges have on the waters." *Texas Oil & Gas*

Ass'n v. U.S. E.P.A., 161 F.3d 923, 927 (5th Cir. 1998) (citing *E.I. du Pont de Nemours & Co. v. Train,* 430 U.S. 112, 130–31 (1977)). In other words, the VIDA tasks EPA with setting a standard that reduces the discharge of pollutants to the minimum level that existing available and economically achievable technology can support. *See Southwestern Elec. Power Co.*, 920 F.3d at 1030 (BAT reflects "'a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges,' which was the intent of Congress in enacting BAT standards in the first place." (quoting *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 74 (1980))).

Other statutory factors that EPA considers in assessing BAT are the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the process employed, potential process changes, and non-water quality environmental impacts, including energy requirements, and other factors as the Administrator deems appropriate. CWA section 304(b)(2)(B), 33 U.S.C. 1314(b)(2)(B). The Agency retains considerable discretion in assigning the weight to be accorded these factors. *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1045 (D.C. Cir. 1978). Generally, EPA determines economic achievability based on the effect of the cost of compliance with BAT limitations on overall industry and subcategory financial conditions. BAT reflects the highest performance in the industry and may reflect a higher level of performance than is currently being achieved based on technology transferred from a different subcategory or category, bench scale or pilot facility studies, or foreign facilities. *Southwestern Elec. Power Co. v. EPA*, 920 F.3d at 1006; *American Paper Inst. v. Train*, 543 F.2d 328, 353 (D.C. Cir. 1976); *American Frozen Food Inst. v. Train*, 539 F.2d 107, 132 (D.C. Cir. 1976). BAT may be based upon process changes or internal controls, even when these technologies are not common industry practice. *See American Frozen Foods*, 539 F.2d at 132, 140; *Reynolds Metals Co. v. EPA*, 760 F.2d 549, 562 (4th Cir. 1985); *California & Hawaiian Sugar Co. v. EPA*, 553 F.2d 280, 285-88 (2nd Cir. 1977).

b. USCG Type-Approved Ballast Water Management Systems

As described in the proposed rule (Section VIII.B.1.v.A.1. *Types of Ballast Water Management Systems Determined to Represent BAT*), the use of type-approved BWMSs is a well-established and demonstrated process for selection of technologies. EPA is considering an equipment standard that would require the use of USCG type-approved BWMSs because this process addresses BWMS design, installation, operation, and testing to ensure that any type-approved system meets both performance and safety standards. For example, USCG type-approval has specifications for use of BWMSs on U.S.-flagged vessels that are relevant to U.S. Lakers, including the requirements of 46 CFR subchapters F (Marine Engineering) and J (Electrical Engineering) and requirements specifying whether the BWMS can be installed in hazardous locations on the vessel, as defined in USCG regulations at 46 CFR 111.105 or its foreign equivalent.

The BWMS treatment technologies currently available typically use one or more of three basic processes to achieve the numeric discharge standard: physical separation (primarily filtration), disinfection, and neutralization. The types of disinfection processes used in USCG type-approved BWMSs broadly include UV radiation, electro-chlorination, chemical addition, ozonation, pasteurization, and deoxygenation.

Disinfection using UV radiation is currently the most common disinfection technology used in BWMSs, with these systems typically combined with filtration during ballasting to improve the efficiency of disinfection. The USCG has type-approved 24 BWMSs using UV, 10 of which are authorized for use on U.S.-flagged vessels. One advantage to using UV BWMSs on Lakers is that these systems have short treatment hold times that are most compatible with the voyages of common inter-lake trade routes that are typically shorter than 72 hours (and even as short as two hours). In fact, several of the newer USCG type-approved UV BWMSs require no hold time or as few as 2.5 hours in freshwater.

Electro-chlorination (or electrolysis) systems are the second most common type of disinfection system used to treat ballast water. However, these systems generate chlorine from

saltwater, thus limiting their use in freshwater environments. Bunkering synthetic seawater solution as a salt source is likely impractical for the large quantities of this solution needed and would come at the expense of considerably reduced cargo-carrying capacity. Therefore, EPA does not consider current USCG type-approved electro-chlorination BWMSs to be technologically available to Laker vessels.

Six BWMSs using chemical addition are USCG type-approved, three of which are authorized for use on U.S.-flagged vessels because it has been verified that the requirements as described in 46 CFR Subchapters F (Marine Engineering) and J (Electrical Engineering) were met. USCG type-approved chemical addition BWMS have hold times that range from 24 to 48 hours. Vessels with voyage routes shorter than the necessary hold time would have to delay operations or increase voyage times, such as by slow steaming, which could significantly disrupt established Great Lakes transportation markets (MARAD, 2013).

As of March 2023, USCG type-approved BWMSs also include two ozone systems, one deoxygenation system, and one pasteurization system; however, these systems are not approved for use on U.S.-flagged vessels because they have not been verified to meet the requirements of 46 CFR Subchapters F (Marine Engineering) and J (Electrical Engineering). The USCG type-approved ozonation systems have a hold time of 24 hours. The USCG type-approved pasteurization system does not have a hold time. The USCG type-approved deoxygenation system has a hold time of 120 hours that exceeds the vessel voyage routes of many Great Lakes vessels. Thus, use of these systems, particularly the deoxygenation system, likely would introduce significant delays in vessel operations, would not be considered available for most Lakers, and is incompatible with some Great Lakes shipping routes.

c. Equipment Standard Versus a Numeric Standard in Challenging Environmental Conditions

As noted in the proposed rule, the environmental conditions of the Great Lakes challenge the operation of BWMSs to the point where consistent compliance with a ballast water numeric standard for organisms using a type-approved BWMS is infeasible for Lakers. Examples of these

challenging conditions include extremely low salinity and high levels of suspended solids, turbidity, icing, filamentous bacteria, and dissolved organic carbon from tannins and humic acid. These environmental conditions pose unique challenges to U.S. Lakers because, unlike other vessels operating in challenging water conditions, U.S. Lakers cannot leave the Great Lakes and thus do not have the option to perform ballast water exchange and saltwater flushing. There are many ways in which the environmental conditions of the Great Lakes can interfere with effective operation of a BWMS. For example, filamentous bacteria and high turbidity can inhibit effective treatment by clogging the filters that are also prone to clogging and freezing in the cold, freshwater conditions of the Great Lakes. BWMSs that do not use filters avoid these issues but may not be as effective in treating the unfiltered water. In addition, areas and times of high turbidity and high dissolved organic carbon from tannins and humic acid inhibit effective UV transmittance.

Land-based and shipboard testing of UV and chemical addition BWMSs in the Great Lakes have demonstrated a substantial reduction in organisms even when the numeric discharge standard cannot be achieved (GSI, 2011; GSI 2015; Bailey et al., 2023). An equipment standard could allow vessels flexibility to operate BWMSs in challenging water conditions through use of operational contingency measures, however, these implementation details would be determined in the USCG regulations. Although contingencies may be necessary in certain locations or at certain times of the year in the Great Lakes, EPA expects that continued operation of a BWMS consistent with an equipment standard over the lifetime of a vessel would still provide reductions in the discharge of organisms.

EPA acknowledges that a numeric standard, were it technologically achievable, would better ensure a specific level of pollution reduction. However, absent the availability of ballast water management technology for new vessels operating solely within the Great Lakes that can reliably achieve such a numeric standard, EPA is considering an equipment standard as an option to best align with the "technology-forcing" nature of the BAT statutory standard. *NRDC v. EPA*,

822 F.2d 104, 123 (D.C. Cir. 1987); *see also Southwestern Elec. Power Co.*, 920 F.3d at 1003 ("By requiring BAT, the Act forces implementation of increasingly stringent pollution control methods.").

d. U.S. Land-Based Testing in the Great Lakes

The Great Ships Initiative (GSI)[5] Land-Based Research, Development, Testing and Evaluation Facility located in Duluth-Superior Harbor on Lake Superior conducted testing of various BWMSs and their components. GSI used freshwater from the Great Lakes to evaluate performance of BWMSs at removing Great Lakes organisms within the size ranges required in the VGP and USCG discharge standard using the USCG and the IMO BWMS type-approval protocols. Although the BWMSs were unable to consistently meet the numeric ballast water discharge standard, GSI land-based testing of chemical addition and UV BWMSs demonstrated a substantial reduction in living organisms, providing further support for the equipment standard regulatory option.

In 2010, GSI tested the filtration and UV Alfa Laval PureBallast® Version 3 BWMS in Duluth-Superior Harbor using ambient Great Lakes water. In all three trials, live organism densities in the two regulated size classes in treated discharge were significantly lower than in control discharge, but above the USCG numeric discharge standard. Densities of organisms ≥ 50 μm size class in treated discharge exceeded the USCG discharge standard of 10 live organisms per cubic meter by two to three orders of magnitude. Live densities in the ≥ 10 and < 50 μm size class exceeded the USCG discharge standard by one to two orders of magnitude. The USCG numeric discharge standards for the two regulated size classes were not achieved, even though intake organism densities in the Great Lakes harbor water were well below IMO and EPA's ETV Protocol challenge conditions. GSI concluded that the system failed to achieve the USCG numeric discharge standard due to the filters' ineffectiveness at removing filamentous algae in

[5] The Great Ships Initiative was an industry-led collaborative effort to research problems of ship-mediated invasive species in the Great Lakes Saint Lawrence Seaway System. The facility is now operated by the Lake Superior Research Institute at the University of Wisconsin-Superior.

Duluth-Superior Harbor water. In addition, very low ambient UV transmittance of Duluth-Superior Harbor water (naturally caused by tannins) at the time of testing likely inhibited the effectiveness of the UV disinfection unit (GSI, 2011). Although the numeric ballast water discharge standard was not met during this land-based testing, substantial reductions in organisms resulted from use of the UV BWMS.

During September and October, 2014, GSI conducted land-based testing of three prototype versions of the chlorine addition JFE BallastAce® BWMS to evaluate not only the biological and chemical performance against the USCG ballast water discharge standard, but also the total residual oxidant (TRO) of the chemical system (GSI, 2015). Tests of all three prototypes showed a substantial reduction in living organisms (99 percent relative to the control) even when the discharge standard was not met. The JFE BallastAce BWMS, operated using the TG BallastCleaner® at the higher target TRO concentration of approximately 20 milligram per liter, achieved the USCG discharge standard for living organisms after a two day hold time, although this did result in elevated levels of disinfection byproducts. In 2018, the JFE BallastAce was type-approved by USCG at the 20 milligram per liter maximum active substance dose without toxicity concerns.[6] As detailed in EPA's Great Lakes Ballast Water research plan, described below, additional land-based and shipboard testing is underway to further evaluate the biological efficacy of BWMSs for Lakers.

e. Canada's Shipboard Testing in the Great Lakes

Between 2017 and 2022, Fisheries and Oceans Canada (DFO) sampled 12 international and Canadian domestic vessels operating in the Great Lakes and St. Lawrence River (GLSLR) to determine the efficacy of BWMSs at reducing the abundance of organisms in ballast water discharges (Bailey et al., 2023). This sampling effort included three ballast water discharge-only samples and eleven paired ballast water samples during uptake and discharge. The majority of

[6] This system is not approved for use on U.S.-flagged vessels because it does not meet the requirements of 46 CFR subchapter F (marine engineering) and J (electrical engineering).

BWMSs on the sampled ships used UV plus filtration BWMSs (10 out of 12 ships), from which four samples were collected using the higher UV dose "USCG mode," seven samples were collected using the lower UV dose "IMO mode," and one sample from a UV BWMS did not have the mode recorded. Two ships used chemical addition BWMSs. Two ships were sampled twice at different source ports. Where ships had two BWMS, one system was selected for sampling. The BWMS flow rate during testing was up to 1200 m^3/hour (hr).

Generally, the results demonstrated a substantial reduction in the number of living organisms for both organism size classes stipulated by the ballast water numeric discharge standard. For the ≥ 50 μm size class, results for two out of the three treated discharge-only samples were below the standard, while one sample had an organism concentration 100 times higher than the standard. In the 11 paired samples, the uptake concentrations ranged from 2,168 to 107,577 organisms per m^3 with the corresponding discharges either meeting the standard or achieving at least a 99 percent reduction in organisms compared to the untreated uptake. Six of the treated discharge samples were below the standard, one was close to that standard, and four were above the standard, where "close" is defined as a result where the confidence intervals of the count span above and below the standard.

The results for the ≥ 10 and < 50 μm organism size class showed that the three treated discharge-only samples were below the standard. For the 11 sets of paired samples, one uptake sample was already below the standard, three uptake samples were close to the standard, and seven uptake samples were above the standard ranging from 20 to 169 organisms per mL. For comparison, USCG type-approval requires a minimum concentration of 1,000 organisms per mL. All paired, treated discharge samples were below the standard and had > 98 percent reduction in organism concentration compared to the untreated uptake sample.

DFO observed these BWMS treatment results aboard vessels between May and November in locations where Canadian and international vessels typically ballast in GLSLR

waters. During these tests, BWMSs did not encounter water with high turbidity, which may impact UV treatment and filtration effectiveness.

f. Differences between U.S. and Canadian Requirements and Laker Fleets

In 2021, Canada finalized its ballast water discharge regulation adopting the IMO's D-2 ballast water performance standard. Canada's regulation provides that a vessel using a BWMS to meet the IMO D-2 numeric ballast water performance standard is deemed to have met that standard in respect of ballast water taken on board in the Great Lakes Basin or in the eastern waters of the St. Lawrence River if the vessel's BWMS was installed before September 8, 2024. A vessel constructed before January 1, 2009, that is operated exclusively in waters under Canadian jurisdiction and U.S. waters of the Great Lakes Basin or on the high seas is also deemed to have met the standard if the BWMS was installed before September 8, 2030. These vessels must operate and maintain an IMO-approved BWMS in accordance with the manufacturer's instructions and meet other conditions. A vessel with a BWMS installed after September 8, 2024, is required to meet the IMO D-2 numeric standard.

Canada's requirements are based on its obligation as a Party to the IMO BWM Convention, to which the U.S. is not a Party, and that differs from the CWA legal framework in several key respects. Most importantly, under the CWA's BAT standard, EPA is required to demonstrate that a treatment technology is available and economically achievable before it can be the basis for a discharge standard. Additionally, the IMO BWM Convention includes a temporary experience building phase during which vessels are not to be penalized for exceeding the D-2 numeric discharge standard. Canada makes that experience building phase permanent in its regulations for certain vessels that install a BWMS before September 8, 2024 (or by September 8, 2030, based on the criteria described above), by requiring only an equipment standard and exempting these vessels from the numeric discharge standard for the life of the installed BWMS if the conditions set out in the regulations are met.

3. Operational, Technical, and Economic Considerations of an Equipment Standard for New Versus Existing Lakers

As a general principle, when promulgating technology-based discharge requirements under the CWA, EPA may establish different requirements for a subclass or subcategory within a point source category where they are fundamentally different with respect to one of the statutory factors specified in the Act. *Chemical Mfrs. Ass'n v. NRDC,* 470 U.S. 119-22, 129-34 (1985). Pursuant to CWA section 312(p)(4)(C), the VIDA specifically authorizes the creation of subcategories between new and existing vessels, as well as among classes, types, and sizes of vessels. There are operational, technical, and economic differences to consider for establishing an equipment standard for new or existing Lakers.

a. Operational and Technical Considerations

Most existing Lakers, particularly those built before the era of ballast water management marked by the adoption of the IMO BWM Convention (2004), were designed to rapidly uptake and discharge ballast water with the express purpose of loading and unloading large quantities of bulk cargo at very high rates and ballast water treatment was not considered in their design. The complexities of treating ballast water on existing Lakers include pumping and piping reconfiguration, vessel stability and structural integrity issues, and new power demands. In addition, the space to house the BWMS and ancillary equipment, as well as the added weight of the retrofitted equipment, would result in lost cargo capacity. Corrosion of uncoated ballast tanks due to chemical addition BWMSs is another concern. U.S. Lakers were designed to solely operate in fresh, low salinity water in which corrosion is not a concern. Use of a chemical addition BWMS would require coating the ballast tanks and piping at significant cost and time out of service in dry dock, resulting in lost revenue for shipping season. In addition, several of the larger existing Lakers load and unload cargo and ballast at rates that are much higher than any of the existing USCG type-approved BWMSs. While use of multiple systems is an option,

the complexity of ballasting increases as multiple systems are operated simultaneously and within the structural design considerations of the vessel.

New Lakers, however, can design, plan, and construct in a manner to overcome identified operational and technical challenges such as corrosion, flow rate capacity, lack of space and lost cargo capacity, and adequate power. New Lakers, unlike existing Lakers, could take advantage of the engineering flexibility available during the initial design and construction process to incorporate ballast water treatment requirements. The information for each of these factors below supports establishing an equipment standard for New Lakers and supports rejecting the equipment standard for existing Lakers.

i. Corrosion

Vessels that operate in brackish or ocean saline waters necessitate tanks and piping with an anti-corrosive coating. Historically, the U.S. Laker fleet has been built with uncoated steel ballast tanks because the freshwater of the Great Lakes is not corrosive. Chemical addition, ozone, and any BWMS that doses corrosive treatment chemicals into the ballast water significantly increases the corrosion rates in uncoated ballast tanks. Electro-chlorination BWMSs could increase corrosion rates and require coated tanks. However, these systems are not currently considered technologically available to Lakers because, as described above, they require a supply of saltwater to generate chlorine. On the other hand, UV BWMSs are non-corrosive and do not require coated ballast tanks. According to the USCG (2013b) study, “Investigation of Ballast Water Treatment’s Effect on Corrosion,” deoxygenation BWMSs also do not raise corrosion concerns in freshwater (although it is a concern in saltwater) and may not require coated ballast water tanks and piping. New Lakers can be designed and constructed with coated tanks and piping to eliminate problems associated with chemical addition, ozone, and any BWMS that may cause corrosion.

ii. Flow Rate Capacity

The capacity of a USCG type-approved BWMS selected for a Laker must be compatible with the ballast needs of the vessel, particularly the ballasting rate of the ballast pumps. Lakers, particularly self-unloading Lakers, often have higher ballasting capacities and flow rates than seagoing vessels. U.S. Laker ballast rates typically range from 3,000 m^3/hr up to 18,000 m^3/hr for the largest Lakers. The maximum capacity of current USCG type-approved UV BWMSs range from 500 to 6,000 m^3/hr. Current USCG type-approved chemical addition BWMSs have flow rate capacities ranging from 2,000 to 16,200 m^3/hr, with one system with capacity up to 200,000 m^3. Currently, two USCG type-approved ozone BWMSs have a max flow rate capacity of 8,000 m^3/hr. The one USCG type-approved deoxygenation BWMS has a max flow rate capacity of 4,000 m^3/hr. Some BWMSs have flow rate capacities that are compatible with some Laker ballasting rates for normal cargo operations. Lakers with higher ballasting capacities may require multiple BWMSs to provide sufficient flow rate for normal cargo operations. However, to accommodate the ballast rates of the largest Lakers in the U.S. fleet, the number of BWMSs that would be required would create exceedingly complex ballasting operations. In this case, an alternative BWMS treatment type may be more appropriate. A New Laker could be designed to allow for use of the appropriate type, size, and number of BWMSs compatible with the vessel's projected ballasting rates.

iii. Lost Cargo Capacity

Lakers are typically designed to maximize cargo capacity with little-to-no space available in the engine room or around the self-unloading equipment for a BWMS. New Lakers can be designed to provide space for one or more BWMS and ancillary equipment in the area typically designed for ballast tanks or cargo holds. The design could account for any lower cargo hauling capacity and impact to the total weight of the vessel.

iv. Increased Power

The electrical capacity of Lakers is sized to accommodate the loading and unloading equipment that is operational while the vessel is in port. Typically, the self-unloading equipment

would have to be operated at the same time as the BWMS and would require increased electrical capacity. A New Laker could be designed with additional power output for the increased demand from operation of the BWMS and additional pumping needs. BWMSs using filtration and UV disinfection have the highest electrical demands of all BWMSs and must be accounted for in the design. This document further describes energy demand in Section IV.B.4 of this preamble, *Other Factors*.

b. Economic Considerations

i. Existing Lakers

EPA does not have actual cost information to retrofit an existing Laker to accommodate a BWMS; however, these costs can be estimated, which is sufficient for the purposes of establishing BAT under the CWA. *See CMA v. EPA*, 870 F.2d 177, 237-38 (5th Cir. 1989). Retrofitting an existing Laker to add a BWMS is expensive, particularly for U.S. Lakers that are regulated under Section 27 of the Merchant Marine Act of 1920 (more commonly referred to as "the Jones Act").[7] A 2017 industry report estimated the capital cost of installing BWMSs on the entire existing U.S. Laker fleet of 75 vessels, including any necessary retrofits to allow for installation and operation of these systems, at approximately $649 million and an additional $9.7 million in annual operating costs (Choice Ballast Solutions, 2017). Previously, the USCG also estimated the cost of shipboard installation of BWMSs on Lakers based on vessel type (USCG, 2013a). For comparison, the estimated capital cost to retrofit each of the large, 1000-foot Lakers ranges from as high as $34 million (Choice Ballast Solutions, 2017) to as low as $11.3 million (USCG, 2013a). The retrofit capital cost estimates for other U.S. Laker types including 690–806-foot converted bulkers to self-unloaders, 500–800-foot newer build self-unloaders, and purpose-built barges and tank barges range from approximately $2 million to $4.5 million (Choice Ballast

[7] The Jones Act requires that a vessel trading between U.S. ports must be U.S.-built, primarily U.S.-owned, U.S.-flagged, and with a majority of the crew U.S. citizens. Under the Jones Act, a 50 percent U.S. tax is imposed for repairs on a U.S. vessel that are conducted in a foreign shipyard. USCG, 2012 and King et al., 2009 compared domestic and foreign vessel BWMS retrofit costs. Additional information is provided in the "Economic Analysis of New Lakers for the Supplemental Notice of Proposed Rulemaking for the Vessel Incidental National Standards of Performance" available in the public docket for this rulemaking.

Solutions, 2017) to approximately $8.4 million (USCG, 2013a). Annual operating costs for the different types of U.S. Lakers range from approximately $60,000 to $300,000 annually per vessel (Choice Ballast Solutions, 2017).

ii. New Lakers

EPA is considering whether the equipment standard regulatory option would be economically achievable for New Lakers. Courts have interpreted economic achievability as a test of whether the regulations can be "reasonably borne" by the industry as a whole. *See Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 262 (5th Cir. 1989); *BP Exploration & Oil v. EPA*, 66 F.3d 784, 799-800 (6th Cir. 1996); *see also Nat'l Wildlife Fed'n v. EPA*, 286 F.3d 554, 570 (D.C. Cir. 2002). EPA conducted an economic impact analysis for the equipment standard regulatory option for New Lakers. A summary of that analysis is included in this document, while the complete analysis is included in the docket for this rulemaking. Based on the analysis, EPA projects that the New Laker equipment standard would result in increased cost to the Laker vessel community compared to the initial Regulatory Impact Analysis of the proposed rule.

The impacted industry for the equipment standard regulatory option would include the firms that provide marine transportation using vessels that only operate on the Great Lakes. To determine the baseline conditions of this industry, EPA developed an inventory of existing Lakers. The primary data source for this inventory is the Vessels Characteristics Database managed by the U.S. Army Corps of Engineers Waterborne Commerce Statistics Center (WCSC).[8] The WCSC database contains data on all U.S. vessels operating in the Waterborne Transportation Lines of the United States, including the Great Lakes System, the Mississippi River System and Gulf Intracoastal Waterway, and the Atlantic, Gulf, and Pacific Coasts. The data is collected annually on a calendar year basis by authority of 33 U.S.C. 555. EPA used the most recent data from 2020 to create an inventory of all Lakers.[9] The data represents 44,663

[8] More information on the database can be found at: https://www.iwr.usace.army.mil/About/Technical-Centers/WCSC-Waterborne-Commerce-Statistics-Center-2/WCSC-Vessel-Characteristics/

[9] The 2020 file EPA used can be downloaded from: https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll2/id/11922

vessels, including the individual components of a barge that are individually counted. The WCSC database provides EPA with the following information on each vessel:

- Owner/Operator
- Gross/Net Tonnage
- CG Number (official vessel number assigned by the U.S. Coast Guard)
- International Classification of Ships by Type code,
- Vessel Type, Construction and Characteristics code,
- Year built,
- Year rebuilt,
- City and state of operating headquarters, and
- Detailed variables on length, breadth, capacity, draft, and equipment.

EPA filtered the WCSC database to limit the vessels to existing Lakers by only including vessels in Region 3 (Transportation Lines of the Great Lakes) and excluding vessels that have a value of less than 1,600 Gross Register Tons (GRT). EPA also excluded records in the WCSC database that are used to register individual barges that are part of a larger vessel. The results of this filtering resulted in an inventory of approximately 70 vessels. Because the definition of "constructed" includes those vessels that have undergone a major conversion, EPA used the WCSC data on existing Lakers to identify both the number of Lakers either newly built or converted over the past 10 to 20 years to analyze the cost and impacts of the equipment standard regulatory option.

Because the WCSC Vessels Characteristics data only go through 2020, manual searches of each vessel were conducted using the Port State Information eXchange (PSIX) system. EPA also looked up company names to assess their current fleet and further exclude decommissioned vessels and include new vessels.

(1) Cost Analysis

EPA developed estimates of the capital cost and operation and management cost of adding BWMSs to newly built Lakers to determine the range of potential costs associated with the standard. Costs were based on the use of UV disinfection plus filtration and chemical addition BWMSs. These system types were selected since they have the highest potential for use on a New Laker, given the constraints described in Section IV.B.2.b. of this preamble, *USCG Type-Approved Ballast Water Management Systems* (e.g., use of electro-chlorination BWMSs require bunkering large quantities of synthetic seawater; the ozone, deoxygenation, and pasteurization systems are not approved for use on U.S.-flagged vessels, and the deoxygenation BWMS has a 120 hour hold time that exceeds the vessel voyage routes of many Great Lakes vessels). For purposes of this analysis, EPA assumed that the capital cost of the BWMS is similar to the acquisition cost of that system. This assumes installation would occur as part of the new vessel construction and the required space, interface connections for the ballast, and the electrical power systems can be efficiently included in the design.

To estimate the national costs of the equipment standard, EPA assumed that the number of New Lakers built each year of the period of analysis (25 years) is equal to the historical annual rate of New Laker construction over the last 10 years. EPA made a similar assumption regarding the number of Lakers that have undergone a major conversion. EPA then used the range of capital and operation and maintenance cost for New Laker BWMSs developed by EPA to estimate the annual cost of the equipment standard over the period of analysis. The annual cost over the useful life of the BWMS was estimated.

(2) Economic Impact Analysis

The impact analysis for the equipment standard allows EPA to determine if the standard is economically achievable for New Lakers. To conduct this analysis, EPA compared the annualized cost associated with installing and operating the BWMS to the annualized cost of building and operating a New Laker. If the annualized cost of installing and operating the

BWMS on a New Laker is a small fraction of the annualized cost of building and operating a New Laker, then EPA can be confident that the equipment standard is economically achievable.

EPA estimated the capital and operation and maintenance costs of building and operating New Lakers by using physical and operational characteristics of recently built Lakers. EPA used these estimates to calculate a range of annualized operating costs over the useful life of a New Laker. To do this, EPA determined the cost of capital faced by the industry as well as an estimate of the useful life of a typical Laker.

EPA then re-calculated the annualized cost of the BWMS over its useful life using the cost of capital faced by the industry. Finally, EPA compared the annualized cost of the BWMS to the annualized cost of the New Laker. The average annual cost of procuring and operating the BWMS as a percentage of the average annual cost of building and operating a newly built Laker ranges from 1.1 percent based on use of chemical-addition BWMSs to 1.7 percent based on the use of UV BWMSs. The average annual cost of procuring, installing, and operating the BWMS as a percentage of the average annual cost of converting and operating a converted Laker is 4.3 percent based on use of UV BWMSs. Since the annual cost of procurement, installation, operation, and maintenance of the BWMS is a small fraction of the annual cost of operating a newly constructed or a convered Laker, EPA finds that the equipment standard is economically achievable.

(3) Small Business Impacts Analysis

The firms that own and operate Lakers fall within the NAICS code 483113 - Coastal and Great Lakes Freight Transportation. According to the Small Business Administration's Small Business Size Regulations as established in 13 CFR 121.201, firms in this industry with fewer than 800 employees are considered small businesses. Therefore, EPA determined the number of employees at each parent company in the baseline industry profile. This allowed EPA to estimate the likelihood of small businesses being potentially impacted by the New Laker equipment standard. EPA determined that at least nine of the thirteen owner/operator companies qualify as

small under the current SBA requirements. Those nine entities own slightly over half of all currently operating Lakers. The equipment standard, however, only applies to new or converted vessels and EPA has no information under whose ownership any New Lakers might be constructed or converted. Additionally, the cost impact of the equipment standard is relatively small when compared to the cost of building/converting and operating a Laker. Based on the above findings, EPA determined that the New Laker equipment standard will likely not have a significant economic impact on small entities. Although this regulatory option may impose equipment requirements on any small entity that operates a vessel subject to the standards, EPA does not believe that the projected cost burden would exceed the conventional cost/thresholds used for small entity impact screening analyses (costs greater than 1 percent and 3 percent of annual revenue).

4. Other Factors

a. Non-Water Quality Environmental Impacts

EPA has broad discretion to weigh the non-water quality environmental impacts of a water pollution control technology. *See., e.g., BP Exploration & Oil Inc., v. USEPA,* 66 F.3d 784, 801-802 (6th Cir. 1995); *see also Weyerhaeuser Co. v Costle*, 590 F.2d 1011, 1045 (D.C. Cir. 1978) (Congress intended that EPA have discretion "to decide how to account for the consideration factors, and how much weight to give each factor"). The potential non-water quality environmental impacts of the operation of BWMSs on New Lakers include increased energy demand, reduced cargo capacity resulting in more voyages, and greater hold times resulting in more idling vessels.

EPA expects the non-water quality environmental impacts of an equipment standard to be limited when considering the number of vessels already required to operate a BWMS on the Great Lakes. Over the last 20 years, six newly constructed lakers were built (a rate of 0.3 Lakers per year). Based on the 20-year period, the percentage of shipping vessels that would be affected by an equipment standard for New Lakers is small. Approximately 200 international seagoing

vessels travel from outside of the exclusive economic zone (EEZ) and through the St. Lawrence Seaway in the Great Lakes annually. Approximately 84 vessels travel between coastal and inland sites and ports in the Great Lakes. These non-water quality environmental impacts are very small and acceptable when taking fleet and new ship construction rates into account.

b. Binational Consistency

Another factor considered by EPA is the value of moving toward binational consistency with the Canadian regulatory program. Under the CWA section 304(b), in establishing BAT, EPA may consider "other factors the Administrator deems appropriate." As described above, in 2021, Canada finalized its ballast water discharge regulation adopting the IMO's D-2 ballast water performance standard, that is similar numerically to EPA's proposed numeric discharge standard for ballast water. However, Canada's regulation also provides that a vessel using a BWMS to meet the IMO D-2 numeric ballast water performance standard for ballast water taken on board in the Great Lakes Basin or in the eastern waters of the St. Lawrence River is deemed to have met that standard if the vessel's BWMS was installed before September 8, 2024. A vessel constructed before January 1, 2009, that is operated exclusively in waters under Canadian jurisdiction and U.S. waters of the Great Lakes Basin or on the high seas is also deemed to have met the standard if the BWMS was installed before September 8, 2030. Therefore, Canada is relying on an equipment standard as a significant component of their regulatory program for vessels ballasting in Great Lakes waters.

The equipment standard regulatory option, while not fully aligning the two countries' ballast water regulatory programs for the Great Lakes Basin, would represent a step towards binational consistency. EPA has heard from the regulated community that such consistency is important for vessel companies engaged in binational trade and allows them to better protect the shared Great Lakes waters. Although not a dispositive consideration under the VIDA, EPA agrees that, for vessel regulation, movement towards international consistency is desirable insofar as it does not conflict with other statutory goals. EPA considers this progress towards

binational consistency to be an "other factor" that the Administrator may deem appropriate to consider in setting an appropriate standard under CWA section 304(b)(2)(B).

c. The VIDA's BWMS Legacy Clause Weighs Against Establishing an Equipment Standard for All U.S. Lakers

A significant factor that weighs against EPA establishing the equipment standard for all Lakers is a desire to exercise caution considering the VIDA's "period of use" (or BWMS legacy) provision at CWA section 312(p)(6)(C). This provision provides generally that when a regulated vessel installs a USCG type-approved BWMS, that vessel shall be deemed to be in compliance so long as that system is maintained and used in accordance with manufacturer specifications and continues to meet the ballast water discharge standard applicable to the vessel at the time of installation. There are certain exceptions to this BWMS legacy provision, but EPA anticipates as a general matter that when a vessel installs a BWMS to comply with a ballast water standard applicable at the time of installation, that vessel may remain in compliance even in the face of new or revised requirements for vessels to achieve greater organism reductions in ballast water discharges. Such an outcome appears consistent with the intent of this provision that the Senate Report explains is to "establish the period of use for ballast water management system equipment to generally be the design life of the equipment, provided that certain enumerated conditions are met." Senate Report, at p. 13. EPA understands this provision to reflect a desire by Congress to avoid imposing on regulated vessels the need to undergo repeated, expensive retrofits in relatively rapid succession as ballast water management technology improves over time.

Given the long service lives of most U.S. Lakers, approximately 50 years, if an existing vessel underwent a costly retrofit and was reconfigured to fit a current USCG type-approved system, the vessel would remain in compliance for the life of that system regardless of whether new and better technology becomes available. Retrofitting that same vessel for a newer BWMS may require a different configuration that could be cost prohibitive and impede the deployment of more effective technologies that EPA expects to result from the ballast water research

conducted under the VIDA's Great Lakes and Lakes Champlain Invasive Species Program (GLLCISP), as described below. Consequently, requiring Lakers to install a BWMS now would limit the results of the VIDA-mandated research to only the small universe of Lakers that would be built after a future revision to any regulations finalized in this rulemaking. EPA doubts this was Congress' intent in crafting the VIDA BWMS legacy provision (CWA section 312(p)(6)(C)) and the GLLCISP program to develop ballast water technologies for Lakers.

Imposing an equipment standard on existing Lakers prematurely, in combination with the VIDA's BWMS legacy provision, could impede the deployment of advanced treatment technologies that EPA expects to result from the VIDA's GLLCISP program. Considering the foregoing, EPA proposes that the possible unintended consequence of impeding the deployment of new BWMS technology is an "other factor" that the Administrator deems appropriate to consider in setting an appropriate standard under CWA section 304(b)(2)(B).

d. The VIDA's Great Lakes Research and Other Provisions

The VIDA acknowledged the need for research on ballast water management on Lakers through the establishment of the GLLCISP. One of the main purposes of the program is for EPA to develop, achieve type-approval for, and pilot shipboard or land-based BWMSs for Lakers. In 2020, EPA initiated what is now a seven-year Great Lakes Ballast Water Research and Development plan with the goal of solving the challenges of ballast water management for the existing Laker fleet. This research is testing the efficacy of different BWMSs in Great Lakes waters and, among other things, exploring pre-filtration and enhanced filter systems, modifying existing type-approved BWMSs, testing improved UV lamps, and assessing the feasibility of mobile or shore-based treatment options as a supplement to onboard BWMSs. The research is also exploring the implications of these modifications on cargo operations and biological efficacy.

The plan is also important to expand the market of BWMS technologies in the Great Lakes. The size of the Laker fleet is small compared to the 80,000 seagoing vessels worldwide

that are now purchasing and installing systems to meet the U.S. or IMO ballast water discharge standards. Due to this small market size, BWMS vendors have historically devoted limited resources to testing and advancing systems that work onboard these vessels. The research seeks to provide Laker owners and operators with more information for selecting a commercially available system for Great Lakes use.

Finally, this research may inform EPA's obligation under CWA section 312(p)(4)(D)(i) to review the discharge standard at least every five years and revise if appropriate. EPA's Great Lakes Ballast Water Research and Development Program may provide a sound basis for proposing a new or updated standard, particularly for existing Lakers as well as Lakers built in the future.

In addition to taking a forward-looking approach to research, EPA is also considering the opportunities the VIDA provides for states to develop enhanced Great Lakes requirements (CWA section 312(p)(10)(B)). This provision establishes a process through which Governors of the Great Lakes states can work together to develop an enhanced standard of performance or other requirements with respect to any incidental discharge, including ballast water. In all cases where Great Lakes Governors propose an enhanced requirement, EPA and the USCG may only reject the proposed requirement if it is less stringent than existing standards or requirements, inconsistent with marine safety, or inconsistent with applicable maritime and navigation laws and regulations.

5. New Lakers

a. Subcategorization of New Lakers

EPA is considering whether to create a regulatory subcategory for New Lakers and a requirement to install, operate, and maintain a USCG type-approved BWMS for ballast water discharges from these vessels to reduce the discharge of organisms in the Great Lakes. EPA is considering this subcategorization based on the important differences between New Lakers and existing Lakers for the purposes of installing and operating BWMSs. New Lakers, unlike

existing Lakers, can take advantage of the engineering flexibility available during the initial design and construction process to incorporate ballast water treatment capabilities. New Lakers can be designed and constructed to accommodate a USCG type-approved BWMS and overcome certain operational and technical challenges such as corrosion, flow rate capacity, lack of space and lost cargo capacity, and adequate power. Due to these technical advantages and the results of the economic analysis, EPA is considering whether use of these systems on New Lakers may be technologically available and economically achievable. An equipment standard for New Lakers would also encourage continued development and deployment of new ballast water treatment technologies suitable for use in the Great Lakes. Ballast water treatment technologies continue to evolve, and EPA expects that technological advancements in the design of BWMSs will continue to improve their availability for use on the Great Lakes.

EPA is not considering an equipment standard for existing Lakers due to the technical and operational challenges and anticipated disproportionately high costs to retrofit BWMSs onto existing Lakers as compared to New Lakers. Moreover, and significantly, EPA is exercising caution considering the VIDA's BWMS legacy provision at CWA section 312(p)(6)(C), in that if the equipment standard were applied to the existing Laker fleet, these vessels would be unlikely to benefit from any improved technology from the ballast water research conducted under the VIDA's GLLCISP. Additionally, EPA's seven-year Great Lakes Ballast Water Research and Development plan is targeted to address the complexities and improve the operation of BWMSs on existing Lakers. This research may provide a sound basis for proposing a new or updated standard, particularly for existing Lakers as well as Lakers built in the future.

EPA acknowledges that for the foreseeable future New Lakers will constitute only a modest proportion of the broader Laker fleet, and thus the equipment standard regulatory option would only apply to a small number of Lakers. EPA further acknowledges that an equipment standard for New Lakers would only eliminate a small percentage of total organisms, and potential ANS, discharged within the Great Lakes. EPA is considering an equipment standard for

New Lakers notwithstanding these limitations in part because of the well-settled principle of administrative law that regulatory agencies may "address [a] problem incrementally" and "need not solve a problem in a single rulemaking." *Nat'l Postal Pol'y Council v. Postal Regul. Comm'n*, 17 F.4th 1184, 1197 (D.C. Cir. 2021) (citing *Mobil Oil Expl. & Producing Se. Inc. v. United Distrib. Cos.*, 498 U.S. 211, 231 (1991)).

EPA views a requirement to install BWMSs on New Lakers as an incremental step and one that could "result in reasonable further progress" towards the ultimate goal of eliminating the discharge of untreated ballast water in the Great Lakes. 33 USC 1311(b)(2)(A). Oceangoing vessels on the Great Lakes are already required to treat ballast water discharges. The regulatory option being considered to install BWMSs on New Lakers would further reduce the amount of untreated ballast water discharged in the Great Lakes and leave existing Lakers as the only source of untreated ballast water discharges.

EPA sees two primary benefits to potentially including the equipment standard for New Lakers. First, EPA expects the equipment standard for New Lakers would have the effect of capping the number of vessels operating without a BWMS in the Great Lakes and would make incremental progress towards the elimination of untreated ballast water discharges in the Great Lakes. As such, EPA expects that the equipment standard would lead to a reduction in the number of organisms discharged and thus a reduction in propagule pressure (a key indicator of ANS establishment (NRC, 2011)). The second primary benefit of the equipment standard would be to promote greater experience among Lakers operating BWMSs on the Great Lakes. EPA anticipates that the experiences of New Lakers operating BMWSs, as well as the VIDA's long-term research program to develop improved BMWS technologies for a broader range of Lakers, will provide important information to support a future update to the proposed standards of performance that could address the full universe of Lakers. In this way, EPA views the equipment standard for New Lakers as an incremental step towards a longer term goal of achieving more significant reductions in the risk of ANS transfer within and between the Great

Lakes. EPA solicits the public's input on the supplemental regulatory option to establish a ballast water equipment standard solely for New Lakers.

b. Definition of a New Laker

EPA is considering defining a "New Laker" as "a bulk carrier vessel that operates exclusively on the Great Lakes and that is constructed after the effective date of USCG regulations promulgated pursuant to CWA section 312(p)(5)(A)(i)." The VIDA directs the USCG to develop corresponding implementation requirements two years after EPA's standards are finalized. As defined in the proposed rule, "constructed" in this context means a stage of construction when: (1) the keel of a vessel is laid; or (2) construction identifiable with the specific vessel begins; or (3) assembly of the vessel has commenced and comprises at least 50 tons or one percent of the estimated mass of all structural material, whichever is less; or (4) the vessel undergoes a major conversion.

EPA is considering this definition of New Laker based on the timeframe EPA expects would be necessary for vessel owners to design a vessel that accounts for both EPA and the USCG ballast water regulatory responsibilities under the VIDA. The VIDA directs EPA to develop national standards of performance, then the USCG to develop corresponding implementing requirements to ensure, monitor, and enforce compliance with the EPA standards. The USCG must also promulgate requirements governing the design, construction, testing, approval, installation, and use of marine pollution control devices (e.g., BWMSs) to ensure compliance with the EPA national standards of performance. Thus, it is critical for vessel owners to be able to wait until both the EPA regulations and the USCG requirements are final to allow for selection and installation of a BWMS consistent with those requirements.

EPA is considering this definition of New Laker as an alternative to the new vessel date in the VGP of January 1, 2009, for several reasons. First, in the 2013 VGP, EPA selected January 1, 2009, as the cutoff date based on consistency with the IMO's 2004 BWM Convention that used the 2009 date to distinguish vessel groups and establish compliance dates. However, the

BWM Convention did not enter into force until 2017, at which point the IMO updated the compliance dates, such that new build vessels are defined as those built after September 8, 2017, and are expected to meet the standard immediately. Ships constructed before September 8, 2017, are expected to comply by September 8, 2024.

Second, the few U.S. Lakers that have been built since 2009 are not operating BWMSs notwithstanding the 2013 VGP requirements to meet the numeric discharge standard. These vessels received USCG extensions (33 CFR 151.1513 and 151.2036) to the compliance schedule of the numeric discharge standard in USCG regulations at 33 CFR 151.1512(b), which is the same as the numeric discharge standard implementation schedule in the VGP. The USCG extensions can be issued up to five years or until implementation of USCG regulations that change the discharge standard. The USCG can re-issue these compliance date extensions. These vessels are also covered by EPA's low enforcement response policy (U.S. EPA, 2013). The basis of this policy was due to the challenges of meeting the numeric ballast water discharge standard for vessels operating exclusively on the Great Lakes.

Third, the 2015 decision from the United States Court of Appeals for the Second Circuit, which remanded certain provisions of the 2013 VGP to EPA, took issue with the 2009 cutoff date. The Court stated that "[P]ost–2009 Lakers face many of the same challenges and constraints as pre–2009 Lakers, such as their short voyages, high pumping rates, and freshwater environment… Thus, distinguishing pre-2009 and post-2009 Lakers was arbitrary and capricious." *Nat. Res. Def. Council v. U.S. E.P.A.*, 808 F.3d 556, 577 (2d Cir. 2015). Considering this decision, the proposed rule would eliminate the distinction between pre- and post-2009 Lakers as compared to the 2013 VGP. However, this document identifies important distinctions between existing Lakers and New Lakers that have yet to be constructed. In particular, New Lakers may be designed and constructed to account for and overcome certain operational and technical challenges without the need for complicated and expensive retrofits.

The definition of "New Laker" in the equipment standard regulatory option differs from

that in Canada's 2021 ballast water regulation. Under Canada's regulation, the "newest" vessels, those with a BWMS installed after September 8, 2024, are required to meet the IMO D-2 numeric ballast water discharge standard. A vessel with a BWMS installed before September 8, 2024, is deemed to have met the standard in respect to ballast water taken on board in the Great Lakes Basin or in the eastern waters of the St. Lawrence River. A vessel constructed before January 1, 2009, that is operated exclusively in waters under Canadian jurisdiction and U.S. waters of the Great Lakes Basin or on the high seas is also deemed to have met the standard if the BWMS was installed before September 8, 2030. Although there may conceivably be administrative advantages to using the same date in both the U.S. and the Canadian regulations, the differences between the U.S. and Canadian legal authorities and the physical, operational, and economic conditions of their respective Laker fleets, as described in Section IV.B.3 of this preamble, *Operational, Technical, and Economic Considerations of an Equipment Standard for New Versus Existing Lakers*, have prompted EPA to consider differentiating between existing and New Lakers.

EPA is soliciting the public's input on the appropriate definition of New Laker for the purpose of establishing a ballast water equipment standard, particularly whether there may be reason to prefer a cutoff date for the New Lakers subcategory based on that in the 2013 VGP (January 1, 2009) or some other date.

C. Hulls and Associated Niche Areas

Vessel hulls are often coated with anti-fouling compounds to prevent or inhibit the attachment and growth of biofouling organisms. Vessel biofouling is the accumulation of aquatic organisms such as microorganisms, plants, and animals on surfaces and structures immersed in or exposed to the aquatic environment. Selection, application, and maintenance of an appropriate coating type and thickness according to vessel profile is critical to effective biofouling management, and therefore prevention of the introduction and spread of ANS from the vessel hull and associated niche areas.

In the proposed rule, EPA included requirements to help reduce the discharge of biofouling organisms from vessel equipment and systems, notably from hulls and associated niche areas, by requiring vessel operators to develop and follow a biofouling management plan and follow specific in-water equipment and system cleaning protocols. Additionally, EPA proposed to prohibit in-water cleaning of biofouling on hulls and associated niche areas that exceed a U.S. Navy fouling rating (FR) of FR-20,[10] except when the fouling is local in origin and cleaning does not result in the substantial removal of a biocidal anti-fouling coating, as indicated by a plume or cloud of paint; or, when an in-water cleaning and capture (IWCC) system is used that is designed and operated to capture coatings and biofouling organisms, filter biofouling organisms from the effluent, and minimize the release of biocides. EPA recommended, but did not propose to require, the use of IWCC systems for removal of local macrofouling.

This document discusses five key issues raised during the public comment period on the general applicability of the hull and associated niche area requirements and cleaning of this equipment as proposed in subsections 139.22(a) and (c). While EPA's proposed rule also included biofouling requirements specific to hull and associated niche area coatings and other incidental discharges such as seawater piping and cathodic protection, EPA is only soliciting comments on the issues discussed in this document. EPA does not expect that the options discussed in this document for hulls and niche areas would result in a change to the compliance costs estimated in the Regulatory Impact Analysis accompanying the proposed rule.

1. Biofouling as a Discharge Incidental to the Normal Operation of a Vessel

Vessel biofouling is the accumulation of aquatic organisms on hulls and associated niche areas. Biofouling can include pathogens, as well as microfouling and macrofouling. Biofouling organisms are discharged from vessel surfaces both passively through sloughing and actively through in-water cleaning activities. With this document, EPA is considering adding definitions

[10] FR-20 is considered soft fouling and is described as: "Slime as dark green patches with yellow or brown colored areas (advanced slime). Bare metal and painted surfaces may by be obscured by the fouling." (U.S. Navy, 2006)

for "passive discharge of biofouling" and "active discharge of biofouling."

During the public comment period, EPA received comments questioning the Agency's legal authority to regulate the passive discharge of biofouling as an incidental discharge under the VIDA. Some commenters asserted that the plain language of the statutory definition of "discharge incidental to the normal operation of a vessel" does not encompass the passive detachment of biofouling organisms from vessel surfaces outside the context of active hull cleaning events. These commenters objected that including the regulation of passive discharges of biofouling would thus have the effect of preempting state authority beyond Congressional intent. Commenters did not question EPA's authority to regulate discharges from active hull-cleaning events.

With this document, EPA is considering if the best interpretation of CWA section 312(p) authorizes the Agency to regulate passive discharge of biofouling as a discharge incidental to the normal operation of a vessel under the VIDA. This interpretation is based on the plain language of the statute, as well as the statutory context and regulatory history. EPA understands the statutory definition of "discharge incidental to the normal operation of a vessel" at CWA section 312(a)(12)(A), to include any incidental discharge (including passive discharge) of biofouling organisms from vessel equipment and systems for several reasons. First, passive biofouling releases are an ordinary accompanying circumstance of vessel operation and transit. Based on a plain reading of the CWA-defined term "discharge incidental to the normal operation of a vessel," EPA interprets passive biofouling to be genuinely incidental to the normal operation of a vessel. Second, the statute does not limit what can be considered an incidental discharge to specific named discharges. Instead, CWA section 312(a)(12)(A) explicitly uses the word "including" before introducing a list of discharges, which indicates that the list is illustrative and not exhaustive. *See, e.g., In re Vill. Apothecary, Inc.*, 45 F.4th 940, 947 (6th Cir. 2022) ("Although context matters, most courts read the word 'include' to introduce a nonexhaustive list.").

Third, CWA section 312(a)(12)(A)(i) states that a discharge incidental to the normal operation of a vessel includes "any other pollutant discharge from the operation of a marine propulsion system, shipboard maneuvering system, crew habitability system, or installed major equipment…." This language is best read to encompass passive biofouling discharges from the hull of a vessel because all such discharges are connected to operation of the listed equipment. For example, the shipboard maneuvering systems cannot "operate" without the hull. The CWA section 312(a)(12)(A)(i) definition also includes "any other pollutant discharge . . . from a protective, preservative, or absorptive application to the hull of the vessel." The same definition at subsection (A)(ii) includes "a discharge in connection with the testing, maintenance, and repair of a system described in clause (i) whenever the vessel is waterborne." Read together, these provisions define a discharge incidental to the normal operation of a vessel, for the purposes of CWA section 312, to include "a discharge in connection with the… maintenance[] and repair" of any "protective, preservative, or absorptive application to the hull." The accumulation, growth, and discharge of biofouling organisms is intimately "connected" to the maintenance of "protective" and "preservative" applications to the hull. Improper or inadequate maintenance of these applications (or coatings) leads to excessive growth of biofouling organisms and the attendant discharge of such organisms. A vessel is more likely to accumulate and discharge biofouling organisms if the hull coatings are not properly maintained and, even in a properly maintained vessel, biofouling organisms are ultimately discharged from the hull coatings as much as the hull itself.

The statutory context and purpose further support the interpretation that passive biofouling is an incidental discharge. The VIDA was enacted to provide "uniform national standards" for vessel discharges, and EPA regulating passive biofouling under the VIDA would further that purpose by avoiding state-by-state variation. This is particularly appropriate for biofouling because EPA and the USCG participated in the Correspondence Group on Review of the Biofouling Guidelines (currently the 2011 Guidelines for the Control and Management of

Ships' Biofouling to Minimize the Transfer of Aquatic Species (Resolution MEPC.207(62))), and thus possess the expertise to regulate this discharge. Only a handful of states have any programs to regulate biofouling, so excluding the passive discharge of biofouling from the rule risks leaving most states without any program to control such discharges. Additionally, the VIDA has a particular focus on ANS, as evidenced by the numerous specific references and provisions relating to ANS in the statutory text. *See, e.g.*, CWA sections 312(p)(1)(A), (2)(B), (4)(B)(i), (4)(E), & 6(E); 33 U.S.C. 1322(p)(1)(A), (2)(B), (4)(B)(i), (4)(E), & 6(E). Because passive biofouling is a significant vector for the spread of ANS, it is likely that Congress would have expected the VIDA to control this discharge.

With respect to the regulatory history, the VGP drew no distinction between active and passive discharges of biofouling. Thus, EPA regulated biofouling under the VGP by including management requirements to minimize the transport of biofouling organisms from vessel equipment and systems, primarily by requiring use and maintenance of an appropriate anti-fouling management system, including inspection, cleaning, and maintenance of the hull and associated niche areas. With limited exceptions, the VIDA requires that the standards be at least as stringent as the 2013 VGP requirements established under CWA section 402. *See* CWA section 312(p)(4)(B)(iii), 33 U.S.C. 1322(p)(4)(B)(iii) (EPA standards); *id.* (5)(A)(ii) (USCG requirements). EPA's consideration of a supplemental option clarifying inclusion of the regulation of passive biofouling is consistent with the VGP and this VIDA requirement.

For the above reasons, EPA is considering whether to regulate the passive discharge of biofouling from vessel equipment and systems as an incidental discharge in the final rule.

2. Application of Requirements to Cleaning of Macrofouling and Microfouling

EPA received comments on the proposed rule that the Agency should promulgate biofouling standards that are as specific as possible to ensure compliance and enforcement. Commenters also requested that EPA make a distinction between macroscopic and microscopic biofouling and include definitions based on scientific literature. Commenters also stated that the

U.S. Navy's FR scale was inappropriate for assessing risk of introducing ANS, recommending that the terms "macrofouling" and "microfouling" be used instead to delineate applicable requirements. In consideration of these comments, EPA is considering defining and using the terms "macrofouling" and "microfouling" and dispensing with use of the U.S. Navy's FR scale as a tool for assigning level and extent of vessel biofouling.

3. Applicability of Regulations to In-Water Cleaning Discharges

In the proposed rule, EPA did not discuss in detail the differences between in-water cleaning without capture and IWCC as it related to the proposed standards for the discharge of biofouling from vessels. Based on comments received, EPA is considering: (a) prohibiting any discharge from in-water cleaning of macrofouling without capture; and (b) establishing discharge requirements for in-water cleaning of microfouling of vessel hulls and associated niche areas. Also, EPA is considering requiring that hulls and associated niche areas be managed to minimize macrofouling, such as through cleaning of microfouling, and that any hull and associated niche area cleaning must minimize damage to the anti-fouling coating and follow applicable cleaning requirements found on the coating manufacturers' instructions and any applicable Federal Insecticide, Fungicide, and Rodenticide Act label. To facilitate these new options, EPA is considering several new and revised definitions for inclusion in the final rule. New definitions include "active discharge of biofouling," "anti-fouling coating," "anti-fouling system," and "passive discharge of biofouling." New definitions for "biofouling," "macrofouling," "microfouling," and "niche areas" are also being considered and are based largely on definitions in the IMO's 2023 "Revised Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species."

4. Discharges from In-Water Cleaning and Capture (IWCC) Systems

IWCC discharges are the result of the use and operation of systems that are designed to capture coatings and biofouling organisms, filter biofouling organisms from the effluent, and minimize the release of biocides. These systems produce waste streams of captured debris that is

transported topside by umbilical and pumped to an adjacent barge or dockside. The waste stream is then typically processed by a commercial in-water cleaning system service provider and then discharged into the receiving water or collected for disposal.

EPA received comments on the proposed rule arguing that IWCC discharges did not fall within the scope of the VIDA definition of discharge incidental to the normal operation of a vessel, and therefore should not be included in the final standard. Specifically, commenters argued that discharges associated with IWCC came from sources associated with the third-party cleaning service rather than from the vessel itself, and that IWCC thus more resembled the shore-side discharge of treated ballast water that is exempted from the VIDA. These commenters urged that IWCC discharges should instead be regulated through appropriate National Pollutant Discharge Elimination System (NPDES) permitting authorities (e.g., state regulatory agencies), consistent with how the VIDA excludes discharges of ballast water to a reception facility from the uniform national standards of performance. Additionally, the VIDA instructed EPA to be generally consistent with the VGP in promulgating new standards (CWA section 312(p)(4)(B)(iii)), and the VGP did not interpret an IWCC discharge to be a discharge incidental to the normal operation of a vessel. This new approach being considered is analogous to the approach used for ballast water discharges to a reception facility, which EPA is explicitly instructed not to regulate under the VIDA. As such, EPA is now considering not including the discharge of effluent from IWCC systems as an incidental discharge in the final rule.

Additionally, EPA acknowledges that this approach would differ from how IWCC discharges from vessels of the Armed Forces are regulated under the Uniform National Discharge Standards (UNDS; *see* 40 CFR 1700.37). However, such differences are to be expected where there are different legal and factual circumstances attending the vessels regulated under each authority. Indeed, there are additional inconsistences that exist across the UNDS, the VGP, and the proposed rule for other discharges.

Based on the comments and EPA's understanding that there are no permanent onboard

IWCC systems commercially available for use, EPA is considering not including the discharge of treated effluent from IWCC technologies as a discharge incidental to the normal operation of a vessel. As such, these discharges would not be exempt from regulation under CWA section 312(p)(9)(C) and, therefore would require NPDES permit coverage akin to the discharge of treated ballast water from a barge-based or shore-based treatment facility. This would include any materials not captured and discharged as part of IWCC usage. Also, consistent with the proposal to exclude discharges from IWCC systems from these standards, EPA is considering removing the reference to IWCC systems from the prohibition of in-water cleaning of any copper-based hull coatings in any copper-impaired waterbody within the first 365 days after application of that coating. Rather, the revision would prohibit any discharge from in-water cleaning without capture of any copper-based hull coatings in a copper-impaired waterbody within the first 365 days after application of that coating.

Given that the approach considered here to exclude IWCC discharges from the final standard differs from what was initially proposed, EPA is seeking additional input to inform the final rule. Specifically, EPA is interested in feedback regarding the State-level technical, administrative, and resource capacity to implement such a NPDES permitting program for discharges or additional state regulatory options associated with IWCC systems.

5. Terms to Describe Cleaning

EPA received comments that the terms “frequent,” “gentle,” “minimal,” “local in origin,” “plume or cloud of paint,” and “minimize release of biocides” with regards to hull and associated niche area cleaning are not well-defined and open for broad interpretation. Along these same lines, EPA received comments that the standards for cleaning in the proposed rule were vague, and as such, not protective against the discharge of organisms and water quality impacts. EPA considers the approach used in the proposed rule (i.e., describing cleaning as frequent and gentle with a goal of minimizing impacts to the coating) to be consistent with how cleaning is regulated in the VGP, and a best practice that would ensure the longevity and effectiveness of the coating

while minimizing pollutant loading into the surrounding environment. EPA understands, however, that use of the terms "local in origin" and "plume or cloud of paint" may be challenging to implement and enforce, and as such, EPA is considering removing these concepts.

D. Graywater Systems

Graywater is water drained or collected from showers, baths, sinks, and laundry facilities. Graywater discharges can contain bacteria, pathogens, oil and grease, detergent and soap residue, metals (e.g., cadmium, chromium, lead, copper, zinc, silver, nickel, mercury), solids, and nutrients. To the extent that graywater is commingled with sewage, the VIDA subjects such discharge to all applicable requirements for both graywater and sewage. *See* CWA section 312(p)(2)(A)(ii), 33 U.S.C. 1322(p)(2)(A)(ii).

1. Summary of Proposed Rule and Relevant Comments Received on Graywater Systems

Among other graywater system requirements, EPA proposed that graywater discharges from certain vessels, including any new vessel of 400 gross tons as measured under the Convention Measurement System of the International Convention on Tonnage Measurement of Ships (GT ITC) (400 GRT if GT ITC is not assigned) and above, would be prohibited unless the discharge meets numeric discharge standards for fecal coliform, biochemical oxygen demand, suspended solids, pH, and residual chlorine. EPA received comments from several industry stakeholders (American Petroleum Institute, American Waterways Operators, Crowley Maritime Corporation, and Offshore Marine Services Association) requesting that EPA consider exempting vessels that carry only a relatively small number of persons. Commenters reasoned that such vessels produce small volumes of graywater discharge and that the pollution reductions would be too negligible to justify the costs of treating graywater discharge. Commenters also asserted that requiring such vessels to comply with the numeric discharge standard is not supported by VGP data and that the requirement should be based on total personnel rather than tonnage, similar to the graywater monitoring requirements found in Section 2.2.15.2 of the 2013 VGP. Specifically, commenters argued that vessels that have a maximum crew capacity and

overnight accommodations for fewer than 15 persons should be exempt from the rule's numeric discharge standard for graywater. Commenters also argued that the pollution reductions to be achieved from storage and pump out of graywater were negligible in comparison to the other environmental impacts that would result from the installation, maintenance, and operation of such systems, including increased energy usage and increased carbon emissions from burning fuel. Commenters also noted that the installation and use of graywater storage tanks could increase the need for ballasting operations, thereby increasing the discharge of pollutants through ballast water.

EPA understands that vessels that carry fewer than 15 persons, regardless of vessel tonnage, would produce a lower volume of graywater discharges. The proposed rule noted that the volume of graywater generated and discharged by a vessel depends on the number of persons onboard and several proposed requirements are tied directly to that number. For example, under the proposed rule, the discharge of graywater from any new ferry authorized by the USCG to carry 250 or more persons would be required to meet the numeric discharge requirements. Additionally, graywater generation rates vary based on the types of activities onboard the vessel. For example, cruise ship passengers and crew are expected to generate higher volumes of graywater than the crew onboard cargo ships, towing vessels, or similar vessels. This is because passengers on cruise ships engaged in leisure activities tend to use galleys and accommodations (sinks and showers) to a greater extent for bathing, food preparation, and other such activities.

2. Supplemental Regulatory Option for Graywater Systems

Due to the comments received, EPA is considering a supplemental option that changes the eligibility criteria to track the number of persons onboard a vessel more closely, in line with commenters' recommendation to limit the applicability only to new vessels of 400 GT and above that have a maximum capacity of 15 or more persons and provide overnight accommodations to those persons. Based on an assumed production rate of 30 to 85 gallons of graywater per person per day, the largest commercial vessels with 14 persons would produce between 420 and 1,190

gallons of graywater per day. EPA expects that 400 GT vessels that have a maximum capacity and overnight accommodations for fewer than 15 persons, such as towing vessels, are likely generating graywater on the lower end of this estimate. Based on the comments received, EPA is considering whether exempting graywater discharges from these less populated vessels without overnight accommodations from meeting the otherwise applicable standard would be reasonable considering the relevant statutory factors for a technology-based standard. EPA projects that this exemption would result in increased cost savings to the vessel community compared to the initial Regulatory Impact Analysis of the proposed rule.

EPA is aware of two technologies for reducing the discharge of pollutants through graywater: treatment and storage. As explained in the proposed rule, EPA recognizes that the option to install advanced wastewater treatment systems (AWTS) or sufficient storage may be unavailable for certain vessels for such reasons as cost, stability of the vessel, or space constraints. Additionally, treatment systems require a minimum number of persons onboard, as identified by the manufacturer, to generate a sufficient volume of wastewater for proper operation. As such, vessels carrying fewer persons may have fewer device options available. In the process of developing a 2011 EPA report titled "Graywater Discharges from Vessels" (Docket No. EPA-HQ-OW-2019-0482-0368), contractors acting on EPA's behalf contacted several vessel operators representing a range of vessel classes to understand current graywater handling practices. Only the operator with the largest vessel – a medium cruise ship typically carrying 740 passengers – reported treatment of graywater using an AWTS. In considering these factors, EPA did not propose that all vessels be required to treat graywater discharges according to the numeric discharge standards. Information on current graywater handling practices, device availability, and minimum number of persons required for operation is also available in the "Graywater Discharges from Vessels" report.

Given the apparent unavailability of technologically practicable treatment options, EPA is considering whether it would be reasonable to require vessels of this type to install holding

tanks (as needed) to store graywater. Commenters expressed concerns regarding the operational and logistical challenges associated with equipping holding tanks onboard minimally crewed vessels greater than 400 GT, such as towing vessels. Specific concerns included impacts to vessel stability, inadequate space for installation, and the need to regularly pump out the tanks despite limited availability of suitable facilities for offloading wastewater from commercial vessels. EPA understands that for vessels with multi-day voyages that primarily operate in nearshore waters, the required holding tanks would be large. Assuming a towing vessel with an average crew of six, generating 30 gallons per person per day, with a 14-day pumpout interval, a 2,520-gallon tank would be required. In the proposed rule, EPA solicited data and comments on the availability of pumpout facilities for graywater. While few specifics were provided, commenters identified general deficiencies in the availability of suitable facilities for non-recreational vessels.

Several commenters argued that installing holding capacity, with the ongoing costs of pumping out, could be economically burdensome. EPA's recent analysis of a mandatory sewage storage requirement for tugboats and similar vessels in Puget Sound amounted to an estimated 6.8 percent increase in annual baseline operating costs for such vessels, not including the additional costs to purchase and install the tanks. This increase is due to the costs associated with facility use (pumpout fees), travel to access facilities (lost revenue and fuel costs), and time to pump out (lost revenue). Because graywater is generated in greater volumes on a per person per day basis than sewage, EPA would expect a greater increase in operating costs should tugboats and similar vessels be required to equip storage capacity to prevent overboard discharges.

As part of this supplemental regulatory option, EPA modified the applicability criteria from "400 GT ITC (400 GRT if GT ITC is not assigned)" to "400 GT." This modification is intended to align the language with existing regulations and the IMO.

V. Solicitation of Comments

In this document, EPA solicits public comment on new data received since the proposed

rule and a small number of supplemental options for specific discharges and/or systems.

For the numeric ballast water discharge standard, EPA is not proposing a different standard than that in the proposed rule; however, EPA is seeking input on this issue and on the analysis of the new data.

For ballast water uptake, EPA is considering a supplemental option to require vessel operators to address and identify their uptake practices as part of their ballast water management plan.

For ballast water discharges from Lakers, EPA is considering a supplemental option to require an equipment standard for New Lakers. These vessels would be required to install and operate a BWMS that has been type-approved by the USCG. EPA proposes to define a New Laker as a bulk carrier that operates exclusively on the Great Lakes and that is constructed after the effective date of USCG regulations promulgated pursuit to CWA section 312(p)(5)(A)(i).

For hulls and associated niche areas, EPA is considering whether to: (a) define the terms "active discharge of biofouling," "microfouling," "macrofouling," and "passive discharge of biofouling;" (b) prohibit any discharges from in-water cleaning without capture of macrofouling; (c) exclude discharges from IWCC activities from these regulations; and (d) eliminate use of terms such as "local in origin" and "plume or cloud of paint" when referring to cleaning activities and "fouling rating" to identify applicable cleaning requirements. Of note, a number of the revisions under consideration align with the recently adopted (July 2023) "Revised Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species."

For graywater systems, EPA is considering a supplemental option to limit the applicability of the requirement that discharges of graywater meet the numeric discharge standard to only those new vessels of 400 GT and above that have a maximum capacity of 15 or more persons and provide overnight accommodations to those persons, instead of all new vessels of 400 GT and above.

EPA solicits public comments exclusively on the topics raised in this document and not on any other provisions of the proposed rule.

VI. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at https://www.epa.gov/laws-regulations/laws-and-executive-orders.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 14094: Modernizing Regulatory Review

This action is a "significant regulatory action" as defined in Executive Order 12866, as amended by Executive Order 14094. Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for Executive Order 12866 review. Documentation of any changes made in response to Executive Order 12866 review is available in the docket. EPA prepared an analysis of the potential costs and benefits associated with this action. This analysis, "Regulatory Impact Analysis of the Proposed Rulemaking" (EPA-HQ-OW-2019-0482-0589), is available in the docket. For each section of this supplemental notice of proposed rulemaking, EPA forecasted the anticipated effect on cost to the regulatory community, as compared to that identified in the Regulatory Impact Analysis and based on the supplemental regulatory option presented. The Regulatory Impact Analysis will be updated and finalized alongside the final rule.

B. Paperwork Reduction Act (PRA)

This supplemental notice of proposed rulemaking does not impose any new information collection burden under the PRA. The information collection activities associated with EPA's 2020 notice of proposed rulemaking (85 FR 67818) were submitted for approval to the Office of Management and Budget (OMB) under the PRA and assigned OMB control number 2040-0303. You can find a copy of the Information Collection Request (ICR) in the docket for this rule. This supplemental notice of proposed rulemaking does not address the previously identified information collection activities nor would it result in changes to the previously submitted ICR.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. Although this action will impose requirements on any small entity that operates a vessel subject to the standards, EPA determined that the projected cost burden would not be significant. As described in this document, EPA has determined that, when compared to the Regulatory Impact Analysis of the 2020 proposed rule (EPA-OW-2019-0482-0589), the supplemental regulatory options being considered would result in no cost impact or a cost savings to the regulated community with the exception of the ballast water standard being considered for New Lakers. For New Lakers, EPA determined that the majority of companies potentially subject to the ballast water requirement qualify as small entities; however, EPA cannot predict under whose ownership a New Laker might be constructed or converted and subject to these requirements. However, the cost to comply with this new requirement is relatively small compared to the cost of building/converting and operating a New Laker. Details of the screening analysis for the new ballast water discharge standard being considered for New Lakers are presented in the "Economic Analysis of New Lakers for the Supplemental Notice of Proposed Rulemaking for the Vessel Incidental National Standards of Performance" available in the public docket for this rulemaking.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

E. Executive Order 13132: Federalism

EPA has concluded that this action has federalism implications because it preempts state law. The VIDA added a new CWA section 312(p)(9)(A) that specifies that, beginning on the effective date of the requirements promulgated by the Secretary established under CWA section 312(p)(5), no state, political subdivision of a state, or interstate agency may adopt or enforce any law, regulation, or other requirement with respect to an incidental discharge subject to regulation

under the VIDA except insofar as such law, regulation, or other requirement is identical to or less stringent than the Federal regulations under the VIDA. Accordingly, EPA and the USCG conducted a Federalism consultation briefing on July 9, 2019, in Washington, DC to allow states and local officials to have meaningful and timely input into the development of the rulemaking (85 FR 67818).

EPA provided an overview of the VIDA, described the interim requirements and the framework of future regulations, identified state provisions associated with the VIDA, and received comments and questions. The briefing was attended by representatives from the National Governors Association, the National Conference of State Legislatures, the U.S. Conference of Mayors, the County Executives of America, the National Association of Counties, the National League of Cities, Environmental Council of the States, the Association of Clean Water Administrators, the National Water Resources Association, the Association of Fish and Wildlife Agencies, the National Association of State Boating Law Administrators, the Western Governors Association, and the Western States Water Council. Pre-proposal comments were accepted from July 9, 2019 to September 9, 2019 and are described in conjunction with the Governors' Consultation comments. After the public comment period concluded for the proposed rule, EPA met with state representatives to discuss topics of interest between June and October 2021 to inform this supplemental notice of proposed rulemaking.

Additionally, pursuant to the terms of Executive Order 13132 and Agency policy, a federalism summary impact statement is required in the final rule. This will summarize not only the issues and concerns raised by state and local government commenters during the proposed rule's development, but also describe how and the extent to which the agency addressed those concerns. Further, as required by Section 8(a) of Executive Order 13132, EPA in the final rule will include a certification from its Federalism Official stating that EPA met the Executive Order's requirements in a meaningful and timely manner. A copy of this certification will be included in the public version of the official record once the action is finalized.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This action has tribal implications. However, it will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law. Tribes may be interested in this action because commercial vessels may operate in or near tribal waters. Additionally, EPA may be authorized to treat eligible federally recognized Tribes as a state (TAS) under section 309 of the CWA.

EPA consulted with tribal officials under the EPA Policy on Consultation and Coordination with Indian Tribes early in the process of developing this regulation to permit them to have meaningful and timely input into its development. A summary of that consultation and coordination follows.

EPA initiated a tribal consultation and coordination process for EPA's 2020 notice of proposed rulemaking (85 FR 67818) by sending a "Notice of Consultation and Coordination" letter on June 18, 2019, to all 573 tribes that were federally recognized at the time.[11] The letter invited tribal leaders and designated consultation representatives to participate in the tribal consultation and coordination process that lasted from July 11 to September 11, 2019. EPA held an informational webinar for tribal representatives on July 11, 2019, to obtain meaningful and timely input during the development of the proposed rule. During the webinar, EPA provided an overview of the VIDA, described the interim requirements and the framework of future regulations, and identified tribal provisions associated with the VIDA. A total of nine tribal representatives participated in the webinar. EPA also provided an informational presentation on the VIDA during the Region 10 Regional Tribal Operations Committee (RTOC) call on July 18, 2019, as requested by the RTOC. During the consultation period, tribes and tribal organizations sent two pre-proposal comment letters to EPA as part of the consultation process. In addition, EPA held one consultation meeting with the leadership of a tribe, at the tribe's request, to obtain pre-proposal input and answer questions regarding the forthcoming rule.

[11] In December 2019, the Little Shell Tribe of Chippewa Indians became the 574th federally recognized tribe.

EPA incorporated the feedback it received from tribal representatives in the proposed rule. Records of the tribal informational webinar, and a consultation summary of the written and verbal comments submitted by tribes are included in the public docket for this proposed rule. Several tribes requested additional consultation in comments submitted during the public comment period of the proposed rule. EPA offered additional consultation opportunities and met with tribal representatives of the Gun Lake Tribe and Chippewa Ottawa Resource Authority in September and October 2021, respectively.

G. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks

EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order.

Therefore, this action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk. Since this action does not concern human health, EPA's Policy on Children's Health also does not apply.

H. Executive Order 13211: Actions That Concern Regulations That Significantly Affect Energy Supply, Distribution, and Use

This action is not a "significant energy action" because it is not likely to have a significant adverse effect on the supply, distribution or use of energy. EPA believes that any additional energy usage would be insignificant compared to the total energy usage of vessels and the total annual U.S. energy consumption.

I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and Executive Order 14096: Revitalizing our Nation's Commitment to Environmental Justice for All

EPA believes that it is not practicable to assess whether the human health or environmental conditions that exist prior to this action result in disproportionate and adverse effects on communities with environmental justice concerns. While EPA was unable to perform a detailed environmental justice analysis because it lacks data on the exact location of vessels and their associated discharges, the rulemaking would increase the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. The Agency recognizes that the burdens of environmental pollution disproportionately fall on certain communities with environmental justice concerns. Overall, the Agency believes this rule would reduce the amount of pollution entering waterbodies from vessels through the minimization and control of discharges entering the waters of the U.S. and the contiguous zone that may contain pollutants such as aquatic nuisance species, nutrients, bacteria or pathogens, oil and grease, metals, as well as other toxic, nonconventional, and conventional pollutants (e.g., organic matter, bicarbonate, and suspended solids). This would yield human health benefits due to decreased exposure to these pollutants and improve the recreational utility of waterbodies where vessels would be subject to the proposed standards.

VII. References

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List of Subjects in 40 CFR Part 139

Environmental protection, Commercial vessels, Coastal zone, Incidental discharges

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Michael S. Regan,

Administrator.

For the reasons set forth in the preamble, 40 CFR part 139, as proposed to be added at 85 FR 67818 (October 26, 2020), is proposed to be amended as follows:

PART 139—DISCHARGES INCIDENTAL TO THE NORMAL OPERATION OF VESSELS

1. The authority citation for part 139 is added to read as follows:

Authority: 33 U.S.C. 1322, as amended.

2. Amend § 139.2 by:

a. Adding the definitions for "*Active discharge of biofouling*", "*Anti-fouling coating*", and "*Anti-fouling system*" in alphabetical order;

b. Revising the definitions for "*Biofouling*", and "*Constructed";*

c. Adding the definitions for "*Macrofouling*", "*Microfouling*", and "*New Laker*";

d. Revising the definition for "*Niche areas*"; and

e. Adding the definition for "*Passive discharge of biofouling*" in alphabetical order.

The additions and revisions read as follows:

§ 139.2 Definitions.

Active discharge of biofouling means the discharge of biofouling from a vessel resulting from in-water cleaning activities.

*****

Anti-fouling coating means a coating or paint designed to prevent, repel, or facilitate the detachment of biofouling from hull and niche areas that are typically or occasionally submerged.

Anti-fouling system means a coating, paint, surface treatment, surface, or device that is used on a vessel to control or prevent attachment of organisms.

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Biofouling means the accumulation of aquatic organisms, such as microorganisms, plants, and animals on surfaces and structures immersed in or exposed to the aquatic environment.

Biofouling can include pathogens in addition to microfouling and macrofouling.

*****

Constructed with respect to a vessel has the same meaning as defined at 33 CFR 151.2005 and means a stage of construction when one of the following occurs:

(1) The keel of a vessel is laid;

(2) Construction identifiable with the specific vessel begins;

(3) Assembly of the vessel has commenced and comprises at least 50 tons or 1 percent of the estimated mass of all structural material, whichever is less; or

(4) The vessel undergoes a major conversion.

*****

Macrofouling means biofouling caused by the attachment and subsequent growth of visible plants and animals on structures and vessels immersed in or exposed to water. Macrofouling is large, distinct multicellular individual or colonial organisms visible to the human eye such as barnacles, tubeworms, mussels, fronds/filaments of algae, bryozoans, sea squirts and other large attached, encrusting, or mobile organisms.

*****

Microfouling means biofouling caused by bacteria, fungi, microalgae, protozoans, and other microscopic organisms that creates a biofilm, also called a slime layer.

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New Laker means a vessel that is 3,000 GT and above and that operates exclusively in the Great Lakes and the St. Lawrence River west of a rhumb line drawn from Cap des Rosiers to Point-Sud-Oeste (West Point), Anticosti Island, and west of a line along 63 W. longitude from Anticosti Island to the north shore of the St. Lawrence River and that is constructed after the effective date of USCG regulations promulgated pursuant to CWA section 312(p)(5)(A)(i).

Niche areas means a subset of the submerged surface area on a vessel that may be more

susceptible to biofouling than the main hull due to structural complexity, different or variable hydrodynamic forces, susceptibility to anti-fouling coating wear or damage, or inadequate or no protection by an anti-fouling system.

*****

Passive discharge of biofouling means the discharge of biofouling from a vessel (for example, sloughing) during a period in which the vessel is not undergoing active cleaning activities.

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3. Amend § 139.10 by revising paragraph (c)(4) and by adding paragraph (c)(5) to read as follows:

§ 139.10 Ballast tanks.

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(c) ***

(4) A ballast water management plan must be developed and followed to minimize the uptake and discharge of harmful aquatic organisms and pathogens. The plan must describe the vessel-specific ballast water management systems and practices necessary to comply with requirements in this section.

(5) A New Laker that discharges ballast water must install, operate, and maintain a ballast water management system (BWMS) that has been type-approved by the USCG.

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4. Amend § 139.21 by revising paragraph (e)(1) to read as follows:

§ 139.21 Graywater systems.

*****

(e) ***

(1) Any new vessel of 400 GT and above that is certificated to carry 15 or more persons and

provides overnight accommodations to those persons;

*****

5. Amend § 139.22 by:

a. Revising paragraph (a);

b. Redesignating paragraphs (b) and (c) as paragraphs (c) and (d);

c. Adding a new paragraph (b); and

d. Revising newly designated paragraph (d).

The revisions and additions read as follows:

§ 139.22 Hulls and associated niche areas.

(a) *Applicability*. The requirements in paragraphs (b) through (d) of this section apply to the discharge of anti-fouling coatings, biofouling organisms, and other materials from vessel hull surfaces and niche areas. Propeller cleaning or polishing is excluded from the requirements.

(b) *Transport and passive discharge.* The transport of attached living organisms and passive discharge of biofouling must be minimized when traveling into waters of the U.S. or waters of the contiguous zone from outside the EEZ or between COTP zones. Management measures to minimize the transport of attached living organisms and the passive discharge of biofouling are described in paragraphs (c) and (d) of this section.

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(d) *In-water cleaning.* (1) Hulls and niche areas must be managed to minimize macrofouling, such as through cleaning of microfouling.

(2) Any hull and niche area cleaning must minimize damage to the anti-fouling coating, minimize release of biocides, and follow applicable cleaning requirements found on the coating manufacturers' instructions and any applicable Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label.

(3) Any discharge from in-water cleaning without capture of macrofouling is prohibited.

(4) Any discharge from in-water cleaning without capture of any copper-based hull coating in a copper-impaired water body within the first 365 days after application of that coating is prohibited.

(5) In-water cleaning must not be conducted on any section of an anti-fouling coating that shows excessive cleaning actions (e.g., brush marks) or blistering due to the internal failure of the paint system.

(6) Any soap, cleaner, or detergent used on vessel surfaces, such as a scum line of the hull, must be minimally toxic, phosphate-free, and biodegradable.

(7) Additional standards applicable to discharges from hulls and associated niche areas when a vessel is operating in federally protected waters are contained in § 139.40(i).

[FR Doc. 2023-22879 Filed: 10/17/2023 8:45 am; Publication Date: 10/18/2023]